AKTIVITA AEROSÓLOV

(dozimetrická stanička Tajná - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]		
1	2008/8	376	±	54	27	2008/985	247	±	21
2	2008/24	324	±	48	28	2008/1067	240	±	21
3	2008/39	281	±	42	29	2008/1091	167	±	14
4	2008/54	224	±	35	30	2008/1106	155	±	13
5	2008/124	117	±	20	31	2008/1174	142	±	12
6	2008/139	219	±	34	32	2008/1189	200	±	17
7	2008/166	157	±	26	33	2008/1216	170	±	15
8	2008/236	178	±	15	34	2008/1241	208	±	18
9	2008/303	237	±	20	35	2008/1287	132	±	11
10	2008/332	139	±	12	36	2008/1364	238	±	20
11	2008/372	158	±	14	37	2008/1402	430	±	37
12	2008/401	65	±	6	38	2008/1417	149	±	13
13	2008/417	89	±	8	39	2008/1504	128	±	11
14	2008/503	209	±	18	40	2008/1521	359	±	31
15	2008/522	127	±	11	41	2008/1557	201	±	17
16	2008/539	174	±	15	42	2008/1577	432	±	37
17	2008/610	98	±	8	43	2008/1599	353	±	30
18	2008/628	225	±	19	44	2008/1647	364	±	31
19	2008/647	104	±	9	45	2008/1720	338	±	29
20	2008/670	157	±	13	46	2008/1745	443	±	38
21	2008/704	202	±	17	47	2008/1760	391	±	34
22	2008/782	139	±	12	48	2008/1837	119	±	10
23	2008/805	276	±	24	49	2008/1877	171	±	15
24	2008/850	205	±	18	50	2008/1897	130	±	11
25	2008/867	130	±	11	51	2008/1942	232	±	20
26	2008/963	196	±	17	52	2008/2059	123	±	11

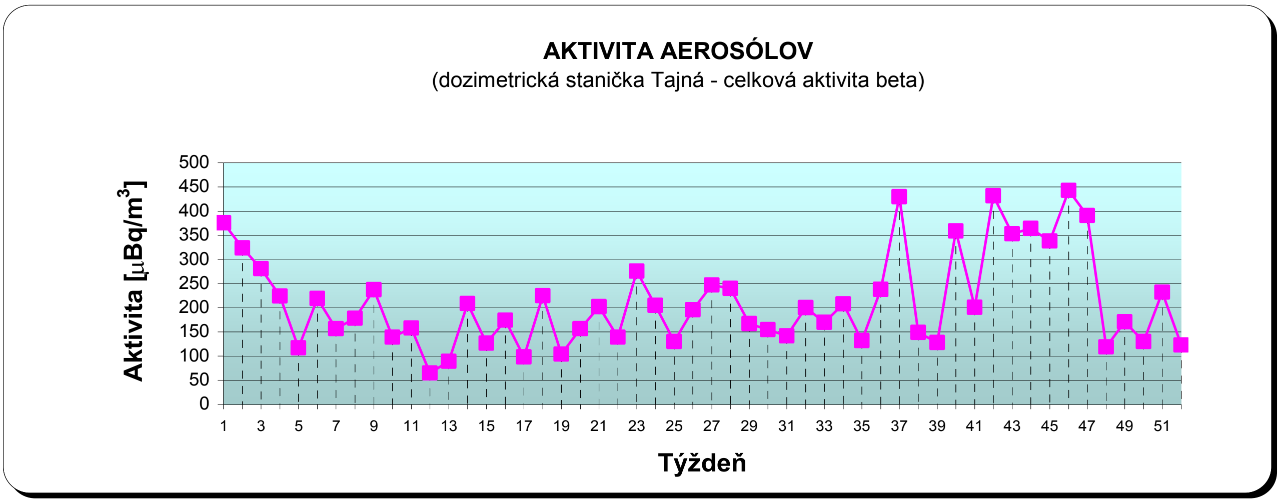

Table 228 Gross beta activity of aerosols - SDS Tajná, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Červený Hrádok - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2005/9	250	±	40	27	2005/1031	323	±	48
2	2005/24	433	±	58	28	2005/1062	383	±	55
3	2005/45	356	±	51	29	2005/1080	297	±	44
4	2005/60	176	±	28	30	2005/1096	362	±	52
5	2005/129	311	±	45	31	2005/1168	699	±	90
6	2005/160	766	±	91	32	2005/1199	156	±	26
7	2005/194	126	±	24	33	2005/1247	310	±	45
8	2005/259	398	±	56	34	2005/1373	420	±	61
9	2005/274	406	±	59	35	2005/1388	510	±	69
10	2005/309	430	±	60	36	2005/1426	380	±	72
11	2005/336	256	±	39	37	2005/1447	532	±	76
12	2005/353	398	±	58	38	2005/1462	330	±	47
13	2005/381	608	±	77	39	2005/1525	911	±	113
14	2005/400	577	±	78	40	2005/1553	748	±	96
15	2005/432	430	±	60	41	2005/1597	1061	±	129
16	2005/493	544	±	73	42	2005/1616	526	±	71
17	2005/559	488	±	67	43	2005/1637	576	±	77
18	2005/642	398	±	56	44	2005/1729	624	±	82
19	2005/669	161	±	27	45	2005/1783	1362	±	160
20	2005/702	253	±	39	46	2005/1889	1081	±	134
21	2005/756	247	±	38	47	2005/1904	303	±	44
22	2005/823	464	±	64	48	2005/1997	441	±	62
23	2005/862	216	±	34	49	2005/2035	394	±	56
24	2005/882	438	±	61	50	2005/2061	571	±	78
25	2005/914	408	±	57	51	2005/2127	185	±	30
26	2005/1011	313	±	46	52	2005/2142	278	±	41

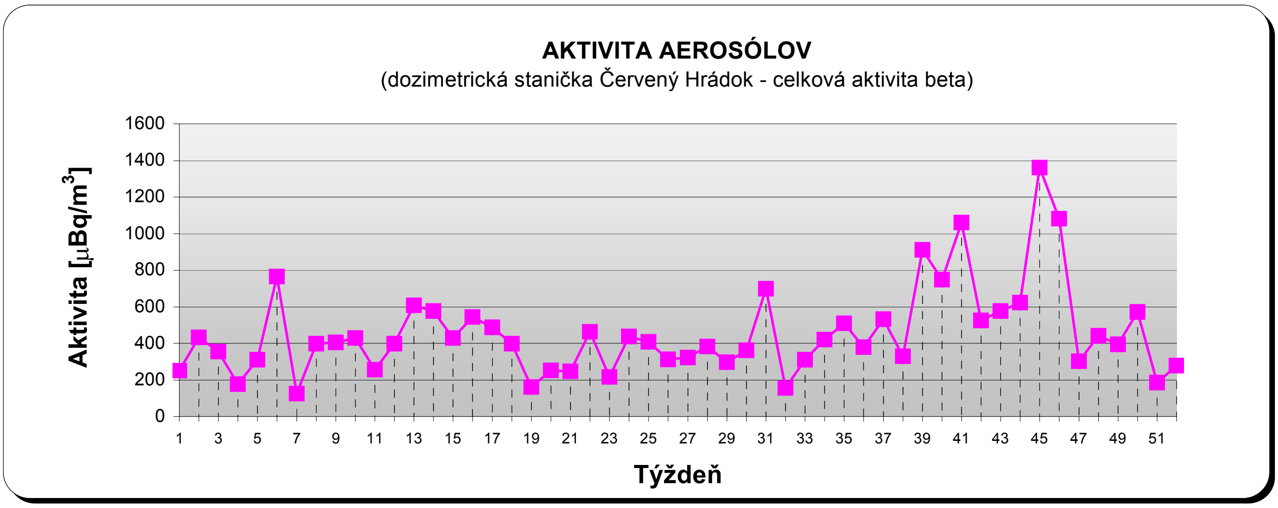

Table 229 Gross beta activity of aerosols - SDS Č. Hrádok, 2005

AKTIVITA AEROSÓLOV
(dozimetrická stanička Červený Hrádok - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2006/10	428	±	61	27	2006/935	291	±	42
2	2006/25	702	±	93	28	2006/971	542	±	73
3	2006/41	788	±	100	29	2006/986	411	±	57
4	2006/57	1104	±	131	30	2006/1112	635	±	81
5	2006/72	1125	±	139	31	2006/1139	579	±	75
6	2006/87	1049	±	128	32	2006/1158	197	±	31
7	2006/105	363	±	52	33	2006/1176	259	±	39
8	2006/134	205	±	38	34	2006/1197	345	±	49
9	2006/152	384	±	54	35	2006/1280	286	±	42
10	2006/265	244	±	37	36	2006/1327	277	±	41
11	2006/303	392	±	54	37	2006/1359	341	±	49
12	2006/372	607	±	78	38	2006/1377	540	±	71
13	2006/397	288	±	42	39	2006/1395	677	±	86
14	2006/419	175	±	28	40	2006/1490	1137	±	134
15	2006/450	359	±	51	41	2006/1508	314	±	45
16	2006/515	272	±	40	42	2006/1582	741	±	93
17	2006/538	463	±	63	43	2006/1667	656	±	82
18	2006/599	351	±	49	44	2006/1682	399	±	55
19	2006/649	496	±	66	45	2006/1723	341	±	50
20	2006/686	409	±	56	46	2006/1746	321	±	46
21	2006/711	348	±	50	47	2006/1773	830	±	102
22	2006/781	197	±	31	48	2006/1889	673	±	86
23	2006/798	157	±	25	49	2006/1907	1197	±	141
24	2006/817	297	±	42	50	2006/1922	536	±	70
25	2006/852	483	±	67	51	2006/1937	725	±	91
26	2006/868	332	±	49	52	2006/1970	372	±	52

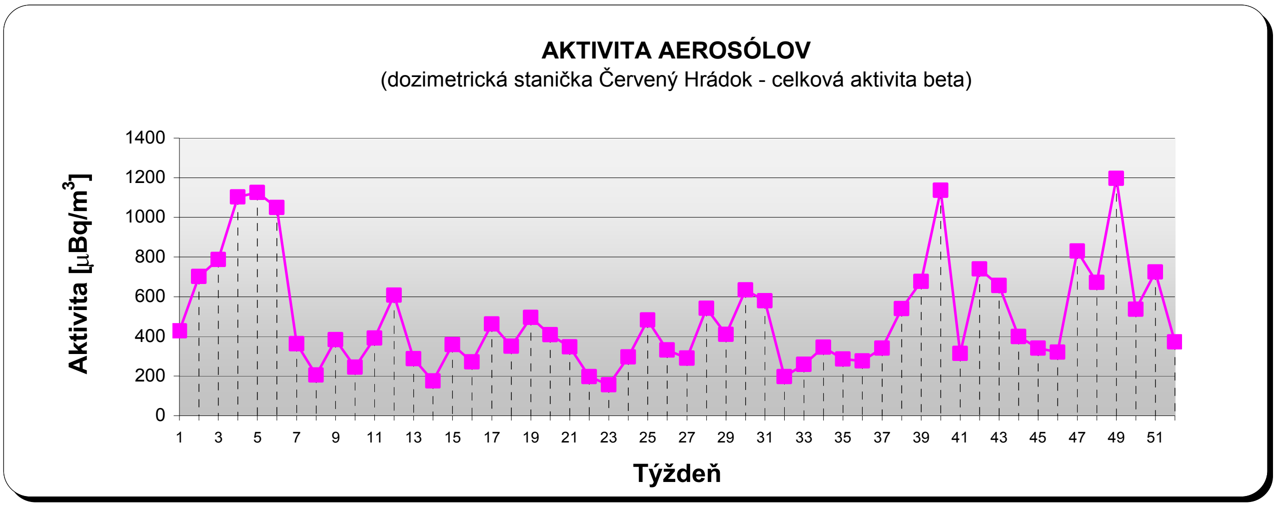

Table 230 Gross beta activity of aerosols - SDS Č. Hrádok, 2006

AKTIVITA AEROSÓLOV
(dozimetrická stanička Červený Hrádok - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2007/11	441	±	60	27	2007/929	234	±	35
2	2007/26	189	±	30	28	2007/946	120	±	20
3	2007/44	139	±	24	29	2007/1021	245	±	37
4	2007/83	148	±	24	30	2007/1096	325	±	48
5	2007/126	122	±	21	31	2007/1126	369	±	52
6	2007/160	119	±	20	32	2007/1159	187	±	30
7	2007/175	131	±	22	33	2007/1174	271	±	40
8	2007/192	199	±	31	34	2007/1242	223	±	35
9	2007/208	320	±	45	35	2007/1257	264	±	39
10	2007/276	88	±	15	36	2007/1291	153	±	25
11	2007/296	154	±	25	37	2007/1310	86	±	15
12	2007/331	90	±	15	38	2007/1358	298	±	46
13	2007/413	230	±	37	39	2007/1426	389	±	54
14	2007/430	240	±	36	40	2007/1453	297	±	43
15	2007/455	142	±	23	41	2007/1494	339	±	49
16	2007/486	264	±	39	42	2007/1514	253	±	38
17	2007/501	159	±	26	43	2007/1547	133	±	22
18	2007/570	225	±	34	44	2007/1634	331	±	47
19	2007/585	223	±	34	45	2007/1658	122	±	21
20	2007/630	173	±	28	46	2007/1733	39	±	8
21	2007/655	189	±	30	47	2007/1804	186	±	30
22	2007/733	292	±	43	48	2007/1852	284	±	43
23	2007/781	124	±	21	49	2007/1867	191	±	30
24	2007/797	227	±	35	50	2007/1910	150	±	24
25	2007/830	202	±	32	51	2007/1954	182	±	32
26	2007/845	164	±	26	52	2007/1969	469	±	62

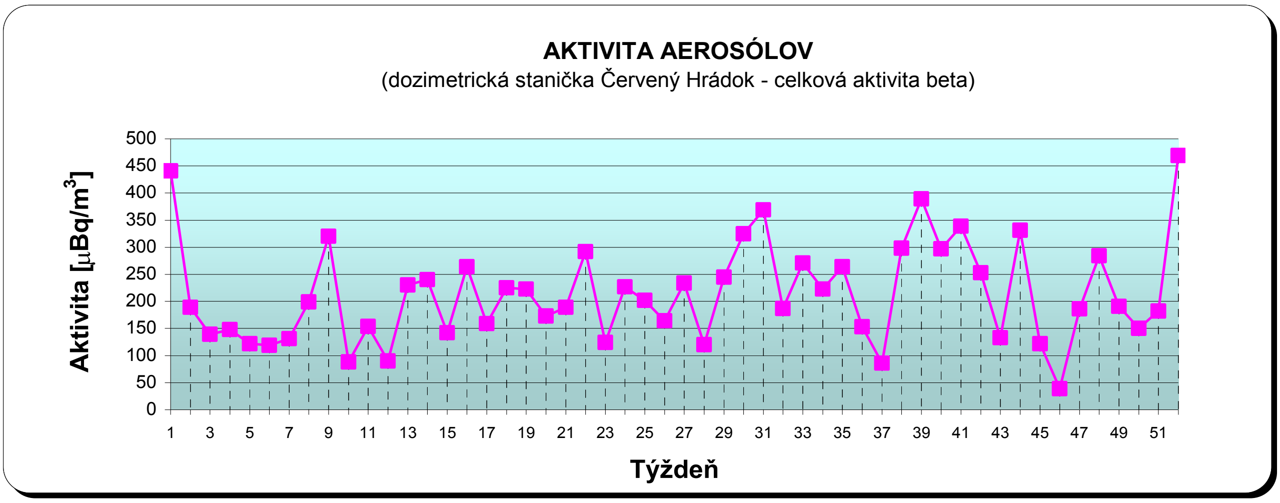

Table 231 Gross beta activity of aerosols - SDS Č. Hrádok, 2007

AKTIVITA AEROSÓLOV
(dozimetrická stanička Červený Hrádok - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m^3]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m^3]		
1	2008/9	402	±	57	27	2008/986	149	±	13
2	2008/25	258	±	40	28	2008/1068	158	±	14
3	2008/40	270	±	40	29	2008/1092	166	±	14
4	2008/55	195	±	31	30	2008/1107	133	±	11
5	2008/125	110	±	19	31	2008/1175	131	±	11
6	2008/140	176	±	28	32	2008/1190	240	±	21
7	2008/167	185	±	29	33	2008/1217	159	±	14
8	2008/237	127	±	11	34	2008/1242	224	±	19
9	2008/304	215	±	18	35	2008/1288	164	±	14
10	2008/333	139	±	12	36	2008/1365	234	±	20
11	2008/373	146	±	13	37	2008/1403	364	±	31
12	2008/402	99	±	9	38	2008/1418	167	±	14
13	2008/418	99	±	9	39	2008/1505	98	±	8
14	2008/504	180	±	15	40	2008/1522	437	±	38
15	2008/523	116	±	10	41	2008/1558	213	±	18
16	2008/540	136	±	12	42	2008/1578	307	±	26
17	2008/611	108	±	9	43	2008/1600	265	±	23
18	2008/629	240	±	21	44	2008/1648	260	±	22
19	2008/648	143	±	12	45	2008/1721	293	±	25
20	2008/671	147	±	13	46	2008/1746	471	±	41
21	2008/705	189	±	16	47	2008/1761	515	±	44
22	2008/783	173	±	15	48	2008/1838	145	±	12
23	2008/806	245	±	21	49	2008/1878	170	±	15
24	2008/851	202	±	17	50	2008/1898	116	±	10
25	2008/868	127	±	11	51	2008/1943	187	±	16
26	2008/964	185	±	16	52	2008/2060	136	±	12

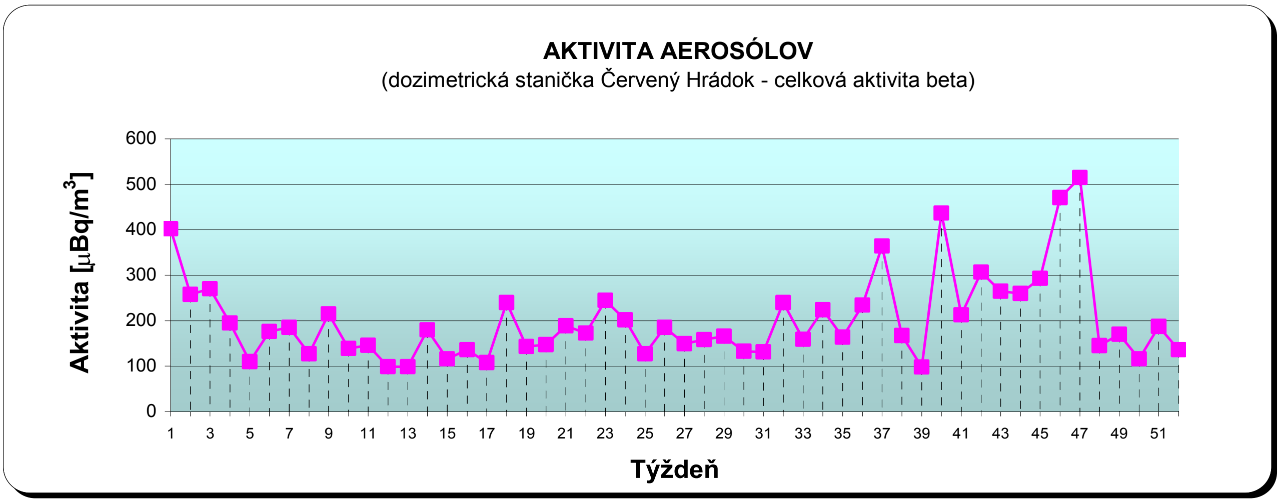

Table 232 Gross beta activity of aerosols - SDS Č. Hrádok, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nemčiňany - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m^3]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m^3]		
1	2005/10	153	±	26	27	2005/1032	137	±	23
2	2005/25	291	±	41	28	2005/1063	165	±	26
3	2005/46	181	±	29	29	2005/1081	504	±	67
4	2005/61	124	±	21	30	2005/1097	225	±	34
5	2005/130	178	±	28	31	2005/1169	444	±	60
6	2005/161	434	±	58	32	2005/1200	65	±	12
7	2005/195	273	±	41	33	2005/1248	170	±	27
8	2005/260	260	±	38	34	2005/1374	204	±	32
9	2005/275	241	±	37	35	2005/1389	331	±	49
10	2005/310	252	±	38	36	2005/1427	308	±	44
11	2005/337	161	±	26	37	2005/1448	411	±	58
12	2005/354	234	±	36	38	2005/1463	259	±	38
13	2005/382	330	±	45	39	2005/1526	551	±	73
14	2005/401	349	±	50	40	2005/1554	445	±	61
15	2005/433	208	±	32	41	2005/1598	665	±	85
16	2005/494	329	±	47	42	2005/1617	345	±	49
17	2005/560	239	±	36	43	2005/1638	328	±	47
18	2005/643	213	±	33	44	2005/1730	398	±	55
19	2005/670	67	±	12	45	2005/1784	709	±	89
20	2005/703	158	±	25	46	2005/1890	694	±	90
21	2005/757	138	±	23	47	2005/1905	192	±	30
22	2005/824	296	±	43	48	2005/1998	245	±	37
23	2005/863	112	±	19	49	2005/2036	186	±	29
24	2005/883	259	±	38	50	2005/2062	348	±	49
25	2005/915	172	±	27	51	2005/2128	108	±	18
26	2005/1012	241	±	36	52	2005/2143	160	±	25

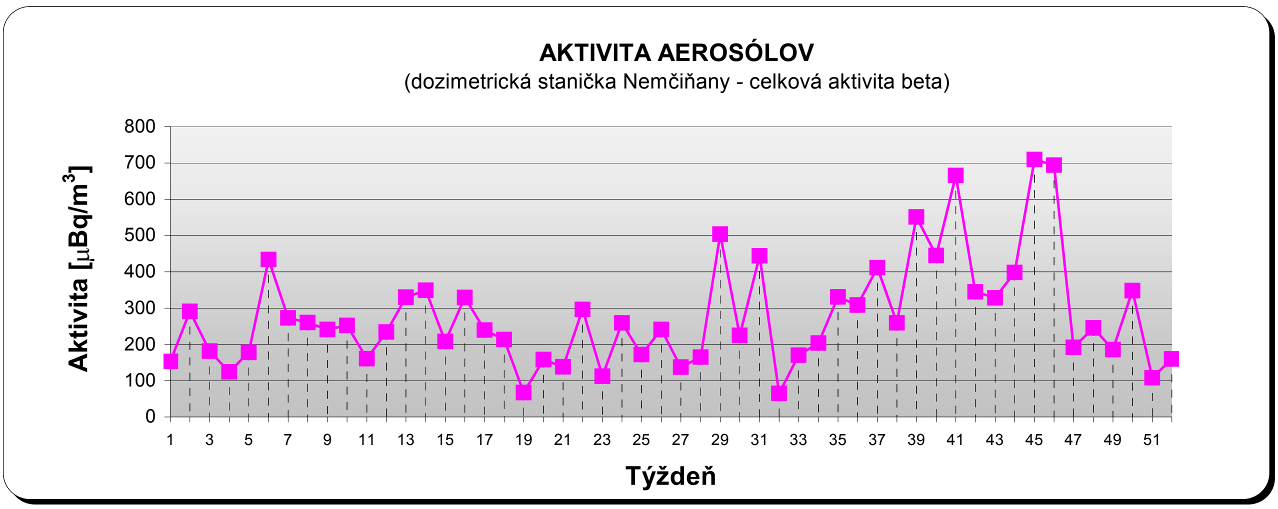

Table 233 Gross beta activity of aerosols - SDS Nemčiňany, 2005

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nemčiňany - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m^3]		
1	2006/11	255	±	39
2	2006/26	456	±	64
3	2006/42	465	±	63
4	2006/58	651	±	81
5	2006/73	715	±	92
6	2006/88	639	±	82
7	2006/106	270	±	40
8	2006/135	197	±	31
9	2006/153	159	±	25
10	2006/266	135	±	22
11	2006/304	209	±	31
12	2006/373	341	±	47
13	2006/398	187	±	29
14	2006/420	76	±	13
15	2006/451	153	±	24
16	2006/516	151	±	24
17	2006/539	220	±	33
18	2006/600	224	±	33
19	2006/650	285	±	41
20	2006/687	237	±	35
21	2006/709	177	±	28
22	2006/782	107	±	18
23	2006/799	79	±	14
24	2006/818	168	±	26
25	2006/853	309	±	45
26	2006/869	346	±	48
27	2006/936	175	±	32
28	*	*		*
29	*	*		*
30	*	*		*
31	*	*		*
32	*	*		*
33	*	*		*
34	*	*		*
35	*	*		*
36	*	*		*
37	2006/1360	323	±	45
38	2006/1378	564	±	72
39	2006/1396	695	±	86
40	2006/1491	1060	±	123
41	2006/1509	339	±	47
42	2006/1583	637	±	80
43	2006/1668	565	±	71
44	2006/1683	378	±	52
45	2006/1724	260	±	39
46	2006/1747	295	±	42
47	2006/1774	783	±	95
48	2006/1890	651	±	81
49	2006/1908	1115	±	129
50	2006/1923	545	±	70
51	2006/1938	675	±	84
52	2006/1971	312	±	44

* Porucha odberového zariadenia

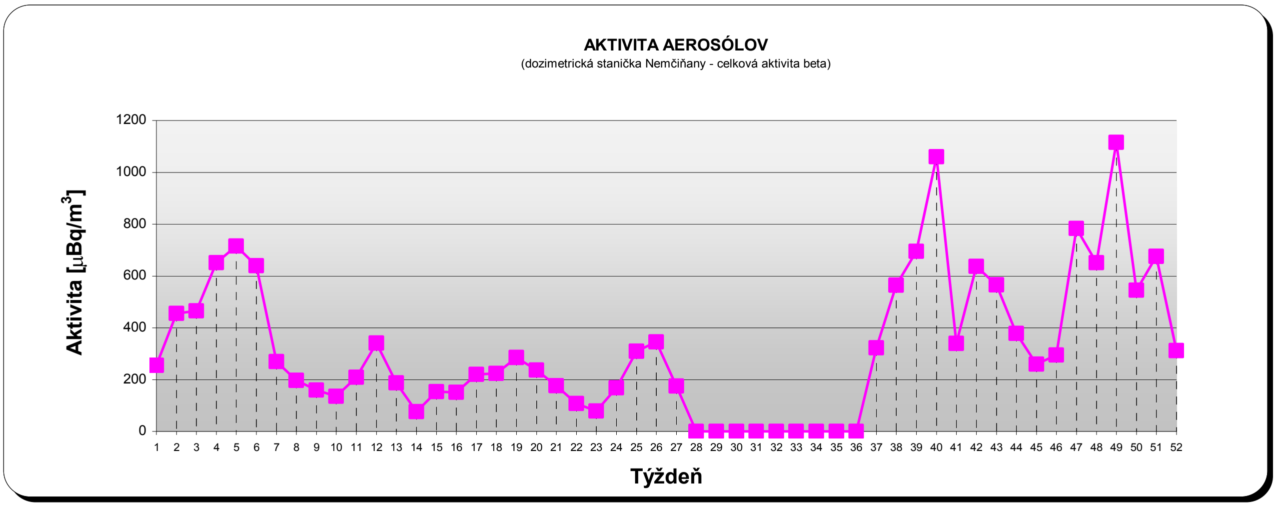

Table 234 Gross beta activity of aerosols - SDS Nemčiňany, 2006

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nemčiňany - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m^3]		
1	2007/12	382	±	52
2	2007/27	170	±	26
3	2007/45	134	±	22
4	2007/84	199	±	30
5	2007/127	96	±	16
6	2007/161	146	±	23
7	2007/176	143	±	23
8	2007/193	222	±	33
9	2007/209	296	±	42
10	2007/277	49	±	9
11	2007/297	122	±	20
12	2007/332	122	±	20
13	2007/414	171	±	27
14	2007/431	279	±	41
15	2007/456	174	±	27
16	2007/487	276	±	40
17	2007/502	175	±	27
18	2007/571	252	±	37
19	2007/586	192	±	30
20	2007/631	206	±	32
21	2007/656	196	±	30
22	2007/734	297	±	43
23	2007/782	132	±	22
24	2007/798	329	±	47
25	2007/831	224	±	34
26	2007/846	115	±	19

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m^3]		
27	2007/930	205	±	31
28	2007/947	127	±	21
29	2007/1022	204	±	32
30	2007/1097	354	±	49
31	2007/1127	240	±	36
32	2007/1160	173	±	27
33	2007/1175	297	±	43
34	2007/1243	297	±	44
35	2007/1258	286	±	41
36	2007/1292	169	±	26
37	2007/1311	73	±	13
38	2007/1359	304	±	45
39	2007/1427	250	±	37
40	2007/1454	289	±	42
41	2007/1495	336	±	47
42	2007/1515	298	±	43
43	2007/1548	165	±	26
44	2007/1635	365	±	51
45	2007/1659	97	±	17
46	2007/1734	49	±	9
47	2007/1805	192	±	30
48	2007/1853	368	±	52
49	2007/1868	273	±	40
50	2007/1911	173	±	27
51	2007/1955	292	±	41
52	2007/1970	591	±	74

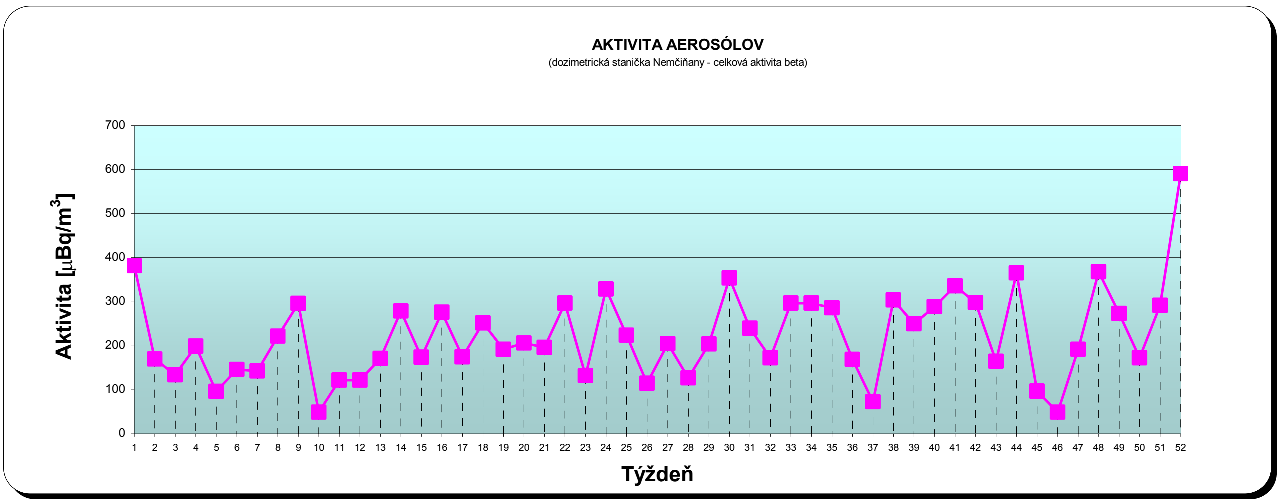

Table 235 Gross beta activity of aerosols - SDS Nemčiňany, 2007

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nemčiňany - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2008/10	506	±	69	27	2008/987	145	±	12
2	2008/26	382	±	55	28	2008/1069	282	±	24
3	2008/41	328	±	47	29	2008/1093	143	±	12
4	2008/56	229	±	35	30	2008/1108	161	±	14
5	2008/126	137	±	23	31	2008/1176	172	±	15
6	2008/141	240	±	37	32	2008/1191	245	±	21
7	2008/168	185	±	30	33	2008/1218	153	±	13
8	2008/238	216	±	19	34	2008/1243	193	±	17
9	2008/305	298	±	26	35	2008/1289	163	±	14
10	2008/334	149	±	13	36	2008/1366	233	±	20
11	2008/374	137	±	12	37	2008/1404	433	±	37
12	2008/403	112	±	10	38	2008/1419	150	±	13
13	2008/419	121	±	10	39	2008/1506	109	±	9
14	2008/505	181	±	16	40	2008/1523	395	±	34
15	2008/524	142	±	12	41	2008/1559	154	±	13
16	2008/541	165	±	14	42	2008/1579	421	±	36
17	2008/612	157	±	13	43	2008/1601	342	±	29
18	2008/630	260	±	22	44	2008/1649	339	±	29
19	2008/649	159	±	14	45	2008/1722	274	±	24
20	2008/672	259	±	22	46	2008/1747	468	±	40
21	2008/706	206	±	18	47	2008/1762	380	±	33
22	2008/784	112	±	10	48	2008/1839	126	±	11
23	2008/807	250	±	21	49	2008/1879	178	±	15
24	2008/852	207	±	18	50	2008/1899	126	±	11
25	2008/869	132	±	11	51	2008/1944	216	±	19
26	2008/965	211	±	18	52	2008/2061	134	±	12

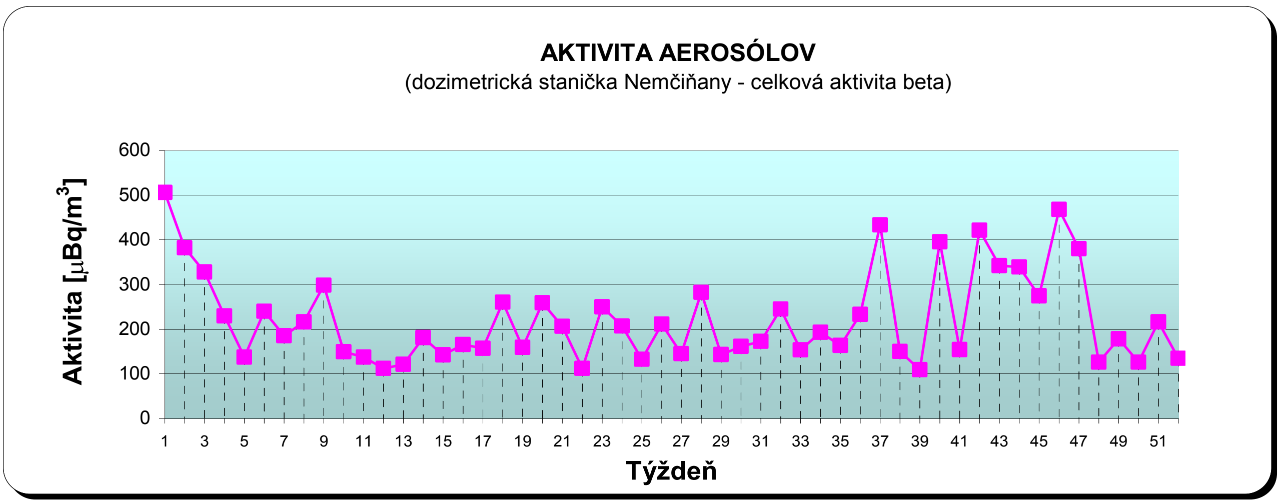

Table 236 Gross beta activity of aerosols - SDS Nemčiňany, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Malé Kozmálovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]		
1	2005/11	247	±	39	27	2005/1033	223	±	35
2	2005/26	397	±	54	28	2005/1064	239	±	37
3	2005/47	254	±	38	29	2005/1082	346	±	50
4	2005/62	202	±	31	30	2005/1098	369	±	53
5	2005/131	308	±	45	31	2005/1170	356	±	51
6	2005/162	666	±	83	32	2005/1201	150	±	25
7	2005/196	657	±	87	33	2005/1249	315	±	45
8	2005/261	358	±	50	34	2005/1375	342	±	51
9	2005/276	356	±	52	35	2005/1390	428	±	61
10	2005/311	324	±	47	36	2005/1428	432	±	59
11	2005/338	232	±	36	37	2005/1449	562	±	77
12	2005/355	201	±	33	38	2005/1464	315	±	45
13	2005/383	473	±	62	39	2005/1527	697	±	90
14	2005/402	469	±	66	40	2005/1555	611	±	80
15	2005/434	399	±	56	41	2005/1599	855	±	106
16	2005/495	445	±	61	42	2005/1618	490	±	67
17	2005/561	332	±	48	43	2005/1639	436	±	60
18	2005/644	314	±	46	44	2005/1731	567	±	76
19	2005/671	175	±	28	45	2005/1785	936	±	115
20	2005/704	205	±	32	46	2005/1891	843	±	108
21	2005/758	192	±	31	47	2005/1906	288	±	42
22	2005/825	401	±	56	48	2005/1999	321	±	47
23	2005/864	173	±	28	49	2005/2037	242	±	37
24	2005/884	340	±	49	50	2005/2063	518	±	70
25	2005/916	295	±	44	51	2005/2129	152	±	25
26	2005/1013	305	±	45	52	2005/2144	207	±	32

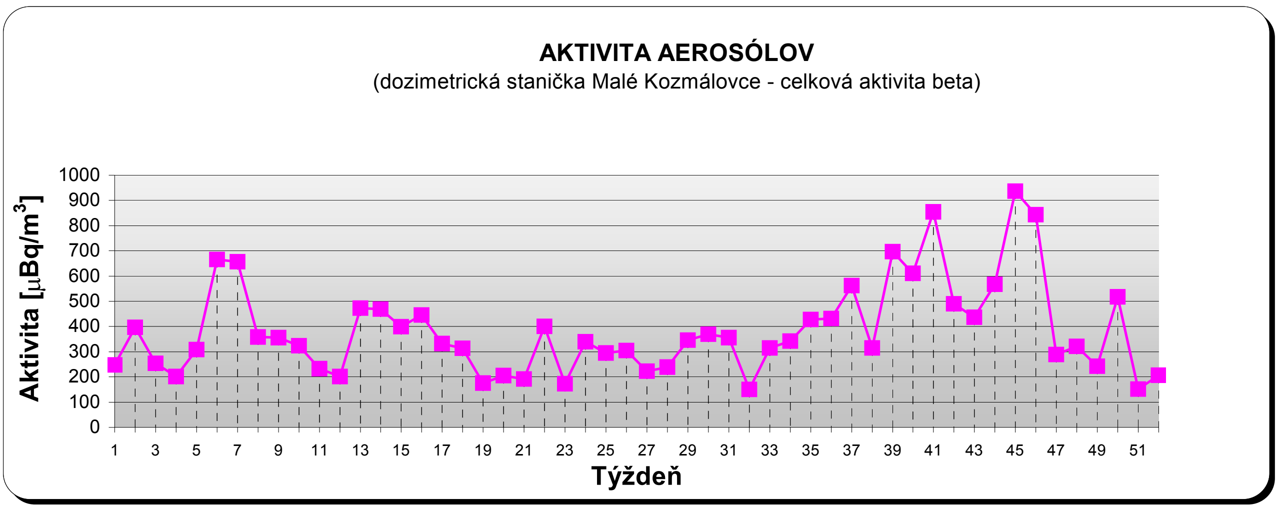

Table 237 Gross beta activity of aerosols - SDS Malé Kozmálovce, 2005

AKTIVITA AEROSÓLOV

(dozimetrická stanička Malé Kozmálovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2006/12	341	±	51
2	2006/27	482	±	68
3	2006/43	698	±	90
4	2006/59	871	±	106
5	2006/74	913	±	115
6	2006/89	826	±	103
7	2006/107	352	±	51
8	2006/136	290	±	43
9	2006/154	274	±	40
10	2006/267	213	±	33
11	2006/305	258	±	38
12	2006/374	488	±	65
13	2006/399	262	±	39
14	2006/421	134	±	22
15	2006/452	221	±	34
16	2006/517	216	±	33
17	2006/540	349	±	49
18	2006/601	262	±	38
19	2006/651	263	±	39
20	2006/688	401	±	55
21	2006/719	288	±	42
22	2006/783	169	±	27
23	2006/800	165	±	26
24	2006/819	234	±	34
25	2006/854	398	±	56
26	2006/870	460	±	62

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
27	2006/937	273	±	39
28	2006/973	455	±	63
29	2006/988	355	±	50
30	2006/1114	574	±	74
31	2006/1141	532	±	70
32	2006/1160	148	±	24
33	2006/1178	238	±	36
34	2006/1199	383	±	53
35	2006/1282	214	±	33
36	2006/1329	229	±	35
37	2006/1361	268	±	39
38	2006/1379	496	±	66
39	2006/1397	597	±	77
40	2006/1492	976	±	116
41	2006/1510	255	±	38
42	2006/1584	500	±	65
43	2006/1669	531	±	69
44	2006/1684	346	±	49
45	2006/1725	272	±	41
46	2006/1748	258	±	38
47	2006/1775	664	±	84
48	2006/1891	544	±	71
49	2006/1909	919	±	111
50	2006/1924	483	±	64
51	2006/1939	622	±	79
52	2006/1972	267	±	39

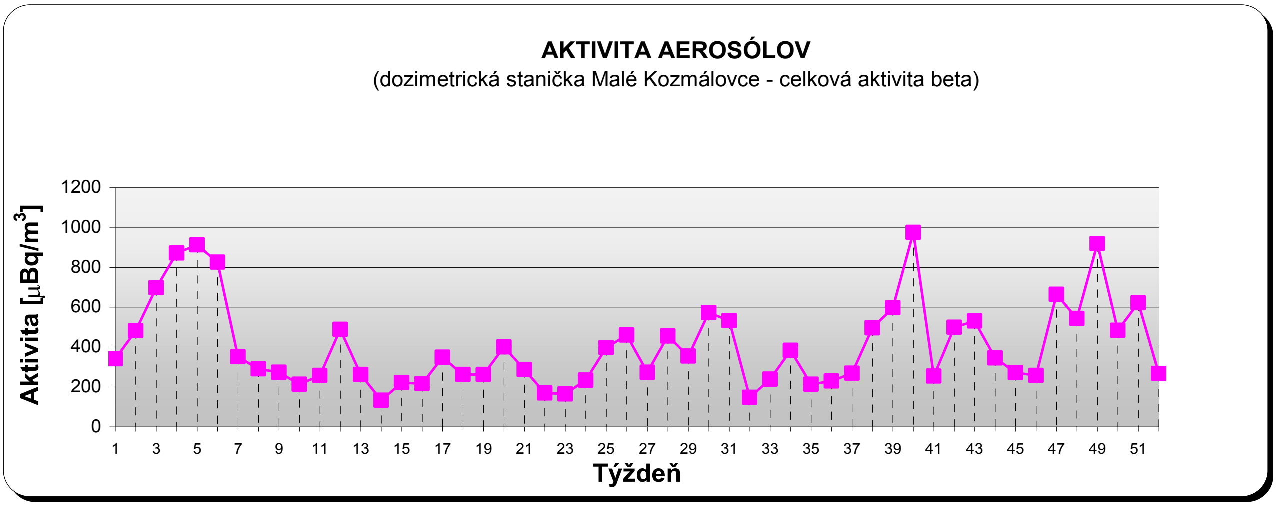

Table 238 Gross beta activity of aerosols - SDS Malé Kozmálovce, 2006

AKTIVITA AEROSÓLOV

(dozimetrická stanička Malé Kozmálovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]		
1	2007/13	348	±	48	27	2007/931	145	±	24
2	2007/28	111	±	19	28	2007/948	85	±	15
3	2007/46	120	±	20	29	2007/1023	199	±	31
4	2007/85	157	±	25	30	2007/1098	297	±	43
5	2007/128	119	±	20	31	2007/1128	157	±	25
6	2007/162	123	±	20	32	2007/1161	177	±	28
7	2007/177	121	±	20	33	2007/1176	288	±	42
8	2007/194	193	±	30	34	2007/1244	194	±	31
9	2007/210	301	±	43	35	2007/1259	258	±	38
10	2007/278	72	±	13	36	2007/1293	163	±	25
11	2007/298	111	±	19	37	2007/1312	55	±	10
12	2007/333	139	±	23	38	2007/1360	243	±	37
13	2007/415	175	±	27	39	2007/1428	208	±	32
14	2007/432	247	±	37	40	2007/1455	221	±	33
15	2007/457	155	±	25	41	2007/1496	310	±	44
16	2007/488	254	±	37	42	2007/1516	235	±	35
17	2007/503	164	±	26	43	2007/1549	158	±	25
18	2007/572	218	±	33	44	2007/1636	300	±	43
19	2007/587	155	±	25	45	2007/1660	92	±	16
20	2007/632	157	±	25	46	2007/1735	34	±	7
21	2007/657	198	±	30	47	2007/1806	172	±	27
22	2007/735	252	±	37	48	2007/1854	299	±	44
23	2007/783	151	±	24	49	2007/1869	180	±	28
24	2007/799	239	±	36	50	2007/1912	155	±	24
25	2007/832	222	±	34	51	2007/1956	233	±	34
26	2007/847	126	±	21	52	2007/1971	500	±	65

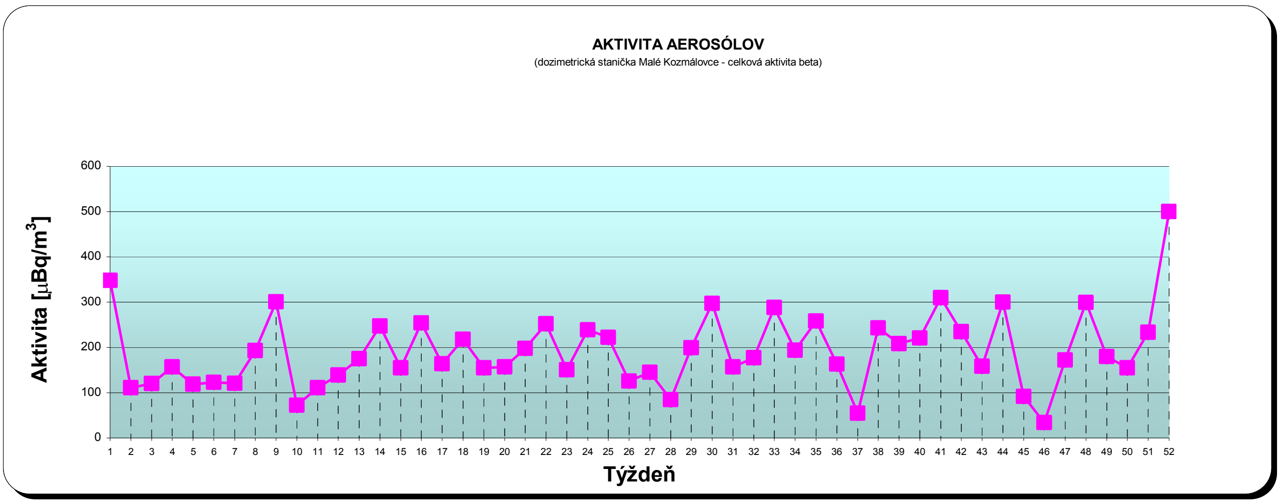

Table 239 Gross beta activity of aerosols - SDS Malé Kozmálovce, 2007

AKTIVITA AEROSÓLOV

(dozimetrická stanička Malé Kozmálovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]		
1	2008/11	415	±	59	27	2008/988	161	±	14
2	2008/27	293	±	44	28	2008/1070	242	±	21
3	2008/42	254	±	38	29	2008/1094	179	±	15
4	2008/57	189	±	30	30	2008/1109	142	±	12
5	2008/127	115	±	20	31	2008/1177	186	±	16
6	2008/142	217	±	33	32	2008/1192	242	±	21
7	2008/169	198	±	31	33	2008/1219	162	±	14
8	2008/239	224	±	19	34	2008/1244	218	±	19
9	2008/306	228	±	20	35	2008/1290	169	±	15
10	2008/335	129	±	11	36	2008/1367	194	±	17
11	2008/375	159	±	14	37	2008/1405	422	±	36
12	2008/404	76	±	7	38	2008/1420	209	±	18
13	2008/420	67	±	6	39	2008/1507	128	±	11
14	2008/506	227	±	20	40	2008/1524	373	±	32
15	2008/525	110	±	9	41	2008/1560	243	±	21
16	2008/542	149	±	13	42	2008/1580	379	±	33
17	2008/613	123	±	11	43	2008/1602	362	±	31
18	2008/631	219	±	19	44	2008/1650	312	±	27
19	2008/650	127	±	11	45	2008/1723	329	±	28
20	2008/673	172	±	15	46	2008/1748	419	±	36
21	2008/707	175	±	15	47	2008/1763	350	±	30
22	2008/785	147	±	13	48	2008/1840	115	±	10
23	2008/808	259	±	22	49	2008/1880	177	±	15
24	2008/853	223	±	19	50	2008/1900	164	±	14
25	2008/870	147	±	13	51	2008/1945	181	±	16
26	2008/966	218	±	19	52	2008/2062	150	±	13

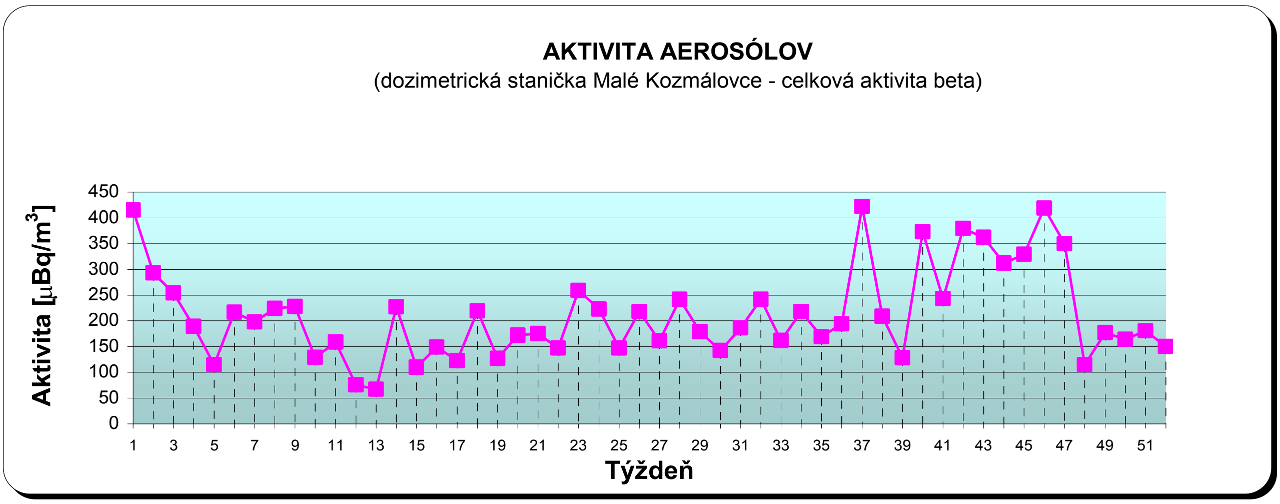

Table 240 Gross beta activity of aerosols - SDS Malé Kozmálovce, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nový Tekov - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2005/12	244	±	39	27	2005/1034	220	±	34
2	2005/27	356	±	49	28	2005/1065	261	±	39
3	2005/48	292	±	43	29	2005/1083	292	±	43
4	2005/63	152	±	25	30	2005/1099	305	±	45
5	2005/132	328	±	50	31	2005/1171	668	±	86
6	2005/163	634	±	83	32	2005/1202	121	±	21
7	2005/197	628	±	83	33	2005/1250	251	±	37
8	2005/262	331	±	47	34	2005/1376	379	±	55
9	2005/277	302	±	45	35	2005/1391	422	±	60
10	2005/312	330	±	48	36	2005/1429	445	±	60
11	2005/339	211	±	33	37	2005/1450	591	±	80
12	2005/356	391	±	56	38	2005/1465	298	±	43
13	2005/384	479	±	63	39	2005/1528	765	±	97
14	2005/403	546	±	72	40	2005/1556	620	±	81
15	2005/435	377	±	53	41	2005/1600	893	±	110
16	2005/496	404	±	56	42	2005/1619	470	±	64
17	2005/562	328	±	47	43	2005/1640	549	±	73
18	2005/645	327	±	47	44	2005/1732	363	±	57
19	2005/672	121	±	21	45	2005/1786	1019	±	123
20	2005/705	227	±	35	46	2005/1892	944	±	118
21	2005/759	214	±	33	47	2005/1907	422	±	73
22	2005/826	404	±	56	48	2005/2000	344	±	50
23	2005/865	226	±	35	49	2005/2038	319	±	47
24	2005/885	355	±	51	50	2005/2064	543	±	72
25	2005/917	308	±	45	51	2005/2130	159	±	26
26	2005/1014	274	±	41	52	2005/2145	212	±	32

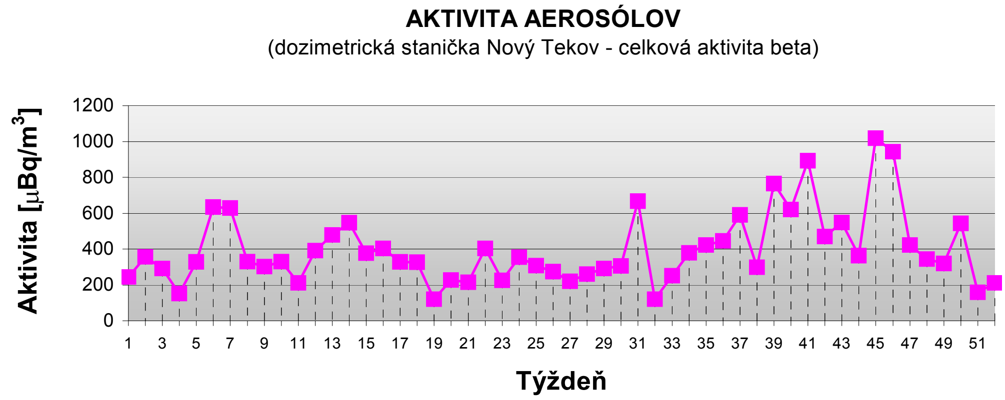

Table 241 Gross beta activity of aerosols - SDS Nový Tekov, 2005

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nový Tekov - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2006/13	410	±	59	27	2006/938	321	±	44
2	2006/28	573	±	78	28	2006/974	449	±	62
3	2006/44	701	±	90	29	2006/989	315	±	45
4	2006/60	910	±	110	30	2006/1115	588	±	75
5	2006/75	917	±	115	31	2006/1142	535	±	70
6	2006/90	855	±	106	32	2006/1161	163	±	26
7	2006/108	396	±	56	33	2006/1179	184	±	29
8	2006/137	259	±	39	34	2006/1200	386	±	53
9	2006/155	276	±	40	35	2006/1283	225	±	34
10	2006/268	220	±	33	36	2006/1330	200	±	31
11	2006/306	313	±	45	37	2006/1362	264	±	39
12	2006/375	437	±	59	38	2006/1380	432	±	58
13	2006/400	238	±	36	39	2006/1398	631	±	80
14	2006/422	114	±	19	40	2006/1493	918	±	110
15	2006/453	242	±	36	41	2006/1511	283	±	41
16	2006/518	203	±	31	42	2006/1585	562	±	73
17	2006/541	369	±	51	43	2006/1670	546	±	70
18	2006/602	265	±	39	44	2006/1685	340	±	48
19	2006/652	465	±	62	45	*	*		*
20	2006/689	312	±	44	46	2006/1749	343	±	56
21	2006/718	263	±	39	47	2006/1776	865	±	119
22	2006/784	143	±	23	48	2006/1892	553	±	72
23	2006/801	125	±	21	49	2006/1910	901	±	108
24	2006/820	228	±	33	50	2006/1925	486	±	64
25	2006/855	417	±	58	51	2006/1940	554	±	72
26	2006/871	441	±	59	52	2006/1973	271	±	39

* Porucha odberového zariadenia

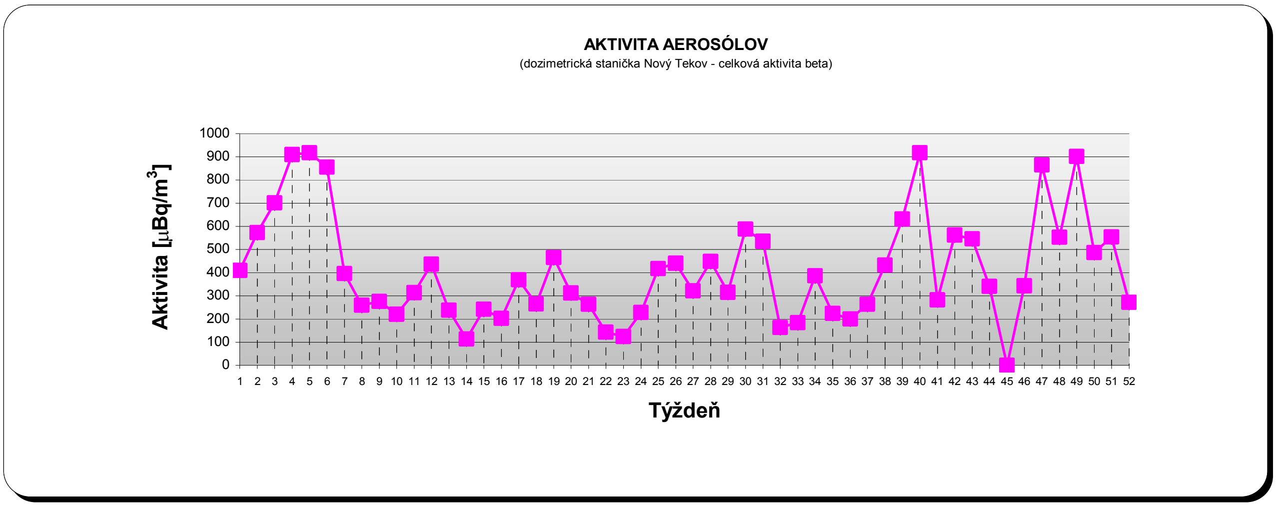

Table 242 Gross beta activity of aerosols - SDS Nový Tekov, 2006

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nový Tekov - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2007/14	307	±	44	27	2007/932	182	±	28
2	2007/29	93	±	16	28	2007/949	117	±	19
3	2007/47	128	±	21	29	2007/1024	172	±	28
4	2007/86	184	±	28	30	2007/1099	385	±	53
5	2007/129	75	±	13	31	2007/1129	226	±	34
6	2007/163	150	±	24	32	2007/1162	220	±	33
7	2007/178	123	±	20	33	2007/1177	273	±	40
8	2007/195	195	±	30	34	2007/1245	250	±	38
9	2007/211	314	±	44	35	2007/1260	281	±	41
10	2007/279	73	±	13	36	2007/1294	173	±	27
11	2007/299	110	±	18	37	2007/1313	42	±	8
12	2007/334	126	±	21	38	2007/1361	256	±	39
13	2007/416	146	±	24	39	2007/1429	238	±	36
14	2007/433	284	±	41	40	2007/1456	237	±	35
15	2007/458	165	±	26	41	2007/1497	309	±	44
16	2007/489	235	±	35	42	2007/1517	263	±	38
17	2007/504	139	±	23	43	2007/1550	154	±	25
18	2007/573	193	±	30	44	2007/1637	295	±	42
19	2007/588	180	±	28	45	2007/1661	87	±	15
20	2007/633	161	±	26	46	2007/1736	59	±	11
21	2007/658	198	±	30	47	2007/1807	149	±	24
22	2007/736	262	±	38	48	2007/1855	287	±	43
23	2007/784	101	±	17	49	2007/1870	218	±	33
24	2007/800	271	±	40	50	2007/1913	186	±	28
25	2007/833	195	±	30	51	2007/1957	219	±	33
26	2007/848	133	±	22	52	2007/1972	471	±	61

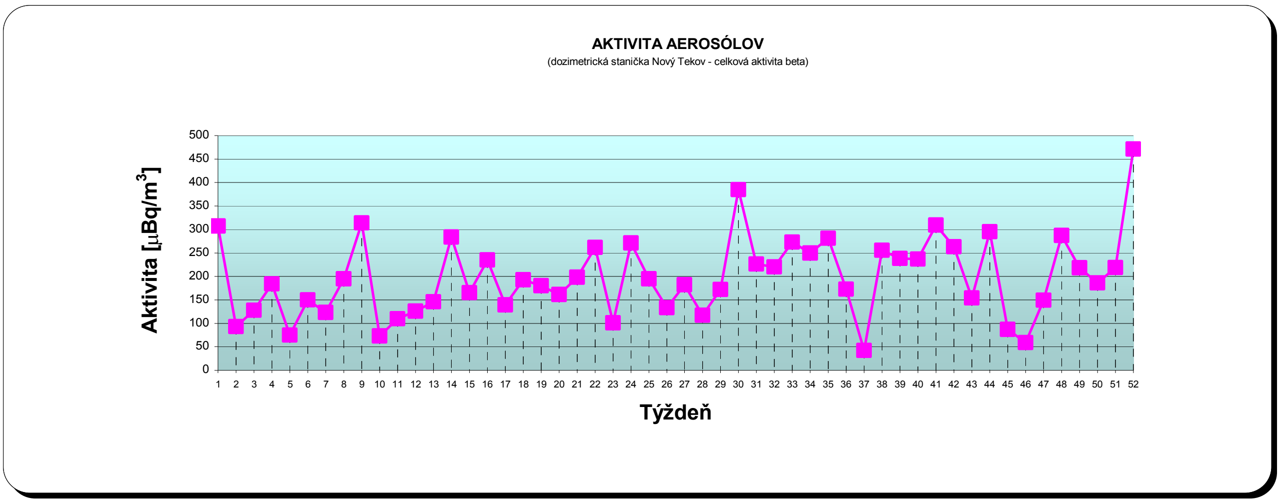

Table 243 Gross beta activity of aerosols - SDS Nový Tekov, 2007

AKTIVITA AEROSÓLOV
(dozimetrická stanička Nový Tekov - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2008/12	426	±	60	27	2008/989	201	±	17
2	2008/28	324	±	48	28	2008/1071	220	±	19
3	2008/43	294	±	43	29	2008/1095	184	±	16
4	2008/58	222	±	35	30	2008/1110	150	±	13
5	2008/128	122	±	21	31	2008/1178	181	±	16
6	2008/143	185	±	30	32	2008/1193	206	±	18
7	2008/170	180	±	29	33	2008/1220	181	±	16
8	2008/240	216	±	19	34	2008/1245	232	±	20
9	2008/307	203	±	17	35	2008/1291	161	±	14
10	2008/336	107	±	9	36	2008/1368	232	±	20
11	2008/376	139	±	12	37	2008/1406	442	±	38
12	2008/405	110	±	9	38	2008/1421	202	±	17
13	2008/421	80	±	7	39	2008/1508	144	±	12
14	2008/507	171	±	15	40	2008/1525	352	±	30
15	2008/526	145	±	12	41	2008/1561	188	±	16
16	2008/543	166	±	14	42	2008/1581	403	±	35
17	2008/614	144	±	12	43	2008/1603	350	±	30
18	2008/632	207	±	18	44	2008/1651	328	±	28
19	2008/651	144	±	12	45	2008/1724	351	±	30
20	2008/674	160	±	14	46	2008/1749	467	±	40
21	2008/708	215	±	19	47	2008/1764	430	±	37
22	2008/786	158	±	14	48	2008/1841	125	±	11
23	2008/809	298	±	26	49	2008/1881	195	±	17
24	2008/854	239	±	21	50	2008/1901	156	±	13
25	2008/871	146	±	13	51	2008/1946	237	±	20
26	2008/967	235	±	20	52	2008/2063	147	±	13

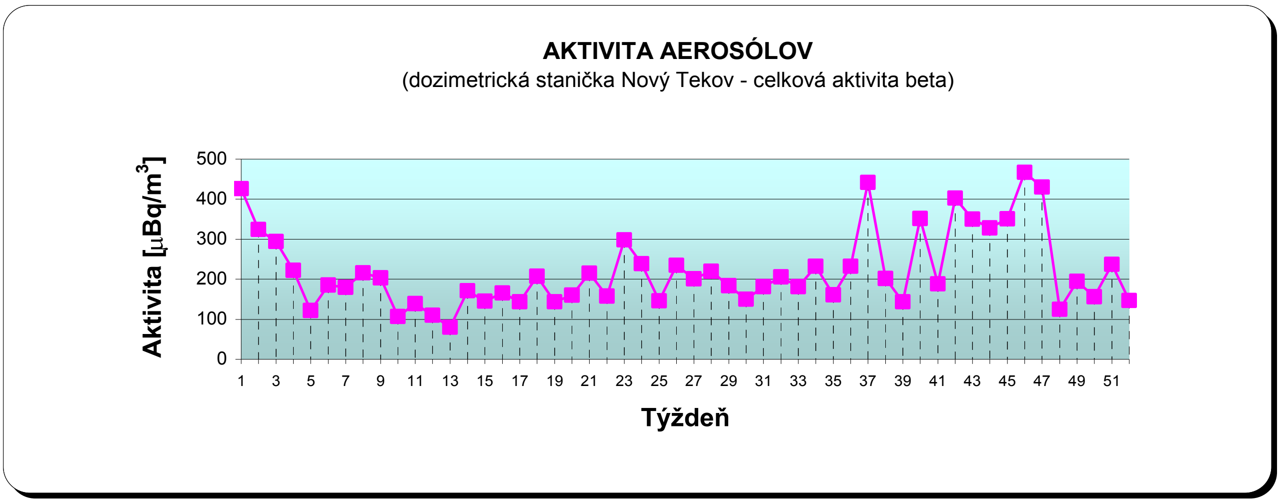

Table 244 Gross beta activity of aerosols - SDS Nový Tekov, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Kozárovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]		
1	2005/13	263	±	41	27	2005/1035	253	±	38
2	2005/28	348	±	48	28	2005/1066	280	±	41
3	2005/49	307	±	44	29	2005/1084	400	±	55
4	2005/64	64	±	11	30	2005/1100	294	±	43
5	2005/133	326	±	47	31	2005/1172	556	±	73
6	2005/164	685	±	85	32	2005/1203	139	±	23
7	2005/198	656	±	86	33	2005/1251	299	±	43
8	2005/263	343	±	48	34	2005/1377	353	±	51
9	2005/278	324	±	48	35	2005/1392	423	±	60
10	2005/313	382	±	53	36	2005/1430	448	±	60
11	2005/340	225	±	34	37	2005/1451	498	±	68
12	2005/357	365	±	53	38	2005/1466	319	±	45
13	2005/385	465	±	60	39	2005/1529	807	±	102
14	2005/404	467	±	64	40	2005/1557	1300	±	177
15	2005/436	396	±	55	41	2005/1601	766	±	127
16	2005/497	462	±	62	42	2005/1620	420	±	58
17	2005/563	321	±	46	43	2005/1641	377	±	53
18	2005/646	308	±	44	44	2005/1733	560	±	74
19	2005/673	142	±	23	45	2005/1787	1009	±	121
20	2005/706	213	±	33	46	2005/1893	960	±	118
21	2005/760	226	±	34	47	2005/1908	275	±	40
22	2005/827	393	±	55	48	2005/2001	358	±	51
23	2005/866	185	±	29	49	2005/2039	189	±	30
24	2005/886	284	±	42	50	2005/2065	580	±	76
25	2005/918	286	±	42	51	2005/2131	162	±	26
26	2005/1015	264	±	39	52	*			

* Porucha odberového zariadenia

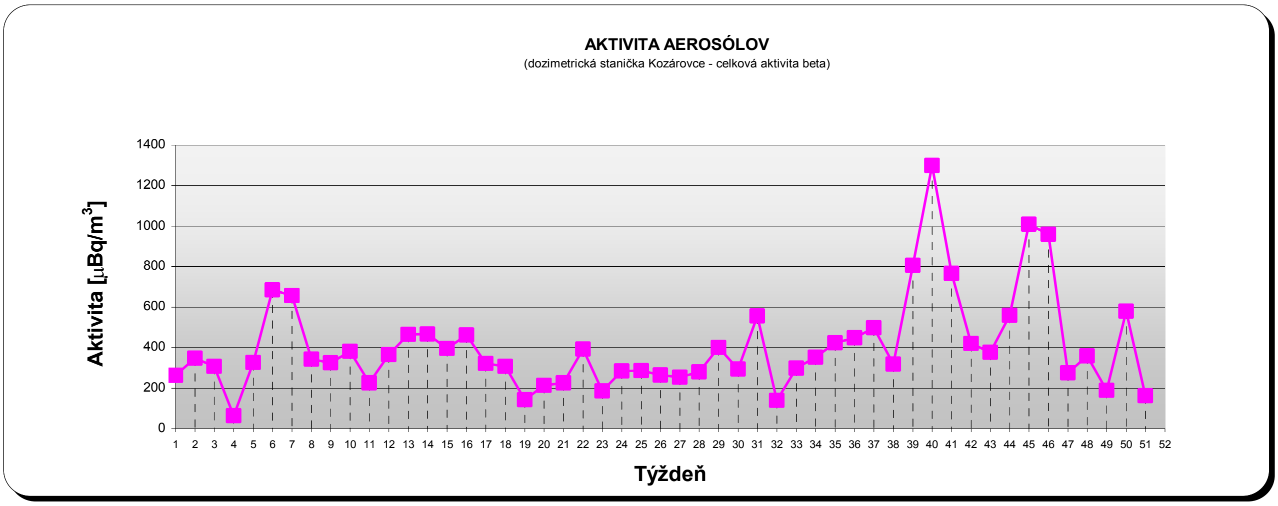

Table 245 Gross beta activity of aerosols - SDS Kozárovce, 2005

AKTIVITA AEROSÓLOV
(dozimetrická stanička Kozárovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2006/14	369	±	53	27	2006/939	286	±	40
2	2006/29	571	±	77	28	2006/975	743	±	93
3	2006/45	635	±	82	29	2006/990	315	±	44
4	2006/61	923	±	110	30	2006/1116	517	±	67
5	2006/76	981	±	121	31	2006/1143	561	±	72
6	2006/91	912	±	111	32	2006/1162	178	±	27
7	2006/109	417	±	57	33	2006/1180	212	±	32
8	2006/138	276	±	41	34	2006/1201	374	±	51
9	2006/156	279	±	40	35	2006/1284	251	±	37
10	2006/269	168	±	26	36	2006/1331	197	±	30
11	2006/307	309	±	44	37	2006/1363	289	±	41
12	2006/376	451	±	60	38	2006/1381	497	±	65
13	2006/401	230	±	34	39	2006/1399	637	±	81
14	2006/423	155	±	24	40	2006/1494	1125	±	129
15	2006/454	304	±	43	41	2006/1512	290	±	41
16	2006/519	243	±	36	42	2006/1586	560	±	72
17	2006/542	387	±	53	43	2006/1671	521	±	66
18	2006/603	314	±	44	44	2006/1686	358	±	49
19	2006/653	443	±	59	45	2006/1727	246	±	37
20	2006/690	343	±	48	46	2006/1750	287	±	41
21	2006/708	255	±	37	47	2006/1777	863	±	103
22	2006/785	172	±	27	48	2006/1893	634	±	80
23	2006/802	101	±	17	49	2006/1911	1035	±	121
24	2006/821	230	±	33	50	2006/1926	519	±	67
25	2006/856	447	±	61	51	2006/1941	809	±	98
26	2006/872	461	±	61	52	*	*		*

* Porucha odberového zariadenia

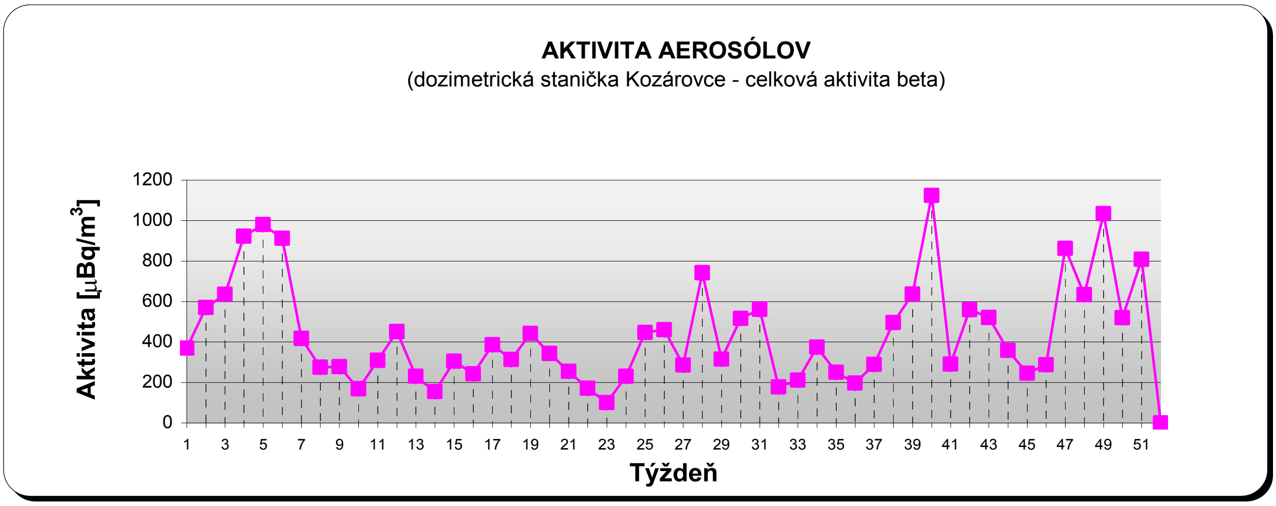

Table 246 Gross beta activity of aerosols - SDS Kozárovce, 2006

AKTIVITA AEROSÓLOV

(dozimetrická stanička Kozárovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]		
1	2007/15	333	±	46	27	2007/933	229	±	35
2	2007/30	132	±	21	28	2007/950	107	±	18
3	2007/48	105	±	18	29	2007/1025	229	±	36
4	2007/87	155	±	24	30	2007/1100	346	±	49
5	2007/130	47	±	9	31	2007/1130	166	±	26
6	2007/164	132	±	21	32	2007/1163	81	±	14
7	2007/179	119	±	19	33	2007/1178	308	±	44
8	2007/196	198	±	30	34	2007/1246	255	±	39
9	2007/212	318	±	44	35	2007/1261	313	±	45
10	2007/280	90	±	15	36	2007/1295	177	±	27
11	2007/300	142	±	23	37	2007/1314	73	±	13
12	2007/335	124	±	20	38	2007/1362	244	±	36
13	2007/417	166	±	26	39	2007/1430	305	±	47
14	2007/434	301	±	44	40	2007/1457	251	±	37
15	2007/459	149	±	24	41	2007/1498	283	±	41
16	2007/490	218	±	33	42	2007/1518	239	±	36
17	2007/505	192	±	30	43	2007/1551	143	±	23
18	2007/574	290	±	42	44	2007/1638	336	±	48
19	2007/589	196	±	31	45	2007/1662	87	±	15
20	2007/634	238	±	36	46	2007/1737	43	±	8
21	2007/659	199	±	31	47	2007/1808	192	±	30
22	2007/737	278	±	41	48	2007/1856	330	±	48
23	2007/785	104	±	18	49	*	*		*
24	2007/801	289	±	42	50	2007/1914	146	±	23
25	2007/834	224	±	34	51	2007/1958	249	±	36
26	2007/849	173	±	28	52	2007/1973	606	±	76

* Porucha odberového zariadenia

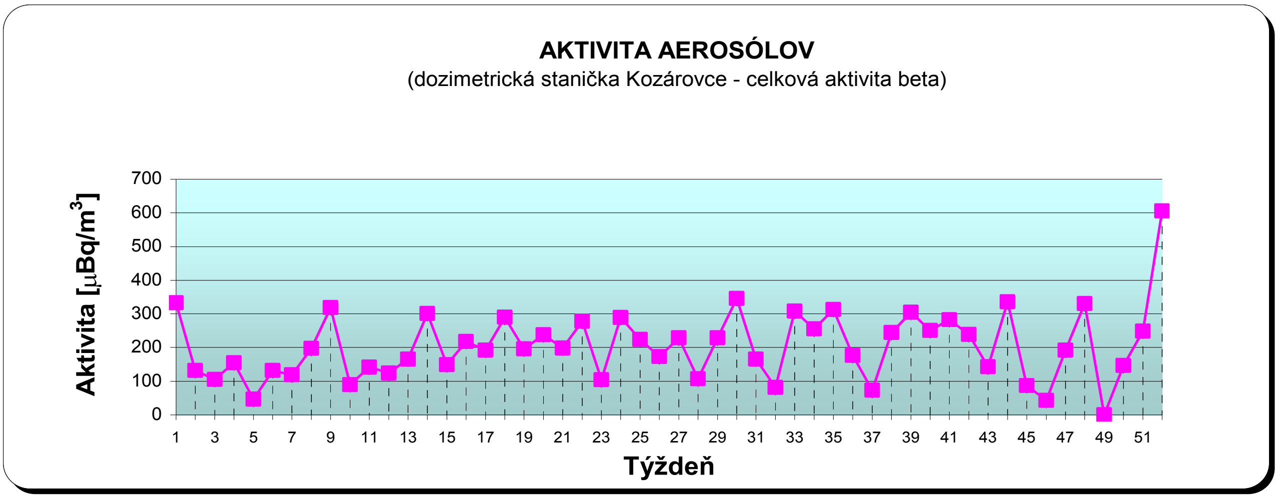

Table 247 Gross beta activity of aerosols - SDS Kozárovce, 2007

AKTIVITA AEROSÓLOV

(dozimetrická stanička Kozárovce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [µBq/m³]		
1	2008/13	391	±	56	27	2008/990	206	±	18
2	2008/29	293	±	45	28	2008/1072	204	±	18
3	2008/44	266	±	40	29	2008/1096	151	±	13
4	2008/59	187	±	30	30	2008/1111	147	±	13
5	2008/129	153	±	25	31	2008/1179	204	±	18
6	2008/144	175	±	28	32	2008/1194	155	±	13
7	2008/171	206	±	32	33	*	*		*
8	2008/241	157	±	13	34	*	*		*
9	2008/308	191	±	16	35	*	*		*
10	2008/337	137	±	12	36	*	*		*
11	2008/377	148	±	13	37	2008/1407	557	±	48
12	2008/406	81	±	7	38	2008/1422	231	±	20
13	2008/422	85	±	7	39	2008/1509	99	±	9
14	2008/508	165	±	14	40	2008/1526	345	±	30
15	2008/527	141	±	12	41	2008/1562	259	±	22
16	2008/544	153	±	13	42	2008/1582	381	±	33
17	2008/615	112	±	10	43	2008/1604	445	±	38
18	2008/633	231	±	20	44	2008/1652	353	±	30
19	2008/652	164	±	14	45	2008/1725	368	±	32
20	2008/675	220	±	19	46	2008/1750	478	±	41
21	2008/709	241	±	21	47	2008/1765	390	±	34
22	2008/787	206	±	18	48	2008/1842	120	±	10
23	2008/810	308	±	27	49	2008/1882	187	±	16
24	2008/855	223	±	19	50	2008/1902	163	±	14
25	2008/872	149	±	13	51	2008/1947	228	±	20
26	2008/968	237	±	20	52	2008/2064	127	±	11

* Porucha odberového zariadenia

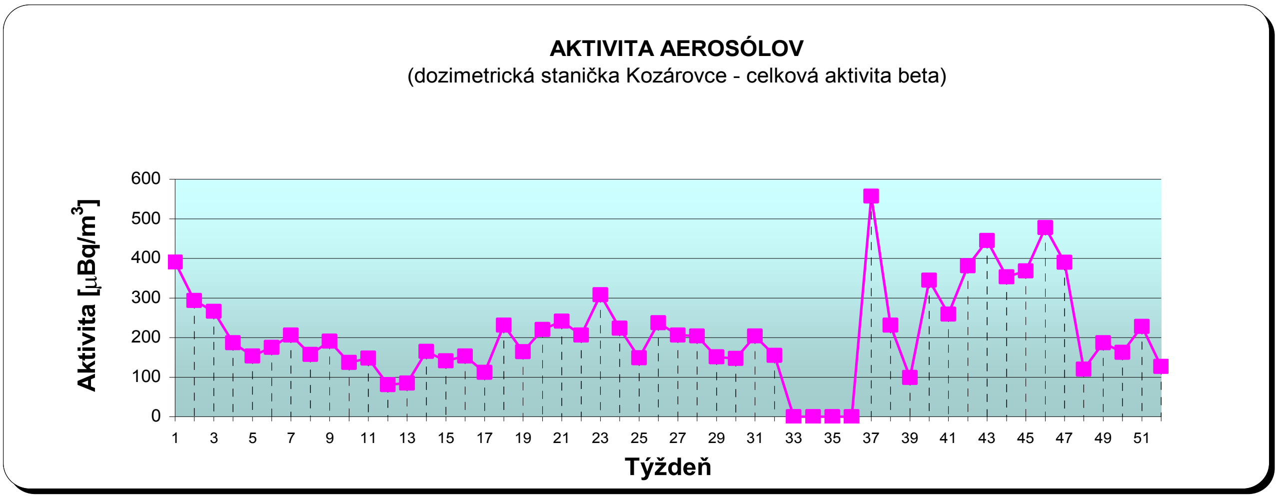

Table 248 Gross beta activity of aerosols - SDS Kozárovce, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Zlaté Moravce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2005/14	291	±	45	27	2005/1036	250	±	38
2	2005/29	414	±	56	28	2005/1067	325	±	47
3	2005/50	334	±	48	29	2005/1085	463	±	63
4	2005/65	189	±	30	30	2005/1101	361	±	52
5	2005/134	328	±	47	31	2005/1173	565	±	75
6	2005/165	674	±	84	32	2005/1204	171	±	28
7	2005/199	680	±	89	33	2005/1252	307	±	44
8	2005/264	330	±	47	34	2005/1378	416	±	60
9	2005/279	413	±	59	35	2005/1393	481	±	67
10	2005/314	397	±	56	36	2005/1431	558	±	73
11	2005/341	217	±	34	37	2005/1452	756	±	98
12	2005/358	421	±	60	38	2005/1467	336	±	48
13	2005/386	487	±	63	39	2005/1530	894	±	110
14	2005/405	575	±	78	40	2005/1558	826	±	103
15	2005/437	421	±	58	41	2005/1602	976	±	119
16	2005/498	536	±	72	42	2005/1621	514	±	69
17	2005/564	361	±	52	43	2005/1642	547	±	73
18	2005/647	358	±	51	44	2005/1734	861	±	107
19	2005/674	145	±	24	45	2005/1788	1040	±	126
20	2005/707	253	±	38	46	2005/1894	986	±	123
21	2005/761	265	±	40	47	2005/1909	315	±	45
22	2005/828	474	±	64	48	2005/2002	423	±	59
23	2005/867	200	±	32	49	2005/2040	270	±	41
24	2005/887	395	±	55	50	2005/2066	500	±	68
25	2005/919	295	±	43	51	2005/2132	127	±	22
26	2005/1016	327	±	47	52	2005/2147	272	±	40

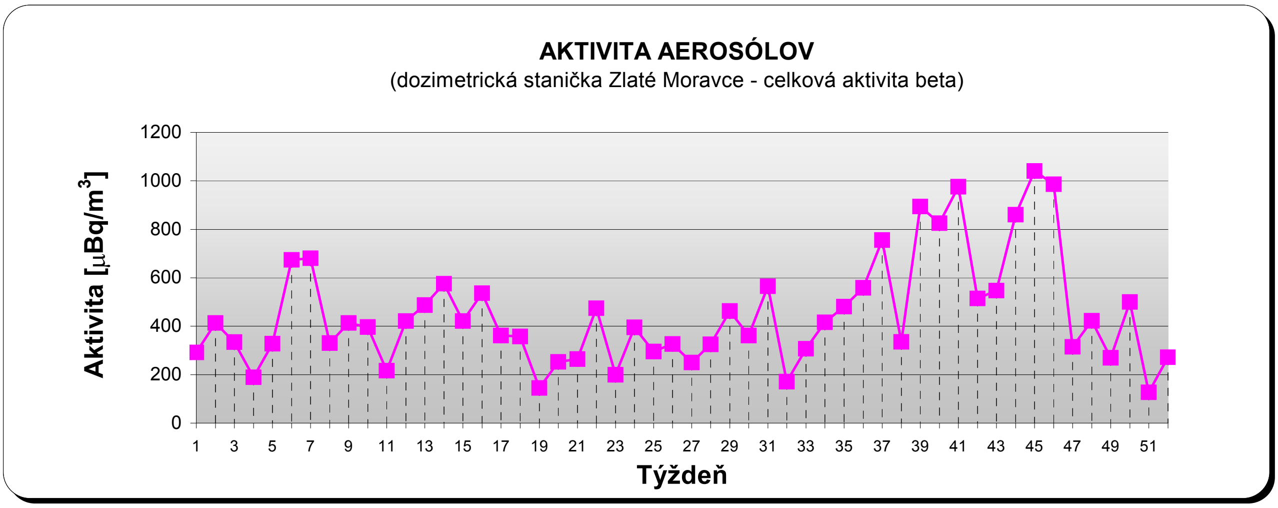

Table 249 Gross beta activity of aerosols - SDS Zlaté Moravce, 2005

AKTIVITA AEROSÓLOV

(dozimetrická stanička Zlaté Moravce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2006/15	354	±	52	27	2006/940	345	±	47
2	2006/30	503	±	70	28	2006/976	548	±	73
3	2006/46	721	±	92	29	2006/991	323	±	46
4	2006/62	975	±	117	30	2006/1117	637	±	81
5	2006/77	883	±	112	31	2006/1144	515	±	67
6	2006/92	955	±	117	32	2006/1163	171	±	27
7	2006/110	366	±	52	33	2006/1181	269	±	39
8	2006/139	291	±	43	34	2006/1202	441	±	59
9	2006/157	354	±	49	35	2006/1285	256	±	38
10	2006/270	213	±	33	36	2006/1332	225	±	34
11	2006/308	227	±	36	37	2006/1364	326	±	46
12	2006/377	539	±	70	38	2006/1382	564	±	73
13	2006/402	240	±	36	39	2006/1400	744	±	92
14	2006/424	169	±	27	40	2006/1495	1018	±	120
15	2006/455	287	±	43	41	2006/1513	280	±	41
16	2006/520	282	±	41	42	2006/1587	602	±	77
17	2006/543	462	±	62	43	2006/1672	565	±	72
18	2006/604	308	±	44	44	2006/1687	394	±	54
19	2006/654	449	±	60	45	2006/1728	217	±	34
20	2006/691	368	±	51	46	2006/1751	326	±	46
21	2006/710	296	±	43	47	2006/1778	759	±	94
22	2006/786	186	±	29	48	2006/1894	630	±	80
23	2006/803	180	±	28	49	2006/1912	1009	±	120
24	2006/822	257	±	37	50	2006/1927	574	±	74
25	2006/857	477	±	65	51	2006/1942	664	±	84
26	2006/873	480	±	64	52	2006/1975	232	±	35

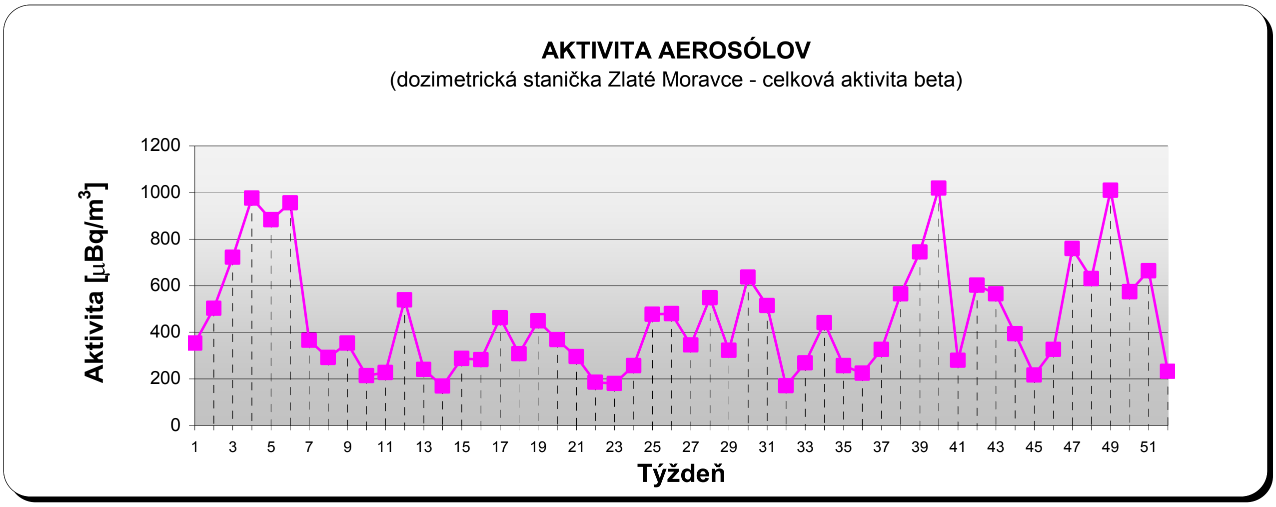

Table 250 Gross beta activity of aerosols - SDS Zlaté Moravce, 2006

AKTIVITA AEROSÓLOV

(dozimetrická stanička Zlaté Moravce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2007/16	358	±	50	27	2007/934	208	±	32
2	2007/31	168	±	27	28	2007/951	51	±	10
3	2007/49	144	±	24	29	*		*	
4	2007/88	181	±	28	30	*		*	
5	2007/131	89	±	15	31	*		*	
6	2007/165	116	±	19	32	*		*	
7	2007/180	135	±	22	33	2007/1179	316	±	47
8	2007/197	209	±	32	34	2007/1247	248	±	37
9	2007/213	295	±	42	35	2007/1262	215	±	33
10	2007/281	110	±	18	36	2007/1296	149	±	23
11	2007/301	158	±	25	37	2007/1315	78	±	14
12	2007/336	142	±	23	38	2007/1363	222	±	34
13	2007/418	182	±	28	39	2007/1431	213	±	32
14	2007/435	299	±	43	40	2007/1458	223	±	34
15	2007/460	122	±	20	41	2007/1499	235	±	35
16	2007/491	253	±	37	42	2007/1519	228	±	34
17	2007/506	174	±	27	43	2007/1552	139	±	23
18	2007/575	225	±	34	44	2007/1639	288	±	41
19	2007/590	177	±	28	45	2007/1663	85	±	15
20	2007/635	165	±	26	46	2007/1738	72	±	13
21	2007/660	217	±	33	47	2007/1809	147	±	24
22	2007/738	273	±	40	48	2007/1857	269	±	40
23	2007/786	156	±	25	49	2007/1872	181	±	28
24	2007/802	272	±	40	50	2007/1915	127	±	20
25	2007/835	211	±	32	51	2007/1959	175	±	27
26	2007/850	143	±	23	52	2007/1974	412	±	55

* Porucha odberového zariadenia

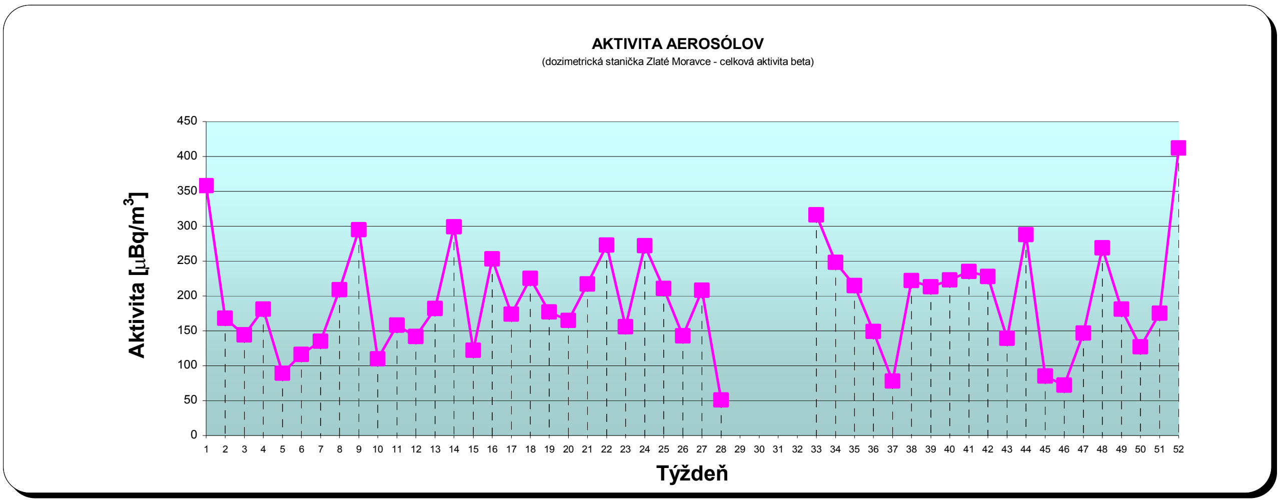

Table 251 Gross beta activity of aerosols - SDS Zlaté Moravce, 2007

AKTIVITA AEROSÓLOV

(dozimetrická stanička Zlaté Moravce - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2008/14	339	±	50	27	2008/991	217	±	19
2	2008/30	274	±	42	28	2008/1073	217	±	19
3	2008/45	242	±	37	29	2008/1097	144	±	12
4	2008/60	191	±	31	30	2008/1112	166	±	14
5	2008/130	131	±	22	31	2008/1180	184	±	16
6	2008/145	191	±	30	32	2008/1195	326	±	28
7	2008/172	206	±	32	33	2008/1222	187	±	16
8	2008/242	231	±	20	34	2008/1247	213	±	18
9	2008/309	240	±	21	35	2008/1293	168	±	14
10	2008/338	121	±	10	36	2008/1370	253	±	22
11	2008/378	174	±	15	37	2008/1408	399	±	34
12	2008/407	124	±	11	38	2008/1423	140	±	12
13	2008/423	77	±	7	39	2008/1510	149	±	13
14	2008/509	193	±	17	40	2008/1527	444	±	38
15	2008/528	133	±	11	41	2008/1563	214	±	18
16	2008/545	148	±	13	42	2008/1583	337	±	29
17	2008/616	131	±	11	43	2008/1605	372	±	32
18	2008/634	241	±	21	44	2008/1653	350	±	30
19	2008/653	156	±	13	45	2008/1726	343	±	30
20	2008/676	155	±	13	46	2008/1751	521	±	45
21	2008/710	197	±	17	47	2008/1766	422	±	36
22	2008/788	172	±	15	48	2008/1843	114	±	10
23	2008/811	286	±	25	49	2008/1883	162	±	14
24	2008/856	246	±	21	50	2008/1903	161	±	14
25	2008/873	125	±	11	51	2008/1948	244	±	21
26	2008/969	242	±	21	52	2008/2065	151	±	13

* Porucha odberového zariadenia

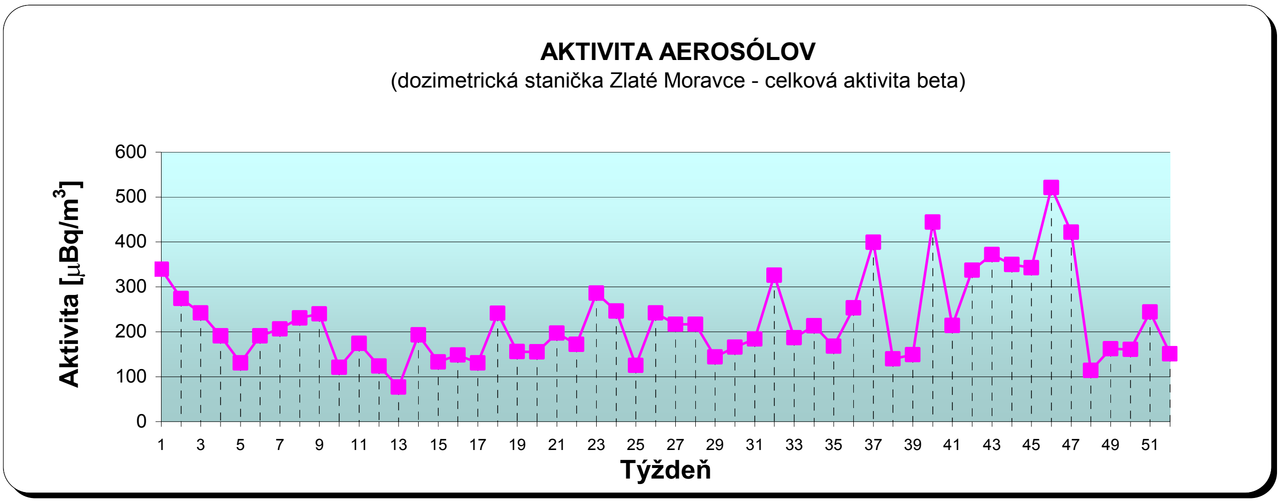

Table 252 Gross beta activity of aerosols - SDS Zlaté Moravce, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Rybník - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [$\mu Bq/m^3$]		
1	2005/15	242	±	39
2	2005/30	399	±	55
3	2005/51	322	±	47
4	2005/66	148	±	25
5	2005/135	283	±	42
6	2005/166	579	±	75
7	2005/200	673	±	88
8	2005/265	333	±	47
9	2005/280	314	±	48
10	2005/315	364	±	51
11	2005/342	176	±	28
12	2005/359	377	±	54
13	2005/387	445	±	58
14	2005/406	465	±	64
15	2005/438	323	±	46
16	2005/499	194	±	30
17	2005/565	350	±	50
18	2005/648	316	±	46
19	2005/675	142	±	23
20	2005/708	204	±	32
21	2005/762	154	±	25
22	2005/829	403	±	56
23	2005/868	172	±	27
24	2005/888	308	±	45
25	2005/920	322	±	46
26	2005/1017	266	±	40
27	2005/1037	209	±	32
28	2005/1068	263	±	39
29	2005/1086	361	±	51
30	2005/1102	290	±	43
31	2005/1174	784	±	98
32	2005/1205	193	±	30
33	2005/1253	147	±	22
34	2005/1379	350	±	53
35	2005/1394	378	±	54
36	2005/1432	412	±	56
37	2005/1453	545	±	74
38	2005/1468	193	±	30
39	2005/1531	731	±	92
40	2005/1559	662	±	85
41	2005/1603	905	±	110
42	2005/1622	459	±	63
43	2005/1643	407	±	56
44	2005/1735	516	±	69
45	2005/1789	1047	±	125
46	2005/1895	924	±	115
47	2005/1910	258	±	38
48	2005/2004	361	±	51
49	2005/2041	286	±	42
50	2005/2067	498	±	67
51	2005/2133	94	±	16
52	2005/2148	246	±	37

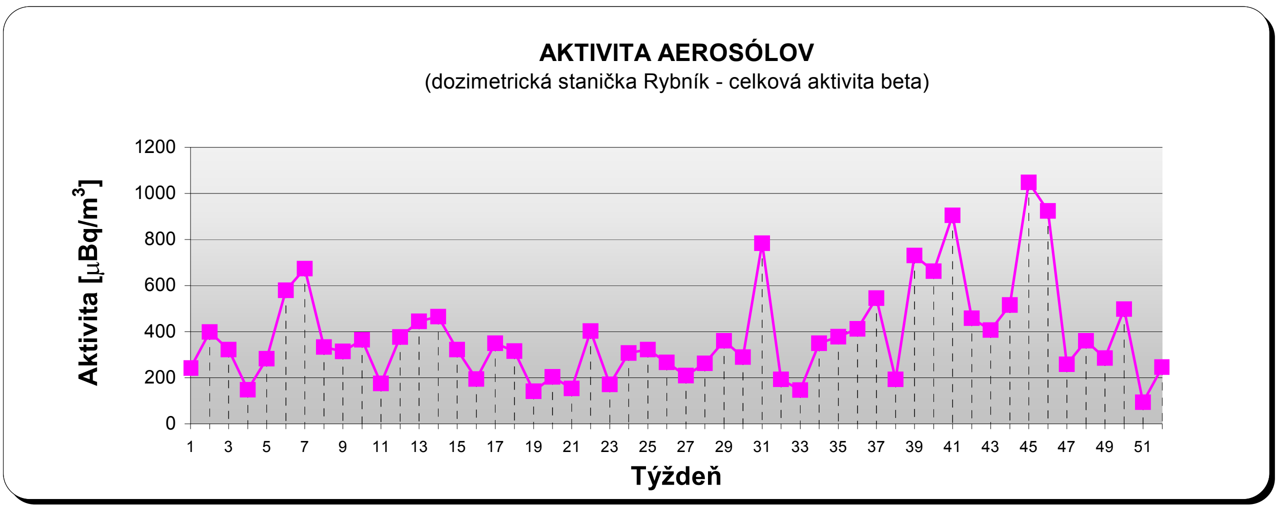

Table 253 Gross beta activity of aerosols - SDS Rybník, 2005

AKTIVITA AEROSÓLOV
(dozimetrická stanička Rybník - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2006/16	322	±	53	27	2006/941	307	±	42
2	2006/31	465	±	65	28	2006/977	527	±	70
3	2006/47	586	±	76	29	2006/992	330	±	46
4	2006/63	648	±	81	30	2006/1118	623	±	79
5	2006/78	785	±	100	31	2006/1145	440	±	59
6	2006/93	699	±	89	32	2006/1164	127	±	21
7	2006/111	335	±	48	33	2006/1182	216	±	32
8	2006/140	254	±	38	34	2006/1203	349	±	48
9	2006/158	305	±	43	35	2006/1286	245	±	36
10	2006/271	198	±	30	36	2006/1333	217	±	33
11	2006/309	285	±	41	37	2006/1365	258	±	38
12	2006/378	507	±	66	38	2006/1383	502	±	65
13	2006/403	257	±	38	39	2006/1401	565	±	72
14	2006/425	145	±	23	40	2006/1496	1079	±	125
15	2006/456	292	±	42	41	2006/1514	266	±	39
16	2006/521	190	±	29	42	2006/1588	572	±	73
17	2006/544	376	±	52	43	2006/1673	515	±	66
18	2006/605	353	±	49	44	2006/1688	375	±	51
19	2006/655	395	±	54	45	2006/1729	233	±	35
20	2006/692	316	±	45	46	2006/1752	289	±	41
21	2006/720	281	±	41	47	2006/1779	715	±	88
22	2006/787	126	±	21	48	2006/1895	631	±	79
23	2006/804	136	±	22	49	2006/1913	1041	±	122
24	2006/823	225	±	33	50	2006/1928	499	±	65
25	2006/858	422	±	58	51	2006/1943	625	±	79
26	2006/874	487	±	65	52	2006/1976	318	±	45

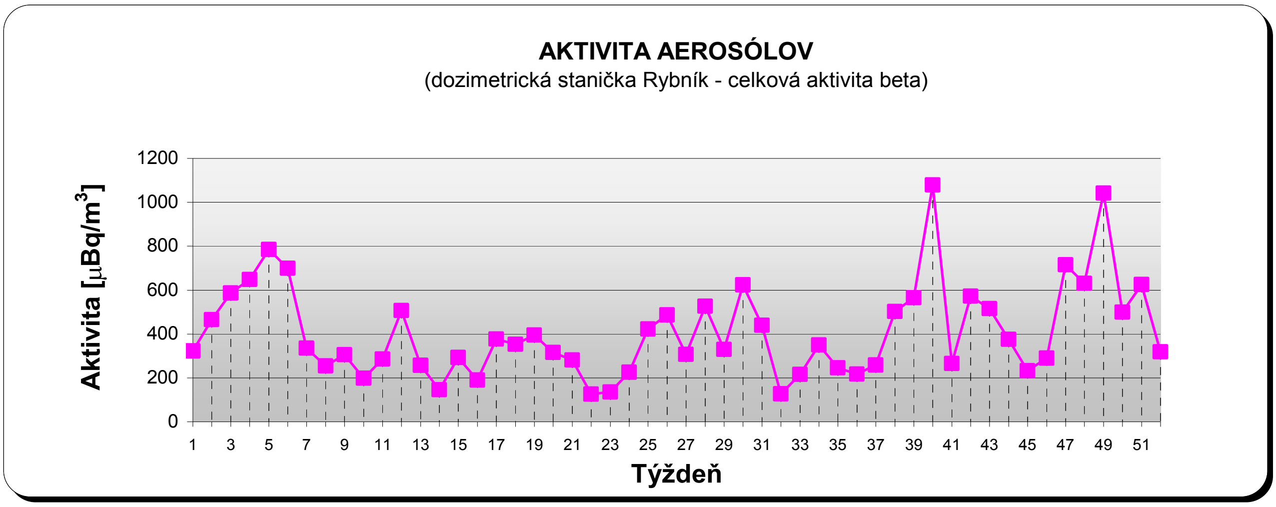

Table 254 Gross beta activity of aerosols - SDS Rybník, 2006

AKTIVITA AEROSÓLOV
(dozimetrická stanička Rybník - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2007/17	341	±	47	27	2007/935	120	±	20
2	2007/32	135	±	22	28	2007/952	118	±	19
3	2007/50	145	±	23	29	2007/1027	182	±	29
4	2007/89	182	±	28	30	2007/1102	352	±	49
5	2007/132	110	±	18	31	2007/1132	155	±	24
6	2007/166	118	±	19	32	2007/1165	48	±	9
7	2007/181	136	±	22	33	2007/1180	270	±	39
8	2007/198	194	±	29	34	2007/1248	246	±	37
9	2007/214	287	±	41	35	2007/1263	283	±	41
10	2007/282	83	±	14	36	2007/1297	126	±	20
11	2007/302	156	±	24	37	2007/1316	51	±	9
12	2007/337	173	±	27	38	2007/1364	252	±	38
13	2007/419	153	±	24	39	2007/1432	211	±	32
14	2007/436	269	±	39	40	2007/1459	288	±	41
15	2007/461	157	±	25	41	2007/1500	300	±	43
16	2007/492	197	±	30	42	2007/1520	246	±	36
17	2007/507	164	±	26	43	2007/1553	148	±	24
18	2007/576	247	±	36	44	2007/1640	355	±	49
19	2007/591	145	±	23	45	2007/1664	79	±	14
20	2007/636	122	±	20	46	2007/1739	51	±	9
21	2007/661	157	±	25	47	2007/1810	168	±	26
22	2007/739	238	±	37	48	2007/1858	306	±	44
23	2007/787	103	±	18	49	2007/1873	190	±	29
24	2007/803	182	±	28	50	2007/1916	166	±	25
25	2007/836	182	±	28	51	2007/1960	260	±	37
26	2007/851	137	±	22	52	2007/1975	537	±	68

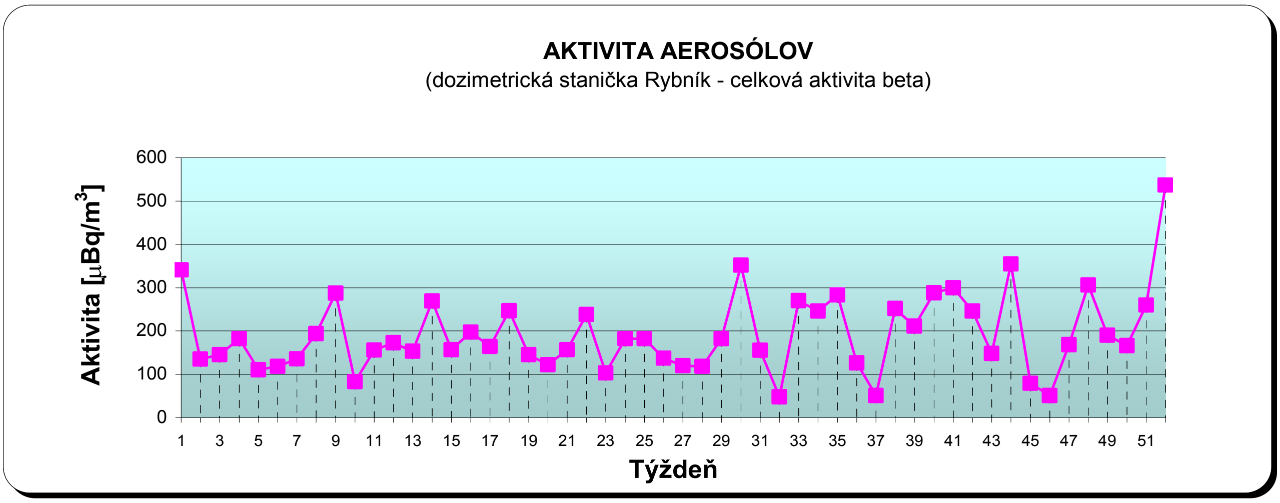

Table 255 Gross beta activity of aerosols - SDS Rybník, 2007

AKTIVITA AEROSÓLOV

(dozimetrická stanička Rybník - celková aktivita beta)

Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]			Týždeň	Evidenčné číslo protokolu	Aktivita [μBq/m³]		
1	2008/15	441	±	61	27	2008/992	190	±	16
2	2008/31	317	±	47	28	2008/1074	204	±	18
3	2008/46	261	±	39	29	2008/1098	179	±	15
4	2008/61	171	±	27	30	2008/1113	155	±	13
5	2008/131	112	±	19	31	2008/1181	218	±	19
6	2008/146	210	±	32	32	2008/1196	248	±	21
7	2008/173	190	±	30	33	2008/1223	131	±	11
8	2008/243	233	±	20	34	2008/1248	217	±	19
9	2008/310	224	±	19	35	2008/1294	183	±	16
10	2008/339	91	±	8	36	2008/1371	183	±	16
11	2008/379	138	±	12	37	2008/1409	465	±	40
12	2008/408	47	±	4	38	2008/1424	179	±	15
13	2008/424	88	±	8	39	2008/1511	152	±	13
14	2008/510	179	±	15	40	2008/1528	352	±	30
15	2008/529	113	±	10	41	2008/1564	154	±	13
16	2008/546	180	±	15	42	2008/1584	351	±	30
17	2008/617	96	±	8	43	2008/1606	419	±	36
18	2008/635	214	±	18	44	2008/1654	286	±	25
19	2008/654	139	±	12	45	2008/1727	332	±	29
20	2008/677	132	±	11	46	2008/1752	472	±	41
21	2008/711	208	±	18	47	2008/1767	311	±	27
22	2008/789	166	±	14	48	2008/1844	113	±	10
23	2008/812	276	±	24	49	2008/1884	162	±	14
24	2008/857	244	±	21	50	2008/1904	164	±	14
25	2008/874	164	±	14	51	2008/1949	198	±	17
26	2008/970	221	±	19	52	2008/2066	113	±	10

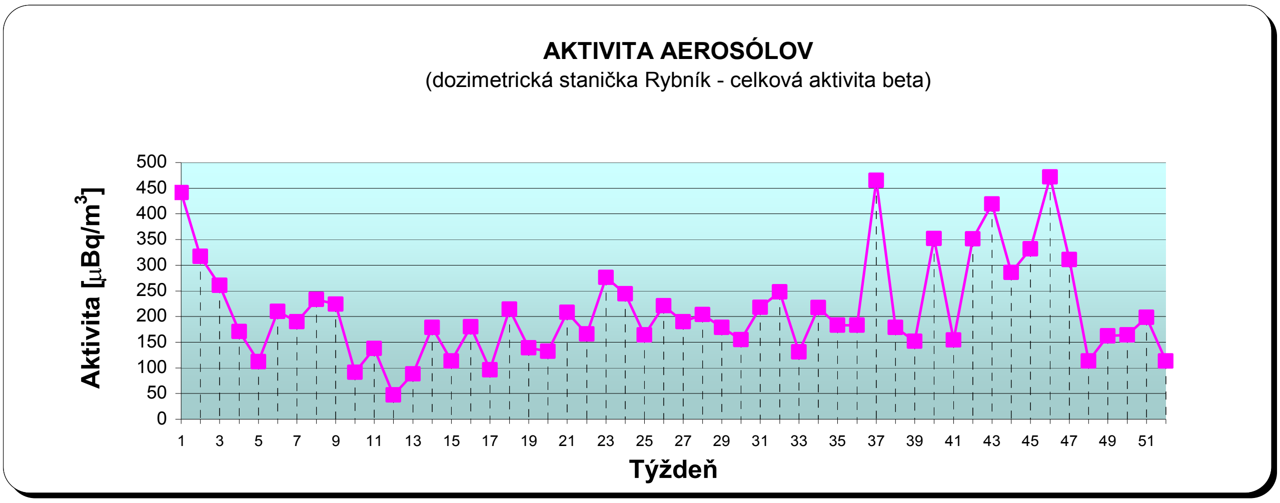

Table 256 Gross beta activity of aerosols - SDS Rybník, 2008

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nový Tekov - ^{90}Sr)

I. štvrťrok			II. štvrťrok			III. štvrťrok			IV. štvrťrok		
Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]	Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]	Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]	Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]
6	2006/90	0,8 ± 0,1	18	2006/602	1,5 ± 0,2	32	2006/1161	2,0 ± 0,3	44	2006/1685	3,2 ± 0,4

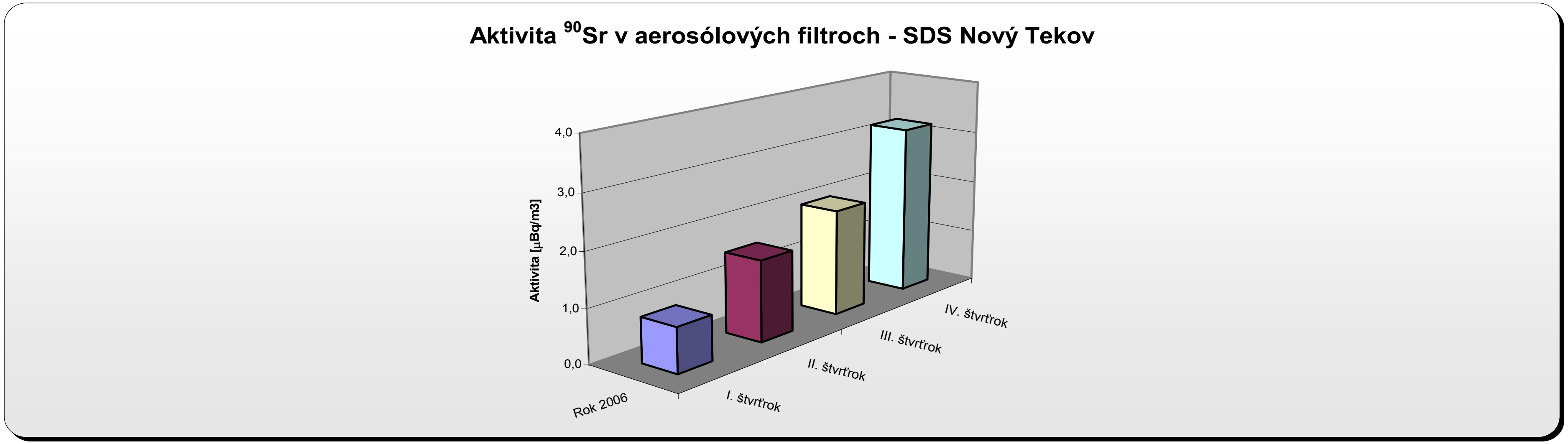

Table 257 ^{90}Sr aerosol activity - SDS Nový Tekov, 2006

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nový Tekov - ^{90}Sr)

I. štvrťrok			II. štvrťrok			III. štvrťrok			IV. štvrťrok		
Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [$\mu Bq/m^3$]	Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [$\mu Bq/m^3$]	Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [$\mu Bq/m^3$]	Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [$\mu Bq/m^3$]
6	2007/163	0,8 ± 0,1	18	2007/573	1,2 ± 0,2	32	2007/1162	0,9 ± 0,2	44	2007/1661	1,7 ± 0,3

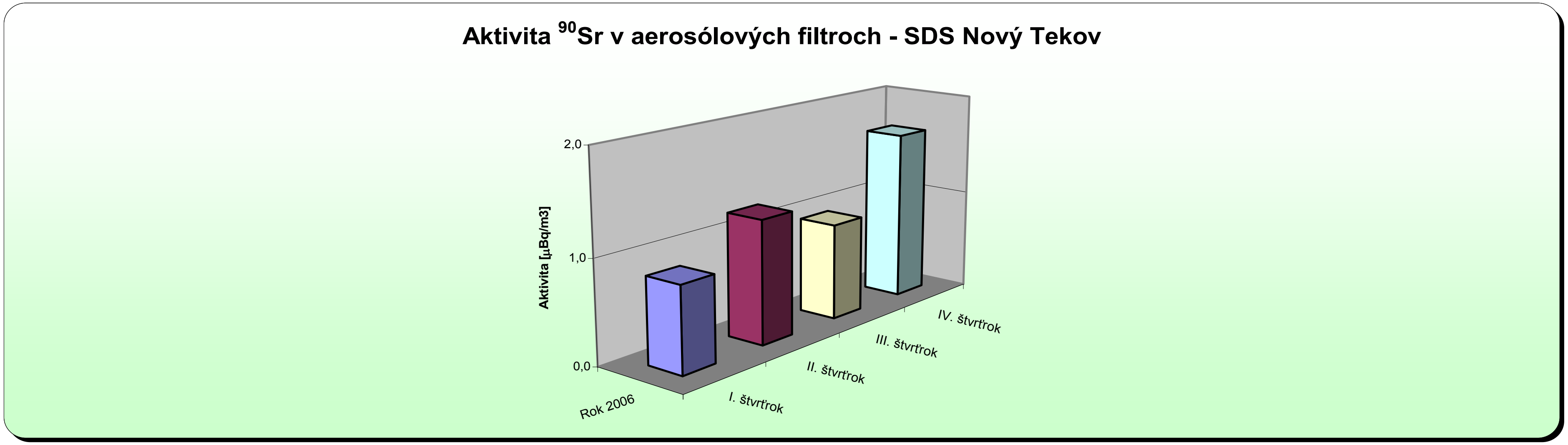

Table 258 ^{90}Sr aerosol activity - SDS Nový Tekov, 2007

AKTIVITA AEROSÓLOV

(dozimetrická stanička Nový Tekov - ^{90}Sr)

I. štvrťrok					II. štvrťrok					III. štvrťrok					IV. štvrťrok				
Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]			Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]			Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]			Tý	Evidenčné číslo protokolu	Aktivita-^{90}Sr [μBq/m^3]		
6	2008/143	1,7	±	0,5	18	2008/632	1,4	±	0,4	32	2008/1193	1,1	±	0,3	44	2008/1724	1,5	±	0,4

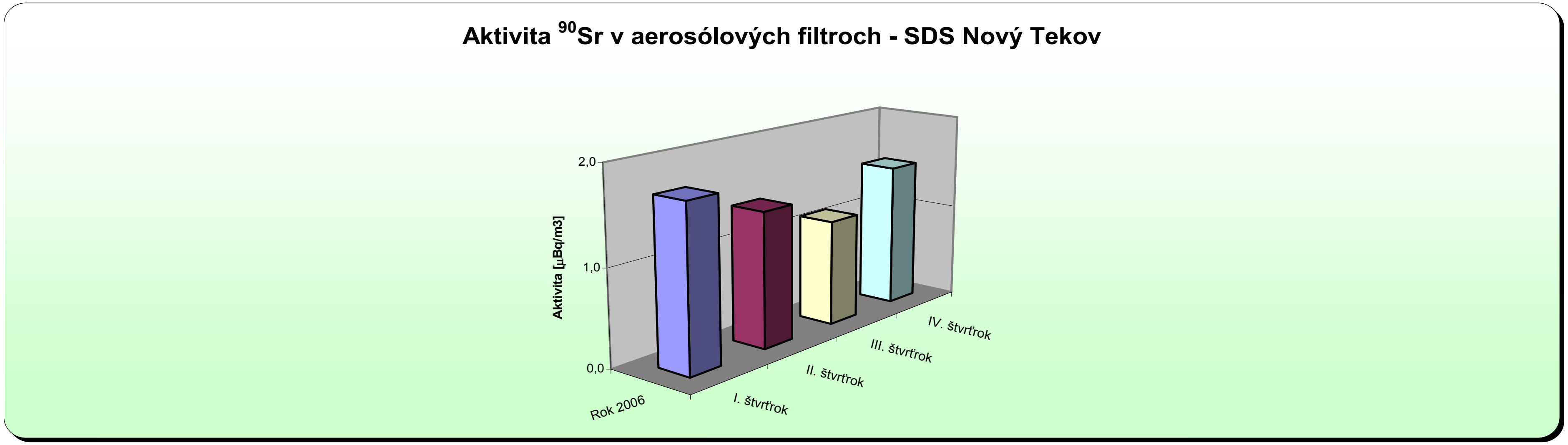

Table 259 ^{90}Sr aerosol activity - SDS Nový Tekov, 2008

AKTIVITA SPADOV

dozimetrické staničky - gamaspektrometria

Lokalita\Štvrťrok (Rádionuklid)		Evid. číslo protokolu	^{134}Cs [Bq/m^2]	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	C. hmotnosť spadov [g]
LRKO	1.	2005/0407	<1,48	<1,44	<15,1	55,4 ± 6,3	<3,45	<5,10	0,0560
	2.	2005/1038	<1,01	<0,911	<11,3	165 ± 11	<2,08	<3,24	0,1628
	3.	2005/1560	<1,44	<1,46	<17,1	162 ± 12	<3,47	<5,29	0,0800
	4.	2005/2156	<1,17	<1,10	<10,6	136 ± 10	<2,45	<3,76	0,0702
Levice	1.	2005/0408	<1,45	<1,43	<15,3	42,3 ± 6,2	<3,69	<5,13	0,0272
	2.	2005/1039	<1,09	<1,08	<11,8	133 ± 9	<2,32	<3,72	0,0852
	3.	2005/1561	<1,36	<1,30	<14,4	172 ± 12	<2,87	<4,60	0,0775
	4.	2005/2157	<1,41	<1,39	<14,2	122 ± 10	<3,12	<4,76	0,0571
Kalná n/Hronom	1.	2005/0409	<1,00	<0,945	<9,67	65,1 ± 5,6	<2,32	<3,35	0,1133
	2.	2005/1040	<1,33	<1,22	9,35 ± 2,65	151 ± 11	<2,72	<4,43	0,1812
	3.	2005/1562	<1,39	<1,30	14,4 ± 3,4	156 ± 11	<3,24	<4,50	0,2347
	4.	2005/2158	<0,739	<0,702	26,4 ± 2,9	99,9 ± 6,6	<1,64	<2,40	0,533
Mochovce	1.	2005/0410	<1,42	<1,38	<14,9	59,2 ± 6,9	<3,32	<4,86	0,1127
	2.	2005/1041	<1,00	<0,97	<11,0	164 ± 11	<2,24	<3,56	0,1166
	3.	2005/1563	<1,46	<1,39	14,8 ± 2,9	197 ± 14	<3,35	<5,04	0,1112
	4.	2005/2159	<1,29	<1,22	<13,3	143 ± 11	<2,78	<4,36	0,0756
Čifáre	1.	2005/0411	<1,25	<1,17	<13,0	55,8 ± 6,1	<2,75	<4,29	0,0998
	2.	2005/1042	<1,34	<1,27	10,4 ± 2,8	165 ± 12	<2,80	<4,74	0,1579
	3.	2005/1564	<1,11	<1,07	9,64 ± 2,33	119 ± 9	<2,54	<3,72	0,1170
	4.	2005/2160	<1,07	<1,04	<11,2	78 ± 7,0	<2,62	<3,69	0,1336
Veľký Ďúr	1.	2005/0412	<1,31	<1,22	<12,9	46,3 ± 6,1	<3,04	<4,43	0,2408
	2.	2005/1043	<1,05	<1,00	<10,9	143 ± 10	<2,25	<3,50	0,1284
	3.	2005/1565	<1,32	<1,28	11,3 ± 2,9	142 ± 10	4,13 ± 1,37	<4,64	0,1087
	4.	2005/2161	<0,951	<0,903	<10,3	95,6 ± 7,4	<2,12	<3,26	0,0976
Vráble	1.	2005/0413	<1,25	<1,33	<14,4	53,3 ± 6,27	<2,97	<3,22	0,2966
	2.	2005/1044	<1,29	0,685 ± 0,264	98,0 ± 8,3	80,2 ± 7,3	<2,81	<4,63	1,0721
	3.	2005/1566	<1,11	<1,12	15,2 ± 3,2	135 ± 10	<2,56	<3,61	0,2822
	4.	2005/2162	<1,12	0,756 ± 0,211	9,53 ± 2,00	69,1 ± 6,2	<2,47	<3,61	0,4059
Tajná	1.	2005/0414	<1,28	<1,24	<12,6	68,6 ± 7,0	<2,88	<4,33	0,0549
	2.	2005/1045	<0,82	<0,79	<9,24	168 ± 11	<2,71	<2,71	0,1639
	3.	2005/1567	<1,41	<1,39	15,1 ± 3,3	143 ± 11	3,86 ± 1,59	<4,79	0,0994
	4.	2005/2163	<1,36	<1,33	14,1 ± 4,0	86,7 ± 8,6	<3,32	<4,59	0,2360

Table 260 Fallout activity, 2005

AKTIVITA SPADOV

dozimetrické staničky - gamaspektrometria

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{134}Cs [Bq/m^2]	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	C. hmotnosť spadov [g]
Červený Hrádok	1.	2005/0415	<1,40	<1,41	<14,3	67,9 ± 7,4	<3,19	<4,71	0,0214
	2.	2005/1046	<1,28	<1,26	<15,2	162 ± 12	<2,10	<4,38	0,1233
	3.	2005/1568	<1,06	<1,00	9,20 ± 2,33	192 ± 13	<2,58	<3,65	0,0750
	4.	2005/2164	<1,13	<1,03	<11,2	92,5 ± 7,4	3,02 ± 1,33	<3,77	0,0577
Nemčiňany	1.	2005/0416	<1,21	<1,19	<11,2	39,9 ± 4,6	<2,82	<4,29	0,0594
	2.	2005/1047	<1,06	<1,05	10,6 ± 2,4	155 ± 11	<2,53	<3,68	0,0751
	3.	2005/1569	<1,37	<1,32	<13,4	106 ± 9	3,77 ± 1,53	<4,68	0,0701
	4.	2005/2165	<1,39	<1,36	<14,7	105 ± 10	3,65 ± 1,45	<4,39	0,0926
Malé Kozmálovce	1.	2005/0417	<1,17	<1,12	<12,7	58,2 ± 5,1	<2,75	<3,94	0,0803
	2.	2005/1048	<0,95	<0,93	27,3 ± 3,8	160 ± 11	<1,79	<3,40	0,2357
	3.	2005/1570	<0,98	<1,02	19,9 ± 3	150 ± 10	<2,59	<3,69	0,1272
	4.	2005/2166	<1,53	<1,07	33,6 ± 4,4	139 ± 10	3,36 ± 1,15	<3,63	0,4573
Nový Tekov	1.	2005/0418	<1,12	<1,12	<12,1	47,6 ± 5,6	<2,62	<3,81	0,0627
	2.	2005/1049	<1,05	<1,02	13,0 ± 2,9	170 ± 12	<2,51	<3,58	0,1715
	3.	2005/1571	<1,34	<1,35	<14,7	160 ± 12	3,19 ± 1,46	<4,54	0,1039
	4.	2005/2167	<1,42	<1,32	<14,8	79,9 ± 8,4	5,97 ± 1,62	<4,84	0,0768
Kozárovce	1.	2005/0419	<1,30	<1,32	<12,5	67,3 ± 6,5	<2,98	<4,43	0,0566
	2.	2005/1050	<1,43	<1,34	<16,6	183 ± 14	<3,08	<4,63	0,2501
	3.	2005/1572	<1,07	<1,01	6,85 ± 2	163 ± 11	<2,48	<3,57	0,1140
	4.	2005/2168	<0,98	<0,94	10,2 ± 2,5	106 ± 8	3,46 ± 1,23	<3,38	0,1615
Zlaté Moravce	1.	2005/0420	<1,21	<1,17	<11,7	46,8 ± 6,1	<2,69	<4,07	0,0530
	2.	2005/1051	<0,79	<0,77	<10,3 ± 1,8	169 ± 11	3,88 ± 0,81	<2,44	0,1297
	3.	2005/1573	<1,31	<1,32	<13,3	53,0 ± 6,1	<3,08	<4,59	0,0313
	4.	2005/2169	<2,00	<1,37	<14,9	105 ± 11	6,08 ± 1,56	<4,94	0,0924
Rybník	1.	2005/0421	<1,13	<1,10	6,98 ± 1,92	67,3 ± 6,2	<2,62	<3,93	0,0837
	2.	2005/1052	<1,31	<1,27	<15,2	180 ± 13	<2,97	<4,53	0,1481
	3.	2005/1574	<1,13	<1,01	11,1 ± 2,3	87,8 ± 7	<2,53	<2,62	0,0980
	4.	2005/2170	<0,85	<0,82	9,81 ± 2,0	108 ± 8	4,12 ± 1,14	<2,82	0,1371

Table 261 Fallout activity, 2005

AKTIVITA SPADOV

dozimetrické staničky - gamaspektrometria

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M$_c$ [g]
LRKO	1.	2006/0426	<1,59	<16,2	44,1 ± 5,1	<3,96	<5,30	0,0442
	2.	2006/0947	<1,41	14,5 ± 3,2	317 ± 20	<3,38	<4,92	0,1136
	3.	2006/1515	<1,62	<17,0	113 ± 10	<3,59	<5,71	0,0854
	4.	2006/2052	<1,49	8,98 ± 2,54	55,6 ± 5,9	<3,35	<5,01	0,0458
Levice	1.	2006/0427	<1,28	<12,0	58,6 ± 6,4	<3,04	<4,26	0,0315
	2.	2006/0948	<1,07	13,3 ± 2,6	378 ± 23	<2,58	<3,31	0,1311
	3.	2006/1516	<1,11	8,94 ± 2,47	117 ± 8	<2,27	<3,70	0,0964
	4.	2006/2053	<1,05	<10,9	55,0 ± 4,8	<2,35	<3,65	0,0625
Kalná n/Hronom	1.	2006/0428	<1,32	<13,1	54,8 ± 5,4	3,69 ± 1,61	<4,97	0,0770
	2.	2006/0949	<1,35	19,5 ± 3,9	323 ± 20	2,57 ± 1,41	<5,00	0,2604
	3.	2006/1517	<1,33	18,7 ± 3,8	132 ± 10	<2,95	<4,83	0,2413
	4.	2006/2054	<1,30	83,7 ± 7,6	75,4 ± 6,7	<3,02	<4,83	0,8639
Mochovce	1.	2006/0429	<1,24	9,12 ± 2,29	48,3 ± 5,5	<3,10	<4,46	0,0434
	2.	2006/0950	<1,08	12,3 ± 2,8	443 ± 27	<2,13	<3,81	0,1488
	3.	2006/1518	<1,05	9,14 ± 2,29	142 ± 10	<2,26	<3,78	0,0735
	4.	2006/2055	<0,992	8,03 ± 2,03	46,8 ± 4,7	<2,37	<3,70	0,0697
Čifáre	1.	2006/0430	<1,42	<14,7	50,6 ± 5,4	3,32 ± 1,49	<5,10	0,0768
	2.	2006/0951	<1,16	<13,4	315 ± 20	5,75 ± 1,05	<4,30	0,2713
	3.	2006/1519	<1,24	12,5 ± 2,6	138 ± 10	2,18 ± 0,91	<4,23	0,1487
	4.	2006/2056	<1,38	23,4 ± 4,9	79,0 ± 7,3	<3,23	<4,88	0,1844
Veľký Ďúr	1.	2006/0431	<0,905	<9,06	76,2 ± 5,7	<2,26	<3,12	0,0884
	2.	2006/0952	<1,35	<14,1	370 ± 23	7,98 ± 1,27	<4,50	0,1749
	3.	2006/1520	<1,14	<13,1	151 ± 11	2,34 ± 0,85	<4,27	0,1437
	4.	2006/2057	<1,06	9,87 ± 2,69	76,4 ± 6,3	<2,14	<3,63	0,0819
Vráble	1.	2006/0432	<1,24	<12,1	66,3 ± 5,9	4,71 ± 1,42	<4,07	0,2955
	2.	2006/0953	0,710 ± 0,279	<15,8	216 ± 14	<3,37	<4,93	0,3041
	3.	2006/1521	0,562 ± 0,233	7,93 ± 1,96	136 ± 9	<2,24	<3,54	0,2890
	4.	2006/2058	<1,19	<11,6	49,0 ± 5,6	<2,83	<4,34	0,0642
Tajná	1.	2006/0433	<1,19	6,76 ± 2,07	56,7 ± 5,1	<3,06	<4,17	0,0449
	2.	2006/0954	<0,911	17,3 ± 2,8	358 ± 22	<2,24	<3,76	0,1294
	3.	2006/1522	<0,810	14,1 ± 2,5	133 ± 9	<1,76	<2,86	0,1632
	4.	2006/2059	<1,04	13,7 ± 2,8	45,7 ± 5,7	<2,46	<3,83	0,1472

Table 262 Fallout activity, 2006

AKTIVITA SPADOV
dozimetrické staničky - gamaspektrometria

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M_c [g]
Červený Hrádok	1.	2006/0434	<1,60	<16,4	47,5 ± 5,8	7,36 ± 1,71	<5,57	0,0317
	2.	2006/0955	<1,44	12,3 ± 3,4	286 ± 19	<3,23	<4,91	0,0909
	3.	2006/1523	<1,41	12,4 ± 3,3	132 ± 10	<3,05	<5,09	0,0679
	4.	2006/2060	<1,42	<14,1	46,8 ± 5,2	<3,27	<4,57	0,0547
Nemčiňany	1.	2006/0435	<1,03	<9,74	65,3 ± 5,8	<2,52	<3,69	0,0716
	2.	2006/0956	<1,04	12,5 ± 2,2	246 ± 15	<2,48	<3,62	0,1169
	3.	2006/1524	<1,02	8,98 ± 2,21	170 ± 11	<2,18	<3,47	0,1233
	4.	2006/2061	<0,898	7,12 ± 2,00	57,0 ± 5,5	<2,06	<3,25	0,0582
Malé Kozmálovce	1.	2006/0436	<1,45	<15,2	75,8 ± 7,0	<3,61	<5,25	0,0562
	2.	2006/0957	<1,13	50,2 ± 5,3	427 ± 26	6,02 ± 1,07	<3,91	0,4286
	3.	2006/1525	<0,965	21,0 ± 3,4	146 ± 10	2,08 ± 0,74	<3,33	0,2404
	4.	2006/2062	1,43 ± 0,27	14,4 ± 2,7	54,2 ± 5,2	2,88 ± 1,18	<3,73	0,3335
Nový Tekov	1.	2006/0437	<1,05	<10,5	64,1 ± 5,9	<2,43	<3,75	0,0648
	2.	2006/0958	<1,25	15,4 ± 3,3	385 ± 23	5,58 ± 1,12	<4,16	0,2368
	3.	2006/1526	<1,18	<13,9	152 ± 11	3,74 ± 0,91	<4,25	0,1467
	4.	2006/2063	<1,04	6,81 ± 2,48	57,8 ± 5,9	<2,48	<3,78	0,0368
Kozárovce	1.	2006/0438	<1,42	<13,6	59,1 ± 6,0	<3,61	<5,35	0,0621
	2.	2006/0959	<1,20	<13,2	343 ± 21	4,72 ± 1,08	<4,17	0,2081
	3.	2006/1527	<1,39	34,2 ± 4,5	140 ± 10	<3,06	<4,70	0,3769
	4.	2006/2064	<1,32	<14,2	52,3 ± 6,0	<3,17	<4,59	0,1328
Zlaté Moravce	1.	2006/0439	<1,06	<11,2	66,2 ± 5,7	<2,63	<3,82	0,0625
	2.	2006/0960	<1,06	10,4 ± 2,4	253 ± 16	<2,52	<3,81	0,1077
	3.	2006/1528	<1,02	8,02 ± 2,05	152 ± 10	<2,37	<3,52	0,1274
	4.	2006/2065	<1,02	11,0 ± 2,4	43,8 ± 4,5	2,61 ± 1,10	<3,66	0,0827
Rybník	1.	2006/0440	<1,39	<14,4	49,2 ± 5,0	3,97 ± 1,57	<4,99	0,0517
	2.	2006/0961	<1,37	12,8 ± 3,4	395 ± 24	<3,14	<4,76	0,2133
	3.	2006/1529	<1,32	21,1 ± 3,5	138 ± 10	3,96 ± 1,28	<4,60	0,1637
	4.	2006/2066	0,504 ± 0,276	<15,0	59,6 ± 6,2	<3,33	<4,92	0,3713

Table 263 Fallout activity, 2006

AKTIVITA SPADOV

dozimetrické staničky - gamaspektrometria

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M$_c$ [g]
LRKO	1.	2007/0462	<1,35	8,62 ± 2,57	112 ± 8	<3,39	<4,76	0,0756
	2.	2007/0905	<1,57	13,3 ± 3,9	247 ± 17	10,5 ± 1,9	<5,26	0,1573
	3.	2007/1460	<1,45	<15,1	201 ± 14	<3,75	<5,19	0,1080
	4.	2007/2032	<1,66	<17,6	60,3 ± 6,7	<4,43	<6,00	0,0461
Levice	1.	2007/0463	<1,11	<11,6	126 ± 9	<2,80	<3,55	0,0502
	2.	2007/0906	<1,13	13,5 ± 2,4	284 ± 18	<2,96	<3,66	0,1009
	3.	2007/1461	<1,02	7,39 ± 2,45	275 ± 17	3,32 ± 1,23	<3,69	0,1012
	4.	2007/2033	<1,27	<12,4	69,2 ± 2,5	<3,33	<4,15	0,0403
Kalná n/Hronom	1.	2007/0464	<1,27	8,52 ± 2,54	95,4 ± 7,4	4,24 ± 1,55	<4,76	0,1036
	2.	2007/0907	<1,43	13,0 ± 3,6	230 ± 16	<3,64	<5,14	0,1831
	3.	2007/1462	<1,29	10,8 ± 2,9	207 ± 14	<3,28	<4,54	0,1707
	4.	2007/2034	<1,44	13,9 ± 3,8	90,7 ± 8,2	<3,82	<5,10	0,2028
Mochovce	1.	2007/0465	<1,38	8,24 ± 2,75	86,2 ± 7,7	<3,27	<4,70	0,0505
	2.	2007/0908	<1,29	13,4 ± 3,6	257 ± 17	<3,16	<4,60	0,1342
	3.	2007/1463	<1,31	<13,4	176 ± 12	<3,25	<4,60	0,0763
	4.	20072035	<1,20	<12,8	94,1 ± 7,7	<3,16	<4,35	0,0515
Čifáre	1.	2007/0466	<1,26	<13,0	115 ± 9	<2,90	<4,26	0,1319
	2.	2007/0909	<1,31	15,3 ± 3,4	208 ± 15	7,77 ± 1,78	<4,74	0,1593
	3.	2007/1464	<1,18	<12,8	125 ± 9	<2,88	<4,20	0,1034
	4.	2007/2036	<1,43	<15,1	86,0 ± 7,6	<3,97	<5,13	0,0818
Veľký Ďúr	1.	2007/0467	<1,32	<14,7	125 ± 10	<3,27	<4,65	0,1109
	2.	2007/0910	<1,30	<14,4	171 ± 13	<3,10	<4,38	0,1254
	3.	2007/1465	<1,25	<13,6	155 ± 11	<3,09	<4,18	0,1040
	4.	2007/2037	<1,16	7,14 ± 2,49	86,8 ± 7,1	<2,77	<3,80	0,0851
Vráble	1.	2007/0468	<1,44	10,8 ± 3,0	112 ± 9	<3,30	<4,69	0,2867
	2.	2007/0911	0,690 ± 0,234	15,9 ± 2,7	281 ± 19	2,36 ± 1,62	<4,81	0,3813
	3.	2007/1466	0,939 ± 0,163	4,44 ± 2,37	198 ± 13	<3,62	<4,69	0,2410
	4.	2007/2038	<1,45	12,8 ± 3,4	72,7 ± 6,8	<3,86	<5,14	0,1500
Tajná	1.	2007/0469	<1,10	9,13 ± 2,51	120 ± 8	<2,81	<3,86	0,0895
	2.	2007/0912	<1,06	16,7 ± 2,9	212 ± 14	<2,83	<3,58	0,1495
	3.	2007/1467	<1,04	5,01 ± 2,31	213 ± 14	<2,77	<3,71	0,1343
	4.	2007/2039	<1,12	16,4 ± 3,4	80,0 ± 6,8	<2,71	<4,14	0,1699

Table 264 Fallout activity, 2007

AKTIVITA SPADOV
dozimetrické staničky - gamaspektrometria

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [Bq/m²]	^{40}K [Bq/m²]	^{7}Be [Bq/m²]	U - rad [Bq/m²]	Th - rad [Bq/m²]	M_c [g]
Červený Hrádok	1.	2007/0470	<1,37	8,13 ± 2,80	139 ± 10	<3,20	<4,74	0,0558
	2.	2007/0913	<1,31	15,1 ± 3,4	222 ± 15	3,89 ± 1,64	<4,81	0,1042
	3.	2007/1468	<1,41	7,01 ± 2,43	168 ± 12	<3,73	<4,98	0,0833
	4.	2007/2040	<1,44	8,99 ± 2,65	81,1 ± 7,5	<4,12	<5,29	0,0383
Nemčiňany	1.	2007/0471	<1,14	15,9 ± 2,6	134 ± 10	<2,99	<3,73	0,1008
	2.	2007/0914	<1,11	12,1 ± 2,4	254 ± 16	<2,81	<3,56	0,1634
	3.	2007/1469	<1,32	<12,6	140 ± 11	<3,15	<4,11	0,1003
	4.	2007/2041	<1,04	6,32 ± 2,05	85,3 ± 6,9	4,76 ± 1,26	<3,78	0,0720
Malé Kozmálovce	1.	2007/0472	0,901 ± 0,251	32,6 ± 4,5	140 ± 10	<2,79	<4,26	0,1585
	2.	2007/0915	1,25 ± 0,37	<16,5	218 ± 16	<3,20	<4,51	0,1906
	3.	2007/1470	0,522 ± 0,296	14,7 ± 3,4	171 ± 12	<3,58	<5,05	0,1383
	4.	2007/2042	0,921 ± 0,304	144 ± 11	120 ± 9	<3,73	<5,12	1,0540
Nový Tekov	1.	2007/0473	<1,08	16,0 ± 2,9	148 ± 10	<2,54	<3,28	0,1065
	2.	2007/0916	<1,29	11,4 ± 3,0	248 ± 17	<3,16	<4,31	0,1705
	3.	2007/1471	<1,24	15,2 ± 3,1	183 ± 13	<2,90	<4,42	0,2168
	4.	2007/2043	<1,12	<11,8	88,5 ± 7,0	<2,76	<3,81	0,0716
Kozárovce	1.	2007/0474	<1,23	17,0 ± 3,3	166 ± 11	4,59 ± 1,55	<4,08	0,1840
	2.	2007/0917	<1,26	20,3 ± 3,9	258 ± 17	<3,07	<4,47	0,2692
	3.	2007/1472	<1,32	<15,2	127 ± 10	<3,44	<4,52	0,2855
	4.	2007/2044	<1,35	10,1 ± 3,0	82,2 ± 7,1	<3,71	<5,04	0,1031
Zlaté Moravce	1.	2007/0475	<0,908	12,5 ± 2,2	136 ± 9	2,05 ± 1,14	<3,15	0,1005
	2.	2007/0918	<1,45	<14,8	217 ± 18	3,57 ± 1,73	<4,95	0,1030
	3.	2007/1473	<1,31	<13,5	190 ± 14	<3,24	<4,75	0,1271
	4.	2006/2065	<1,12	4,02 ± 2,06	79,5 ± 6,7	2,95 ± 1,25	<3,87	0,0703
Rybník	1.	2007/0476	<1,46	8,83 ± 2,90	127 ± 10	4,16 ± 1,66	<4,97	0,1114
	2.	2007/0919	<1,12	21,4 ± 3,7	256 ± 17	4,51 ± 1,45	<4,18	0,2051
	3.	2007/1474	<1,34	12,6 ± 3,2	247 ± 16	<3,50	<5,01	0,1851
	4.	2007/2046	<1,23	7,45 ± 2,5	88,8 ± 7,6	<3,17	<4,23	0,1072

Table 265 Fallout activity , 2007

AKTIVITA SPADOV

dozimetrické staničky - gamaspektrometria

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M$_c$ [g]
LRKO	1.	2008/0480	<1,58	8,54 ± 6,46	86,9 ± 14,0	<3,75	<5,29	0,0584
	2.	2008/0993	<1,31	13,5 ± 5,6	316 ± 37	<3,31	<4,50	0,1279
	3.	2008/1531	<1,15	<7,10	237 ± 28	<2,72	<3,71	0,1061
	4.	2008/2073	<1,50	11,3 ± 6,2	151 ± 23	<3,60	<4,84	0,0838
Levice	1.	2008/0481	<1,25	3,37 ± 4,39	84,8 ± 15,0	<3,33	<4,56	0,0336
	2.	2008/0994	<1,21	12,7 ± 6,3	336 ± 39	<2,77	<4,10	0,1110
	3.	2008/1532	<1,18	14,4 ± 5,9	276 ± 34	<3,10	<4,33	0,1203
	4.	2008/2074	<1,16	<11,9	89,0 ± 13,5	<3,03	<4,17	0,4843
Kalná n/Hronom	1.	2008/0482	<1,30	4,96 ± 4,95	99,9 ± 15,2	<3,44	<4,74	0,0793
	2.	2008/0995	<1,44	14,8 ± 8,3	229 ± 27	<3,38	<4,90	0,1967
	3.	2008/1533	<1,14	17,9 ± 5,7	260 ± 31	<2,90	<4,12	0,2027
	4.	2008/2075	<1,21	33,4 ± 9,2	194 ± 24	<3,08	<4,01	0,8205
Mochovce	1.	2008/0483	<1,20	<12,2	137 ± 19	<3,46	<4,40	0,0504
	2.	2008/0996	<1,16	21,3 ± 7,1	392 ± 45	<2,85	<4,03	0,1256
	3.	2008/1534	<1,28	15,8 ± 6,3	260 ± 33	<3,23	<4,29	0,1058
	4.	2008/2076	<1,16	10,1 ± 5,0	184 ± 24	<3,17	<4,43	0,0565
Čifáre	1.	2008/0484	<1,31	8,57 ± 4,47	93,7 ± 15,0	<3,49	<4,75	0,0913
	2.	2008/0997	<1,10	20,1 ± 6,5	312 ± 37	<2,85	<4,02	0,1762
	3.	2008/1535	<1,05	13,4 ± 5,2	222 ± 27	<2,94	<3,51	0,2536
	4.	2008/2077	<1,12	11,3 ± 5,0	146 ± 21	<2,82	<4,26	0,1211
Veľký Ďúr	1.	2008/0485	<1,16	<11,0	97,8 ± 14,8	<3,10	<3,95	0,0697
	2.	2008/0998	<1,13	14,7 ± 6,2	242 ± 30	<3,03	<4,11	0,1428
	3.	2008/1536	<1,12	<12,8	229 ± 28	<3,11	<3,79	0,1802
	4.	2008/2078	<1,20	7,63 ± 5,16	182 ± 24	<3,02	<4,06	0,1013
Vráble	1.	2008/0486	<1,34	<14,0	63,5 ± 12,0	<3,39	<4,44	0,1452
	2.	2008/0999	<1,01	9,84 ± 4,45	188 ± 22	<2,60	<3,64	0,2057
	3.	2008/1537	<1,08	18,2 ± 5,8	243 ± 29	<2,77	<3,63	0,3156
	4.	2008/2079	<1,11	12,8 ± 5,4	147 ± 20	<2,55	<3,76	0,2098
Tajná	1.	2008/0487	<1,32	8,85 ± 5,54	126 ± 19	<3,66	<4,71	0,0856
	2.	2008/1000	<1,12	39,0 ± 8,8	310 ± 36	<2,85	<3,73	0,1932
	3.	2008/1538	<1,21	21,9 ± 7,5	265 ± 33	<3,27	<4,27	0,1768
	4.	2008/2080	<1,21	112 ± 17	168 ± 21	<3,05	<4,06	1,1805

Table 266 Fallout activity, 2008

AKTIVITA SPADOV
dozimetrické staničky - gamaspektrometria

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M$_c$ [g]
Červený Hrádok	1.	2008/0488	<1,34	9,32 ± 5,24	144 ± 21	<3,31	<4,61	0,0362
	2.	2008/1001	<1,06	19,1 ± 6,5	353 ± 41	<2,77	<3,61	0,1302
	3.	2008/1539	<1,20	8,73 ± 5,31	270 ± 33	<3,14	<4,25	0,0942
	4.	2008/2081	<1,24	10,1 ± 5,6	157 ± 23	<2,92	<4,35	0,0645
Nemčiňany	1.	2008/0489	<1,21	<12,6	139 ± 19	<3,03	<4,05	0,0881
	2.	2008/1002	<1,15	12,8 ± 5,8	307 ± 36	<3,00	<3,94	0,1540
	3.	2008/1540	<1,14	11,3 ± 5,0	245 ± 31	4,37 ± 2,71	<4,12	0,2640
	4.	2008/2082	<1,17	7,24 ± 4,63	140 ± 20	<2,68	<4,07	0,0849
Malé Kozmálovce	1.	2008/0490	<1,21	11,2 ± 4,7	126 ± 18	<3,05	<4,30	0,0788
	2.	2008/1003	<1,15	44,2 ± 9,1	384 ± 44	<2,85	<4,08	0,2293
	3.	2008/1541	<1,24	24,6 ± 7,5	210 ± 28	<3,04	<4,16	0,2138
	4.	2008/2083	<1,12	33,6 ± 8,3	192 ± 25	<2,80	<4,01	0,3668
Nový Tekov	1.	2008/0491	<1,19	9,76 ± 5,19	137 ± 20	<3,27	<4,13	0,0894
	2.	2008/1004	<1,12	29,0 ± 8,1	372 ± 43	<2,83	<3,99	0,2186
	3.	2008/1542	<1,16	<8,17	195 ± 25	<2,98	<4,24	0,1394
	4.	2008/2084	<1,13	12,6 ± 6,3	188 ± 25	<2,77	<4,06	0,1234
Kozárovce	1.	2008/0492	<1,16	8,29 ± 4,74	151 ± 20	<3,25	<3,97	0,0902
	2.	2008/1005	<1,19	12,1 ± 6,2	368 ± 43	<3,04	<4,24	0,1960
	3.	2008/1543	<1,14	18,5 ± 6,5	268 ± 32	<2,83	<3,84	0,2290
	4.	2008/2085	<1,12	45,4 ± 9,8	206 ± 27	<2,81	<4,06	0,2380
Zlaté Moravce	1.	2008/0493	<1,21	<12,7	141 ± 20	<3,10	<4,35	0,1033
	2.	2008/1006	<1,17	8,47 ± 5,38	291 ± 36	<3,11	<4,44	0,1019
	3.	2008/1544	<1,15	9,93 ± 4,99	257 ± 33	<2,72	<4,01	0,1186
	4.	2008/2086	<1,17	6,06 ± 5,13	139 ± 19	<2,88	<4,19	0,1027
Rybník	1.	2008/0494	<1,20	<12,1	124 ± 18	<2,98	<4,10	0,0767
	2.	2008/1007	<1,26	26,2 ± 7,6	404 ± 47	<3,26	<4,05	0,2085
	3.	2008/1545	<1,13	20,7 ± 6,8	228 ± 29	<2,63	<3,80	0,1905
	4.	2008/2087	<1,16	12,9 ± 6,0	191 ± 25	<2,90	<4,09	0,1253

Table 267 Fallout activity, 2008

AKTIVITA SPADOV
(dozimetrické staničky - celková aktivita beta)

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	II. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	III. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/m^2]
LRKO	2005/407	4,6 ± 0,6	2005/1038	5,0 ± 0,7	2005/1560	8,3 ± 1,1	2005/2156	9,0 ± 1,1
Levice	2005/408	4,4 ± 0,6	2005/1039	8,1 ± 1,1	2005/1561	8,5 ± 1,1	2005/2157	11,5 ± 1,4
Kalná n/Hronom	2005/409	5,7 ± 0,8	2005/1040	7,5 ± 1,0	2005/1562	6,2 ± 0,8	2005/2158	18,8 ± 2,5
Mochovce	2005/410	6,4 ± 0,8	2005/1041	7,9 ± 1,0	2005/1563	9,9 ± 1,3	2005/2159	11,6 ± 1,4
Čifáre	2005/411	5,5 ± 0,7	2005/1042	10,2 ± 1,3	2005/1564	5,8 ± 0,8	2005/2160	8,3 ± 1,1
Veľký Ďúr	2005/412	4,4 ± 0,6	2005/1043	8,4 ± 1,1	2005/1565	6,0 ± 0,8	2005/2161	9,2 ± 1,1
Vráble	2005/413	9,0 ± 1,2	2005/1044	33,6 ± 4,5	2005/1566	7,7 ± 1,0	2005/2162	8,7 ± 1,2
Tajná	2005/414	4,6 ± 0,7	2005/1045	11,2 ± 1,4	2005/1567	6,9 ± 0,9	2005/2163	16,5 ± 2,0
Červený Hrádok	2005/415	3,8 ± 0,5	2005/1046	12,1 ± 1,5	2005/1568	10,6 ± 1,3	2005/2164	7,1 ± 0,9
Nemčiňany	2005/416	4,0 ± 0,6	2005/1047	7,8 ± 1,0	2005/1569	5,2 ± 0,7	2005/2165	10,5 ± 1,3
Malé Kozmálovce	2005/417	7,2 ± 0,9	2005/1048	8,5 ± 1,1	2005/1570	8,4 ± 1,1	2005/2166	23,3 ± 2,9
Nový Tekov	2005/418	5,1 ± 0,7	2005/1049	8,8 ± 1,1	2005/1571	7,2 ± 0,9	2005/2167	5,9 ± 0,8
Kozárovce	2005/419	5,3 ± 0,7	2005/1050	10,0 ± 1,3	2005/1572	8,9 ± 1,1	2005/2168	14,0 ± 1,7
Zlaté Moravce	2005/420	3,5 ± 0,5	2005/1051	8,9 ± 1,1	2005/1573	2,7 ± 0,4	2005/2169	9,1 ± 1,2
Rybník	2005/421	5,5 ± 0,7	2005/1052	8,4 ± 1,1	2005/1574	5,4 ± 0,7	2005/2170	9,7 ± 1,2

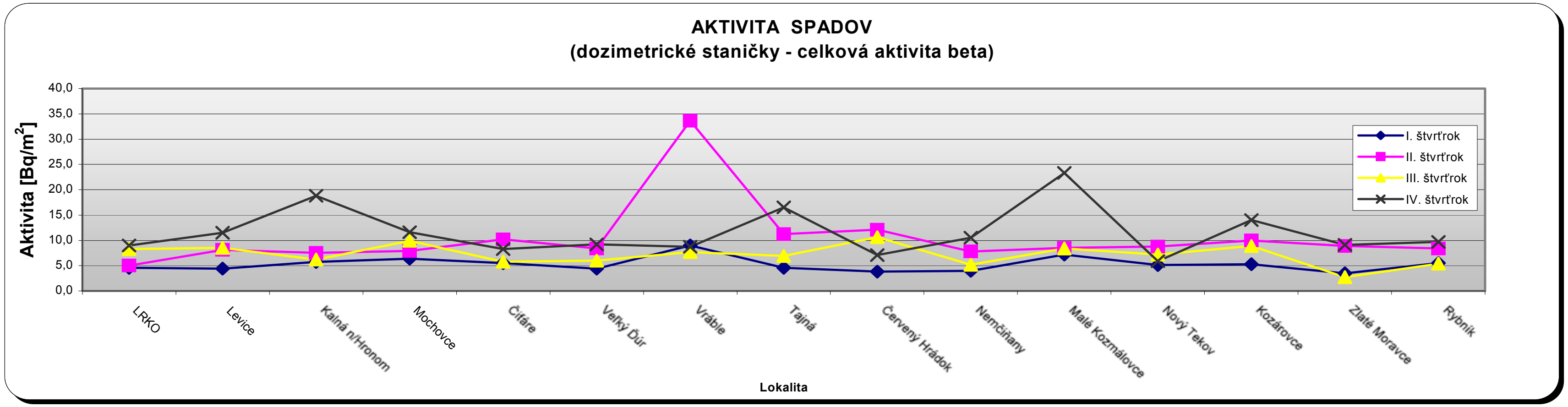

Table 268 Fallout activity, 2005

AKTIVITA SPADOV
(dozimetrické staničky - celková aktivita beta)

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/m²]	Evidenčné číslo protokolu	II. štvrťrok [Bq/m²]	Evidenčné číslo protokolu	III. štvrťrok [Bq/m²]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/m²]
LRKO	2006/426	3,1 ± 0,5	2006/947	20,1 ± 2,3	2006/1515	12,3 ± 1,6	2006/2052	5,7 ± 0,8
Levice	2006/427	3,4 ± 0,5	2006/948	21,0 ± 2,4	2006/1516	10,5 ± 1,3	2006/2053	4,4 ± 0,6
Kalná n/Hronom	2006/428	4,5 ± 0,6	2006/949	26,6 ± 3,1	2006/1517	14,6 ± 1,8	2006/2054	39,4 ± 4,9
Mochovce	2006/429	4,4 ± 0,6	2006/950	27,6 ± 3,1	2006/1518	11,7 ± 1,4	2006/2055	5,1 ± 0,7
Čifáre	2006/430	4,4 ± 0,6	2006/951	21,3 ± 2,5	2006/1519	12,9 ± 1,6	2006/2056	12,2 ± 1,4
Veľký Ďur	2006/431	6,3 ± 0,8	2006/952	25,9 ± 2,9	2006/1520	12,6 ± 1,5	2006/2057	7,2 ± 1,0
Vráble	2006/432	7,9 ± 1,1	2006/953	13,8 ± 1,7	2006/1521	17,5 ± 2,2	2006/2058	4,8 ± 0,7
Tajná	2006/433	4,1 ± 0,6	2006/954	18,9 ± 2,2	2006/1522	15,9 ± 1,9	2006/2059	7,0 ± 0,9
Červený Hrádok	2006/434	3,7 ± 0,6	2006/955	15,0 ± 1,8	2006/1523	12,4 ± 1,5	2006/2060	3,7 ± 0,5
Nemčiňany	2006/435	4,5 ± 0,6	2006/956	8,4 ± 1,1	2006/1524	13,8 ± 1,6	2006/2061	3,6 ± 0,5
Malé Kozmálovce	2006/436	5,8 ± 0,8	2006/957	33,0 ± 3,9	2006/1525	21,0 ± 2,4	2006/2062	8,0 ± 1,1
Nový Tekov	2006/437	4,6 ± 0,6	2006/958	21,5 ± 2,5	2006/1526	13,8 ± 1,7	2006/2063	5,1 ± 0,7
Kozárovce	2006/438	4,8 ± 0,7	2006/959	22,2 ± 2,6	2006/1527	23,0 ± 2,8	2006/2064	5,8 ± 0,8
Zlaté Moravce	2006/439	4,2 ± 0,6	2006/960	14,6 ± 1,7	2006/1528	11,5 ± 1,4	2006/2065	5,4 ± 0,7
Rybník	2006/440	3,4 ± 0,5	2006/961	26,6 ± 3,0	2006/1529	13,2 ± 1,6	2006/2066	5,6 ± 0,8

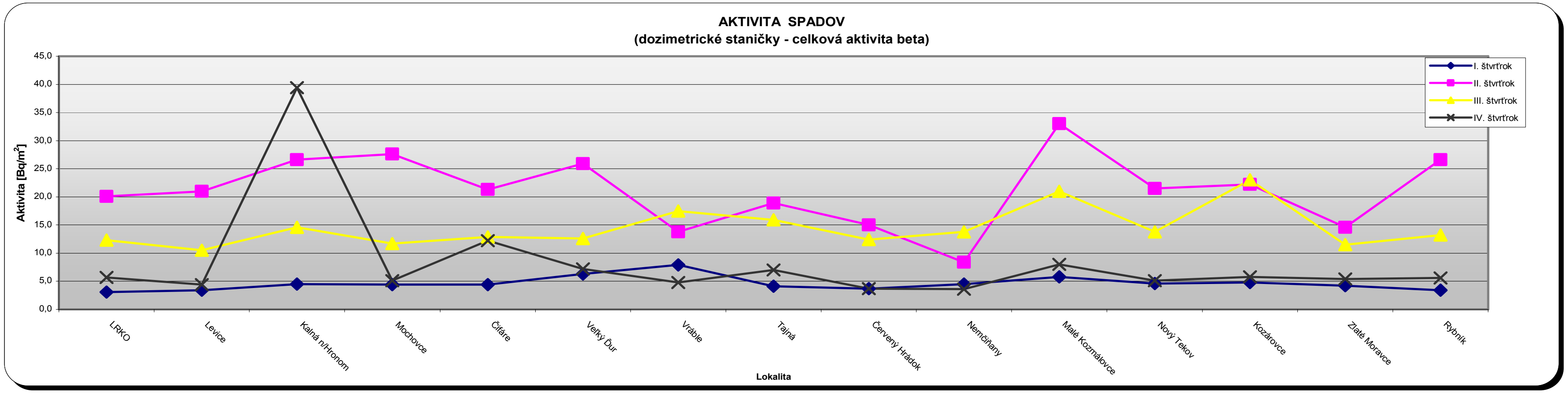

Table 269 Fallout activity, 2006

AKTIVITA SPADOV
(dozimetrické staničky - celková aktivita beta)

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	II. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	III. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/m^2]
LRKO	2007/462	13,4 ± 1,6	2007/905	22,0 ± 2,4	2007/1460	19,8 ± 2,4	2007/2032	10,8 ± 1,4
Levice	2007/463	17,0 ± 2,1	2007/906	21,4 ± 2,3	2007/1461	25,5 ± 3,0	2007/2033	11,1 ± 1,4
Kalná n/Hronom	2007/464	13,9 ± 1,7	2007/907	21,4 ± 2,4	2007/1462	23,7 ± 2,9	2007/2034	12,1 ± 1,5
Mochovce	2007/465	13,6 ± 1,7	2007/908	27,2 ± 2,9	2007/1463	18,4 ± 2,2	2007/2035	15,2 ± 1,8
Čifáre	2007/466	14,2 ± 1,7	2007/909	20,9 ± 2,4	2007/1464	11,9 ± 1,4	2007/2036	13,8 ± 1,6
Veľký Ďúr	2007/467	14,2 ± 1,7	2007/910	16,5 ± 1,9	2007/1465	11,9 ± 1,4	2007/2037	17,7 ± 2,0
Vráble	2007/468	15,3 ± 1,9	2007/911	23,1 ± 2,9	2007/1466	11,7 ± 1,4	2007/2038	10,7 ± 1,3
Tajná	2007/469	14,5 ± 1,8	2007/912	23,2 ± 2,5	2007/1467	20,6 ± 2,4	2007/2039	16,6 ± 1,9
Červený Hrádok	2007/470	17,1 ± 2,1	2007/913	20,0 ± 2,3	2007/1468	13,1 ± 1,6	2007/2040	13,8 ± 1,8
Nemčiňany	2007/471	16,0 ± 2,0	2007/914	22,2 ± 2,4	2007/1469	10,8 ± 1,3	2007/2041	13,9 ± 1,6
Malé Kozmálovce	2007/472	31,2 ± 3,5	2007/915	26,4 ± 2,8	2007/1470	16,2 ± 2,0	2007/2042	87,1 ± 10,3
Nový Tekov	2007/473	21,0 ± 2,4	2007/916	21,4 ± 2,3	2007/1471	15,2 ± 1,8	2007/2043	15,8 ± 1,8
Kozárovce	2007/474	28,8 ± 3,3	2007/917	25,2 ± 2,8	2007/1472	15,2 ± 2,0	2007/2044	15,1 ± 1,7
Zlaté Moravce	2007/475	21,3 ± 2,5	2007/918	21,2 ± 2,5	2007/1473	15,6 ± 1,8	2007/2045	10,8 ± 1,4
Rybník	2007/476	17,3 ± 2,1	2007/919	28,1 ± 3,1	2007/1474	24,5 ± 2,6	2007/2046	13,8 ± 1,7

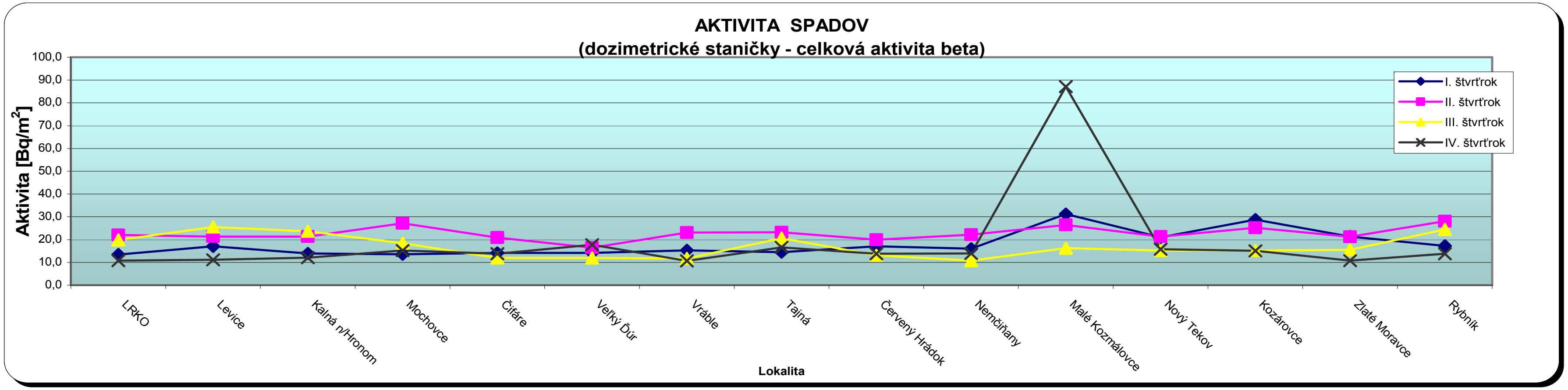

Table 270 Fallout activity, 2007

AKTIVITA SPADOV

(dozimetrické staničky - celková aktivita beta)

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	II. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	III. štvrťrok [Bq/m^2]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/m^2]
LRKO	2008/480	9,8 ± 0,4	2008/993	23,0 ± 0,9	2008/1531	22,3 ± 0,9	2008/2073	13,9 ± 0,5
Levice	2008/481	9,4 ± 0,4	2008/994	26,0 ± 1,0	2008/1532	25,9 ± 1,0	2008/2074	6,9 ± 0,3
Kalná n/Hronom	2008/482	9,1 ± 0,4	2008/995	26,6 ± 1,0	2008/1533	26,8 ± 1,0	2008/2075	38,6 ± 1,5
Mochovce	2008/483	12,9 ± 0,5	2008/996	27,3 ± 1,1	2008/1534	27,4 ± 1,1	2008/2076	16,6 ± 0,6
Čifáre	2008/484	9,6 ± 0,4	2008/997	24,9 ± 1,0	2008/1535	17,8 ± 0,7	2008/2077	15,6 ± 0,6
Veľký Ďúr	2008/485	10,7 ± 0,4	2008/998	22,3 ± 0,9	2008/1536	19,7 ± 0,8	2008/2078	18,5 ± 0,7
Vráble	2008/486	3,9 ± 0,2	2008/999	8,9 ± 0,3	2008/1537	16,2 ± 0,6	2008/2079	18,8 ± 0,7
Tajná	2008/487	15,2 ± 0,6	2008/1000	31,1 ± 1,2	2008/1538	30,0 ± 1,2	2008/2080	70,9 ± 2,7
Červený Hrádok	2008/488	14,1 ± 0,5	2008/1001	27,7 ± 1,1	2008/1539	25,2 ± 1,0	2008/2081	17,8 ± 0,7
Nemčiňany	2008/489	11,4 ± 0,4	2008/1002	21,5 ± 0,8	2008/1540	22,2 ± 0,9	2008/2082	16,3 ± 0,6
Malé Kozmálovce	2008/490	14,3 ± 0,6	2008/1003	39,4 ± 1,5	2008/1541	23,9 ± 0,9	2008/2083	29,3 ± 1,1
Nový Tekov	2008/491	14,4 ± 0,6	2008/1004	30,1 ± 1,2	2008/1542	16,0 ± 0,6	2008/2084	18,1 ± 0,7
Kozárovce	2008/492	12,5 ± 0,5	2008/1005	26,6 ± 1,0	2008/1543	30,5 ± 1,2	2008/2085	37,9 ± 1,5
Zlaté Moravce	2008/493	20,7 ± 0,8	2008/1006	17,5 ± 0,7	2008/1544	19,1 ± 0,7	2008/2086	16,0 ± 0,6
Rybník	2008/494	10,5 ± 0,4	2008/1007	30,5 ± 1,2	2008/1545	26,1 ± 1,0	2008/2087	21,7 ± 0,8

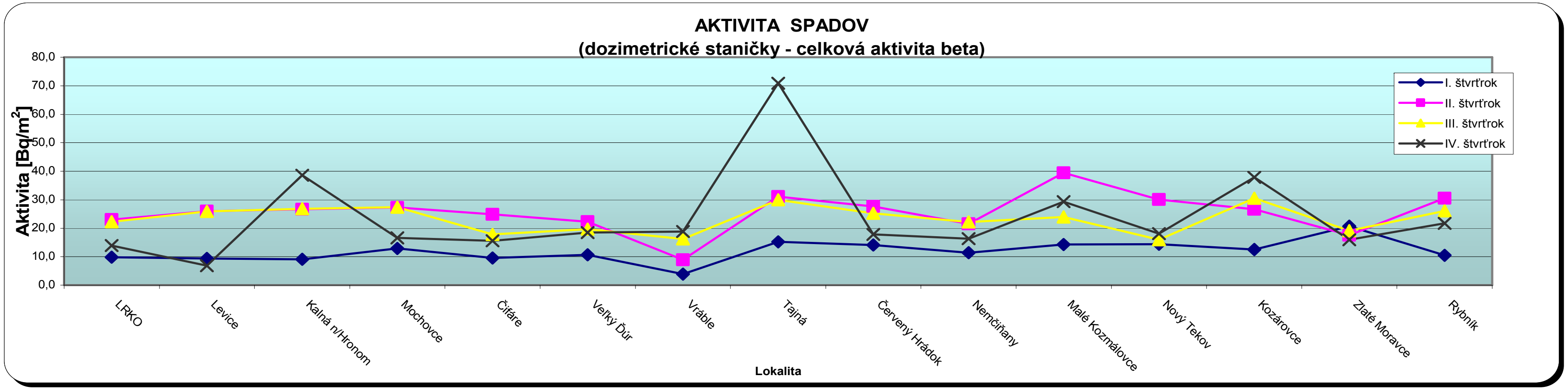

Table 271 Fallout activity, 2008

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{134}Cs [mBq/dm^3]	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Levice *	**1.**	2005/0167	<5,55	<5,13	158 ± 19	18,2 ± 4,6	<18,5
/Podlužianka/	**2.**	2005/0735	<7,75	<7,17	120 ± 21	<15,7	<25,1
	3.	2005/1532	<5,14	<5,25	142 ± 19	<11,8	<17,8
	4.	2005/1957	<6,52	<6,16	157 ± 21	19,9 ± 6,2	<20,9
V. Kozmálovce **	**1.**	2005/0170	<5,39	<5,27	151 ± 18	<11,9	<18,0
/ČS-Perec/	**2.**	2005/0739	<6,47	<6,21	98,4 ± 16,4	<13,5	<21,0
	3.	2005/1535	<5,26	<5,05	124 ± 16	<11,1	<17,9
	4.	2005/1960	<6,12	<5,84	143 ± 19	<15,0	<20,2
Kalná n/Hronom	**1.**	2005/0148	<5,18	<5,25	142 ± 17	<11,5	<18,5
/Hron/	**2.**	2005/0889	<5,68	<5,53	97,9 ± 15,3	<12,4	<19,9
	3.	2005/1359	<5,22	<5,25	96,5 ± 15,2	<12,6	<18,4
	4.	2005/2008	<5,51	<5,30	162 ± 19	<11,7	<18,7
Mochovce	**1.**	2005/0136	<6,29	<6,26	410 ± 33	<13,5	<21,8
/Telinský potok/	**2.**	2005/0743	<6,46	<6,14	311 ± 27	<13,6	<21,2
	3.	2005/1362	<5,31	<5,23	342 ± 27	<11,6	<17,8
	4.	2005/2011	<5,50	<5,17	322 ± 28	<15,9	<18,5
Nemčiňany *	**1.**	2005/0298	<5,55	<5,13	158 ± 19	18,2 ± 4,6	<18,5
/rybník/	**2.**	2005/0892	<7,75	<7,17	120 ± 21	<15,7	<25,1
	3.	2005/1538	<5,14	<5,25	142 ± 19	<11,8	<17,8
	4.	2005/1967	<6,52	<6,16	157 ± 21	19,9 ± 6,2	<20,9
Tlmače **	**1.**	2005/0283	<5,39	<5,27	151 ± 18	<11,9	<18,0
/Hron/	**2.**	2005/0895	<6,47	<6,21	98,4 ± 16,4	<13,5	<21,0
	3.	2005/1350	<5,26	<5,05	124 ± 16	<11,1	<17,9
	4.	2005/2014	<6,12	<5,84	143 ± 19	<15,0	<20,2
V. Kozmálovce **	**1.**	2005/0139	<5,39	<5,27	151 ± 18	<11,9	<18,0
/Hron-Hať/	**2.**	2005/0898	<6,47	<6,21	98,4 ± 16,4	<13,5	<21,0
	3.	2005/1353	<5,26	<5,05	124 ± 16	<11,1	<17,9
	4.	2005/2017	<6,12	<5,84	143 ± 19	<15,0	<20,2
V. Kozmálovce	**1.**	2005/0142	<5,24	<5,02	185 ± 22	<11,8	<18,1
/Hron-pod výpustným	**2.**	2005/0901	<5,78	<5,49	114 ± 19	<12,4	<19,7
otvorom/	**3.**	2005/1356	<5,11	<4,94	169 ± 18	<11,4	<17,7
	4.	2005/2020	<5,27	<5,24	181 ± 18	<11,2	<17,8

Poznámka: * V tabuľke sú uvedené priemerné hodnoty aktivity dvoch vzoriek (Levice-Podlužianka a Nemčiňany-rybník), zmiešaných v rovnakom objemovom pomere

** V tabuľke sú uvedené priemerné hodnoty aktivity troch vzoriek (V.Kozmálovce-ČS-Perec, Tlmače-Hron a V.Kozmálovce -Hron-hať), zmiešaných v rovnakom objemovom pomere

Table 272 Volume activity in surface waters, 2005

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Kalná n/Hronom	**1.**	**2006/0114**	<5,75	143 ± 17	<12,7	<18,9
/Hron/	**2.**	**2006/0693**	<5,02	42,9 ± 13,3	30,6 ± 4,5	<17,5
	3.	**2006/1253**	<4,97	120 ± 16	24,0 ± 4,7	<17,3
	4.	**2006/1702**	<4,67	126 ± 17	11,4 ± 3,4	<17,1
Mochovce	**1.**	**2006/0117**	<5,43	264 ± 24	<13,0	<20,1
/Telinský potok/	**2.**	**2006/0696**	<4,72	256 ± 23	13,8 ± 4,5	<16,6
	3.	**2006/1288**	<4,89	322 ± 25	10,3 ± 4,1	<17,0
	4.	**2006/1731**	<5,20	383 ± 28	10,2 ± 4,3	<17,8
Tlmače	**1.**	**2006/0311**	<6,06	136 ± 20	<13,5	<20,7
/Hron/	**2.**	**2006/0699**	<4,70	72,3 ± 13,5	22,6 ± 4,9	<17,0
	3.	**2006/1256**	<4,79	101 ± 16	10,1 ± 3,7	<16,6
	4.	**2006/1705**	<4,82	149 ± 17	8,97 ± 4,29	<18,0
V. Kozmálovce	**1.**	**2006/0120**	<6,15	139 ± 22	<14,2	<22,5
/Hron-Hať/	**2.**	**2006/0702**	<4,51	78,7 ± 13,8	17,1 ± 3,8	<16,3
	3.	**2006/1259**	<4,87	149 ± 17	12,1 ± 3,9	<16,1
	4.	**2006/1708**	<4,51	140 ± 17	13,1 ± 4,0	<16,8
V. Kozmálovce	**1.**	**2006/0123**	<5,77	235 ± 25	<13,8	<20,3
/Hron-pod výpustným c	**2.**	**2006/0705**	<4,54	89,5 ± 13,8	30,4 ± 4,6	<17,0
	3.	**2006/1262**	<4,88	178 ± 20	11,0 ± 4,0	<16,7
	4.	**2006/1711**	<4,97	240 ± 21	14,8 ± 4,0	<17,4

Table 273 Volume activity in surface waters, 2006

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Kalná n/Hronom	**1.**	**2007/0134**	<5,00	106 ± 16	16,9 ± 4,4	<16,1
/Hron/	**2.**	**2007/0807**	3,26 ± 0,61	64,1 ± 17,4	25,5 ± 4,3	<18,7
	3.	**2007/1133**	3,48 ± 1,38	179 ± 38	<11,3	<18,1
	4.	**2007/1931**	2,94 ± 1,06	120 ± 37	<11,9	<18,7
Mochovce	**1.**	**2007/0137**	<5,03	423 ± 29	21,0 ± 4,3	<18,0
/Telinský potok/	**2.**	**2007/0810**	<5,86	338 ± 21	25,8 ± 4,7	12,8 ± 6,6
	3.	**2007/1115**	4,36 ± 1,51	453 ± 45	<12,1	<19,8
	4.	**2007/1934**	<5,69	378 ± 43	<12,1	<17,9
Tlmače	**1.**	**2007/0140**	<4,92	122 ± 17	23,0 ± 4,3	<17,2
/Hron/	**2.**	**2007/0813**	<5,60	108 ± 18	18,8 ± 4,0	<20,2
	3.	**2007/1136**	<5,67	99,4 ± 37,0	<11,2	<19,6
	4.	**2007/1937**	2,82 ± 1,47	111 ± 38	<12,3	<19,4
V. Kozmálovce	**1.**	**2007/0143**	<4,82	125 ± 17	20,6 ± 4,3	<17,4
/Hron-Hať/	**2.**	**2007/0816**	<5,77	93,1 ± 18,6	15,3 ± 4,0	<19,9
	3.	**2007/1139**	<5,85	114 ± 38	<11,7	<17,6
	4.	**2007/1940**	2,67 ± 1,21	120 ± 37	<11,8	<18,7
V. Kozmálovce	**1.**	**2007/0146**	<4,81	182 ± 19	21,0 ± 4,3	<18,1
/Hron-pod výpustným otvorom/	**2.**	**2007/0819**	<5,57	154 ± 19	19,0 ± 4,4	<19,9
	3.	**2007/1142**	4,41 ± 1,46	339 ± 42	<15,5	<18,9
	4.	**2007/1943**	5,52 ± 1,73	269 ± 40	<11,4	<20,1

Table 274 Volume activity in surface waters, 2007

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Kalná n/Hronom	**1.**	**2008/0313**	<5,91	115 ± 83	<11,7	<21,1
/Hron/	**2.**	**2008/0827**	<6,01	82,7 ± 28,6	<13,6	<19,6
	3.	**2008/1268**	<5,91	92,8 ± 33,3	<13,7	<20,9
	4.	**2008/1845**	<6,16	137 ± 36	20,8 ± 17,8	<22,1
Mochovce	**1.**	**2008/0153**	3,03 ± 2,44	390 ± 92	<12,4	<20,8
/Telinský potok/	**2.**	**2008/0830**	<5,86	250 ± 45	<13,8	<21,0
	3.	**2008/1224**	<6,08	357 ± 56	<15,8	<20,5
	4.	**2008/1857**	<5,82	323 ± 51	<13,5	<21,1
Tlmače	**1.**	**2008/0316**	<5,92	71,8 ± 80,9	<15,7	<19,6
/Hron/	**2.**	**2008/0833**	<5,76	90,4 ± 31,3	<14,0	<20,5
	3.	**2008/1271**	<5,98	106 ± 33	<13,8	<21,5
	4.	**2008/1848**	<6,15	131 ± 35	<18,9	<22,6
V. Kozmálovce	**1.**	**2008/0319**	3,84 ± 3,11	106 ± 81	<11,9	<20,9
/Hron-Hať/	**2.**	**2008/0836**	<5,85	112 ± 31	<16,6	<20,7
	3.	**2008/1274**	<5,88	111 ± 51	<13,8	<21,7
	4.	**2008/1851**	<6,31	133 ± 37	30,6 ± 16,2	<23,0
V. Kozmálovce	**1.**	**2008/0322**	<5,47	66,4 ± 75,9	25,4 ± 11,6	<19,6
/Hron-pod výpustným otvorom/	**2.**	**2008/0839**	<6,00	135 ± 35	30,1 ± 13,6	<21,0
	3.	**2008/1277**	<5,90	205 ± 42	<14,3	<19,6
	4.	**2008/1854**	<6,15	310 ± 54	<14,7	<22,0

Table 275 Volume activity in surface waters, 2008

OBJEMOVÁ AKTIVITA ^{90}Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Levice /Podlužianka/	2005/168	7 ± 1	2005/736	13 ± 2	2005/1533	11 ± 1	2005/1958	6 ± 1
V.Kozmálovce /ČS-Perec/	2005/171	10 ± 1	2005/740	7 ± 1	2005/1536	12 ± 1	2005/1961	9 ± 1
Kalná n/Hronom /Hron/	2005/149	9 ± 1	2005/890	13 ± 2	2005/1360	11 ± 1	2005/2009	12 ± 2
Mochovce /Telinský potok/	2005/137	18 ± 2	2005/744	13 ± 2	2005/1363	16 ± 2	2005/2012	19 ± 2
Nemčiňany /rybník/	2005/299	14 ± 2	2005/893	40 ± 3	2005/1539	12 ± 2	2005/1968	15 ± 2
Tlmače /Hron/	2005/284	8 ± 1	2005/896	12 ± 1	2005/1351	6 ± 1	2005/2015	23 ± 2
V.Kozmálovce /Hron -Hať/	2005/140	10 ± 1	2005/899	13 ± 2	2005/1354	16 ± 2	2005/2018	12 ± 2
V.Kozm ./Hron-výp. otvor/	2005/143	9 ± 1	2005/902	7 ± 1	2005/1357	18 ± 2	2005/2021	16 ± 2

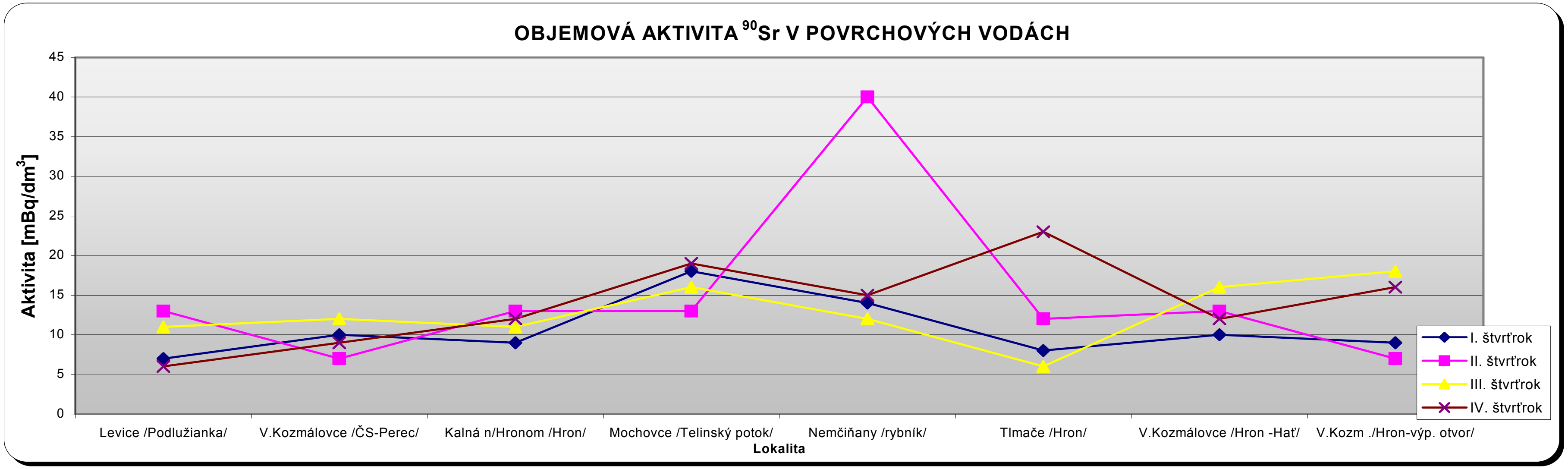

Table 276 ^{90}Sr volume activity in surface waters, 2005

OBJEMOVÁ AKTIVITA ^{90}Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Kalná n/Hronom /Hron/	2006/115	19 ± 2	2006/694	10 ± 1	2006/1253	13 ± 2	2006/1703	9 ± 1
Mochovce /Telinský potok/	2006/118	11 ± 2	2006/697	7 ± 1	2006/1288	9 ± 1	2006/1732	7 ± 1
Tlmače /Hron/	2006/312	4 ± 1	2006/700	10 ± 1	2006/1256	9 ± 1	2006/1706	15 ± 2
V.Kozmálovce /Hron -Hať/	2006/121	19 ± 2	2006/703	8 ± 1	2006/1259	9 ± 1	2006/1709	9 ± 1
V.Kozm ./Hron-výp. otvor/	2006/124	20 ± 2	2006/706	11 ± 2	2006/1262	9 ± 1	2006/1712	9 ± 1
Čifáre /rybník/	2006/407	14 ± 2	2006/668	17 ± 2	2006/1291	21 ± 2	2006/1691	15 ± 2

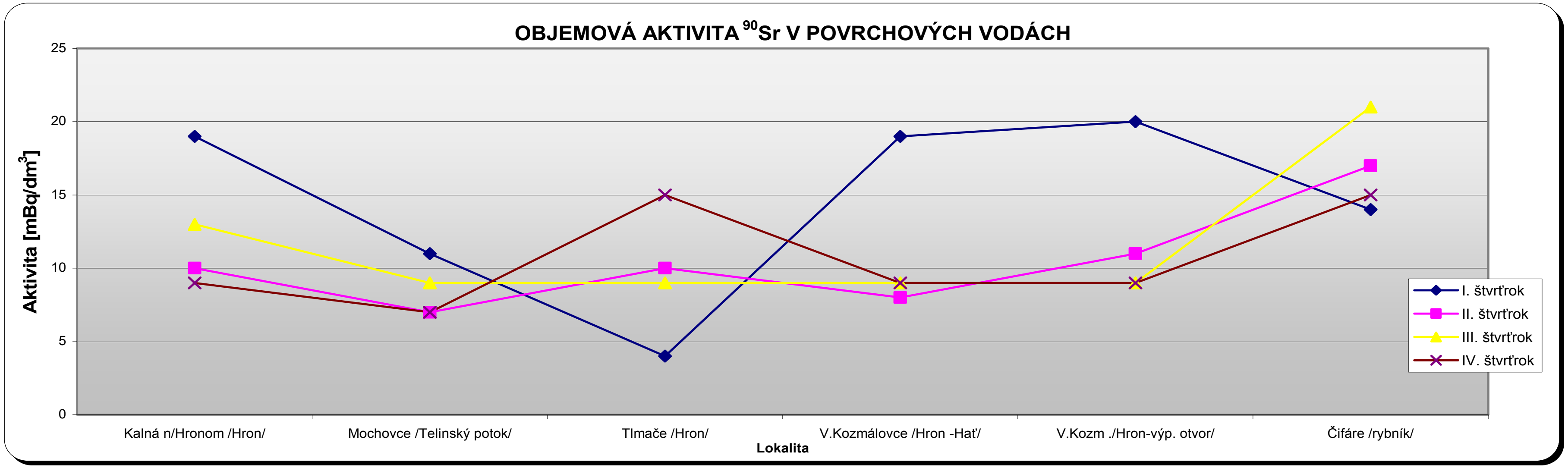

Table 277 ^{90}Sr volume activity in surface waters, 2006

OBJEMOVÁ AKTIVITA ^{90}Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Kalná n/Hronom /Hron/	2007/134	10 ± 1	2007/808	20 ± 2	2007/1134	15 ± 2	2007/1932	9 ± 1
Mochovce /Telinský potok/	2007/137	9 ± 1	2007/811	26 ± 2	2007/1116	12 ± 2	2007/1935	13 ± 2
Tlmače /Hron/	2007/140	9 ± 1	2007/814	12 ± 1	2007/1137	7 ± 1	2007/1938	9 ± 1
V.Kozmálovce /Hron -Hať/	2007/143	22 ± 2	2007/817	16 ± 2	2007/1140	9 ± 1	2007/1941	8 ± 1
V.Kozm ./Hron-výp. otvor/	2007/146	17 ± 2	2007/820	<6	2007/1143	7 ± 1	2007/1944	8 ± 1
Čifáre /rybník/	2007/149	10 ± 1	2007/722	11 ± 2	2007/1146	6 ± 1	2007/1923	12 ± 2

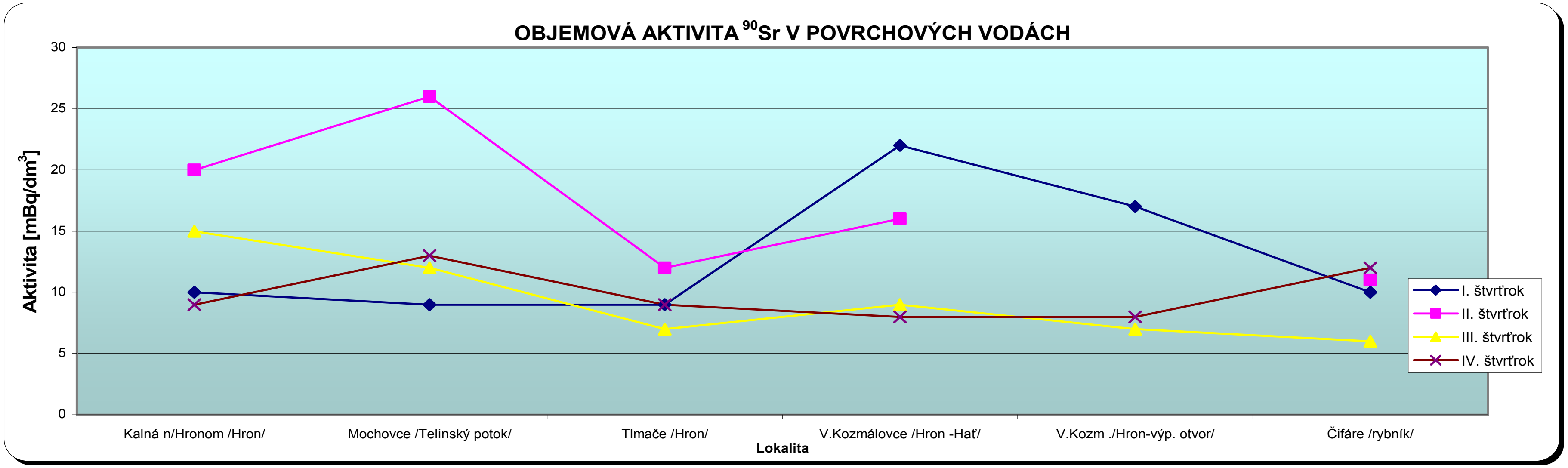

Table 278 ^{90}Sr volume activity in surface waters, 2007

OBJEMOVÁ AKTIVITA ^{90}Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm³]
Kalná n/Hronom /Hron/	2008/314	12 ± 2	2008/828	10 ± 2	2008/1269	7 ± 2	2008/1846	<6
Mochovce /Telinský potok/	2008/154	<6	2008/831	11 ± 2	2008/1225	11 ± 2	2008/1858	14 ± 3
Tlmače /Hron/	2008/317	13 ± 3	2008/834	11 ± 2	2008/1272	12 ± 2	2008/1849	9 ± 2
V.Kozmálovce /Hron -Hať/	2008/320	12 ± 2	2008/837	10 ± 2	2008/1275	8 ± 2	2008/1852	15 ± 3
V.Kozm ./Hron-výp. otvor/	2008/323	13 ± 3	2008/840	<6	2008/1278	10 ± 2	2008/1855	9 ± 2
Čifáre /rybník/	2008/157	11 ± 2	2008/878	14 ± 3	2008/1228	8 ± 2	2008/1861	14 ± 3

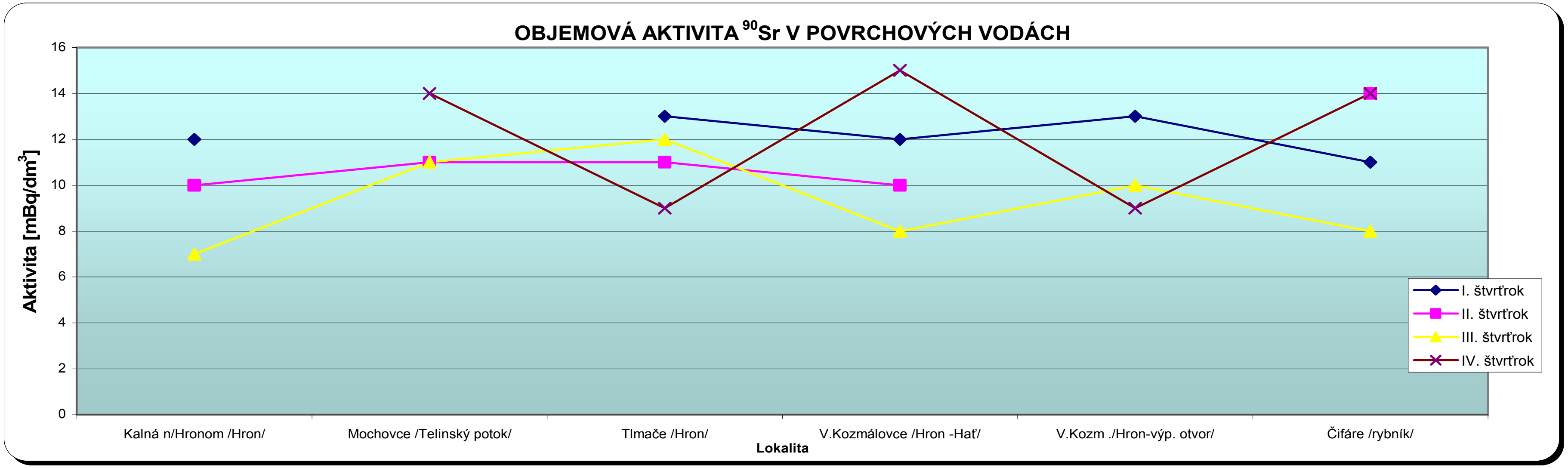

Table 279 ^{90}Sr volume activity in surface waters, 2008

OBJEMOVÁ AKTIVITA ^{3}H V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
Levice /Podlužianka/	2005/169	2,9 ± 0,4	2005/737	1,0 ± 0,1	2005/1534	2,1 ± 0,3	2005/1959	1,0 ± 0,1
V.Kozmálovce /ČS-Perec/	2005/172	2,7 ± 0,4	2005/741	1,0 ± 0,1	2005/1537	1,0 ± 0,1	2005/1962	1,0 ± 0,1
Kalná n/Hronom /Hron/	2005/150	3,6 ± 0,5	2005/891	3,0 ± 0,4	2005/1361	1,0 ± 0,1	2005/2010	1,0 ± 0,1
Mochovce /Telinský potok/	2005/138	1,1 ± 0,1	2005/745	1,0 ± 0,1	2005/1364	1,0 ± 0,1	2005/2013	1,0 ± 0,1
Nemčiňany /rybník/	2005/300	1,0 ± 0,1	2005/894	2,0 ± 0,3	2005/1540	1,0 ± 0,1	2005/1969	1,0 ± 0,1
Tlmače /Hron/	2005/285	5,0 ± 0,7	2005/897	2,0 ± 0,3	2005/1352	1,0 ± 0,1	2005/2016	1,0 ± 0,1
V.Kozmálovce /Hron -Hať/	2005/141	1,0 ± 0,1	2005/900	2,0 ± 0,3	2005/1355	1,0 ± 0,1	2005/2019	1,0 ± 0,1
V.Kozm ./Hron-výp. otvor/	2005/144	1,0 ± 0,1	2005/903	1,0 ± 0,1	2005/1358	1,0 ± 0,1	2005/2022	1,0 ± 0,1

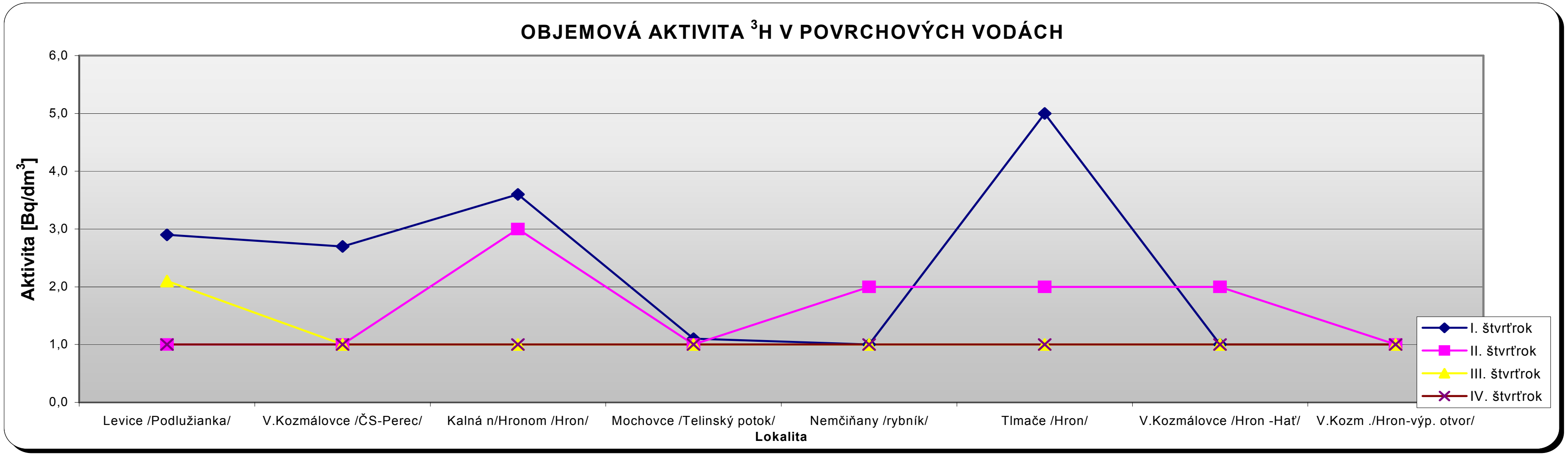

Table 280 ^{3}H volume activity in surface waters, 2005

OBJEMOVÁ AKTIVITA ^{3}H V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
Kalná n/Hronom /Hron/	2006/116	1,0 ± 0,1	2006/695	1,0 ± 0,1	2006/1254	1,0 ± 0,1	2006/1704	5,7 ± 0,8
Mochovce /Telinský potok/	2006/119	1,0 ± 0,1	2006/698	3,1 ± 0,4	2006/1289	1,0 ± 0,1	2006/1733	2,8 ± 0,4
Tlmače /Hron/	2006/313	1,0 ± 0,1	2006/701	1,0 ± 0,1	2006/1257	1,0 ± 0,1	2006/1707	4,3 ± 0,6
V.Kozmálovce /Hron -Hať/	2006/122	1,0 ± 0,1	2006/704	1,0 ± 0,1	2006/1260	1,0 ± 0,1	2006/1710	2,0 ± 0,3
V.Kozm ./Hron-výp. otvor/	2006/125	1,5 ± 0,2	2006/707	1,0 ± 0,1	2006/1263	1,0 ± 0,1	2006/1713	1,4 ± 0,2
Čifáre /rybník/	2006/408	1,2 ± 0,2	2006/669	1,0 ± 0,1	2006/1292	1,0 ± 0,1	2006/1692	1,3 ± 0,2

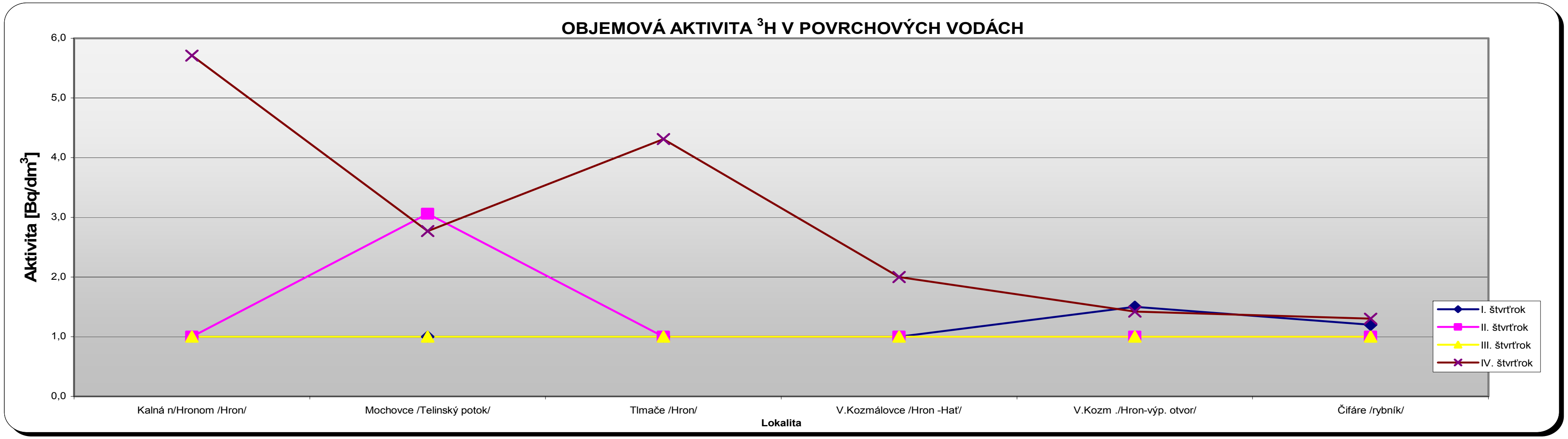

Table 281 ^{3}H volume activity in surface waters, 2006

OBJEMOVÁ AKTIVITA ^{3}H V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
Kalná n/Hronom /Hron/	2007/135	4,8 ± 0,7	2007/809	1,1 ± 0,2	2007/1135	6,3 ± 0,9	2007/1933	5,2 ± 0,7
Mochovce /Telinský potok/	2007/138	2,0 ± 0,3	2007/812	4,7 ± 0,6	2007/1117	<1	2007/1936	3,0 ± 0,4
Tlmače /Hron/	2007/141	4,8 ± 0,7	2007/815	5,5 ± 0,7	2007/1138	<1	2007/1939	1,6 ± 0,2
V.Kozmálovce /Hron -Hať/	2007/144	4,9 ± 0,7	2007/818	<1	2007/1141	<1	2007/1942	2,2 ± 0,3
V.Kozm ./Hron-výp. otvor/	2007/147	3,0 ± 0,4	2007/821	<1	2007/1144	<1	2007/1945	<1
Čifáre /rybník/	2007/150	1,1 ± 0,2	2007/723	2,4 ± 0,3	2007/1147	<1	2007/1924	<1

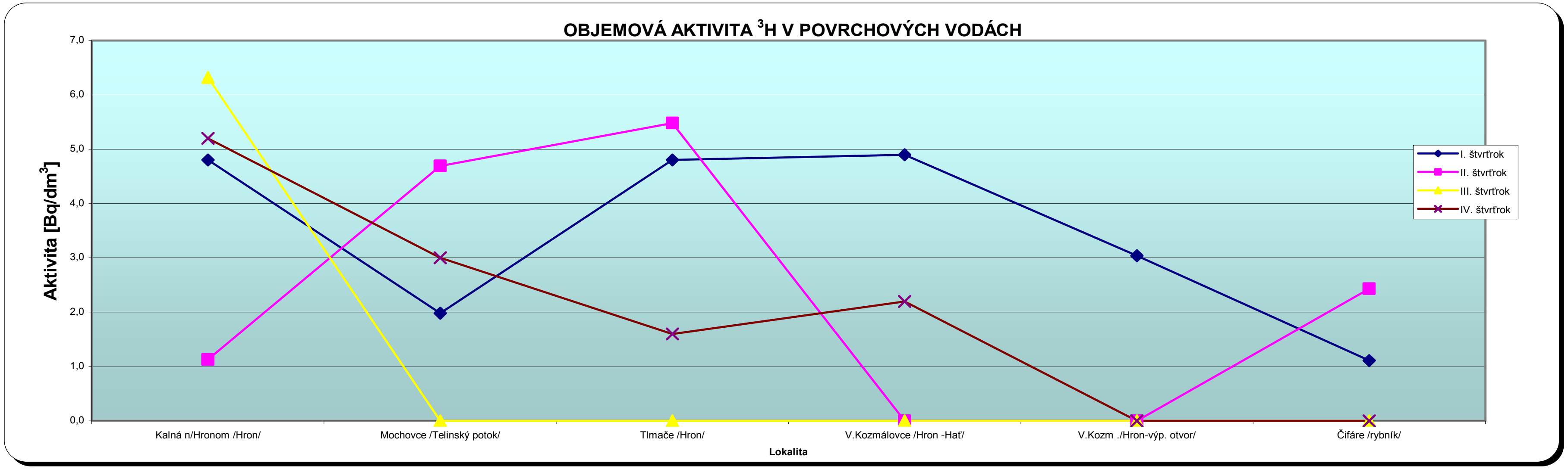

Table 282 ^{3}H volume activity in surface waters, 2007

OBJEMOVÁ AKTIVITA ^{3}H V POVRCHOVÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
Kalná n/Hronom /Hron/	2008/315	4,9 ± 0,5	2008/829	6,2 ± 0,7	2008/1270	8,1 ± 0,9	2008/1847	1,6 ± 0,2
Mochovce /Telinský potok/	2008/155	5,9 ± 0,6	2008/832	6,0 ± 0,7	2008/1226	1,1 ± 0,1	2008/1858	1,4 ± 0,2
Tlmače /Hron/	2008/318	4,0 ± 0,4	2008/835	4,9 ± 0,5	2008/1273	1,1 ± 0,1	2008/1850	3,5 ± 0,4
V.Kozmálovce /Hron -Hať/	2008/321	4,7 ± 0,5	2008/838	3,7 ± 0,4	2008/1276	1,3 ± 0,1	2008/1853	<1
V.Kozm ./Hron-výp. otvor/	2008/324	3,0 ± 0,3	2008/841	1,3 ± 0,1	2008/1279	1,5 ± 0,2	2008/1856	<1
Čifáre /rybník/	2008/158	3,0 ± 0,3	2008/879	3,0 ± 0,3	2008/1229	1,9 ± 0,2	2008/1862	<1

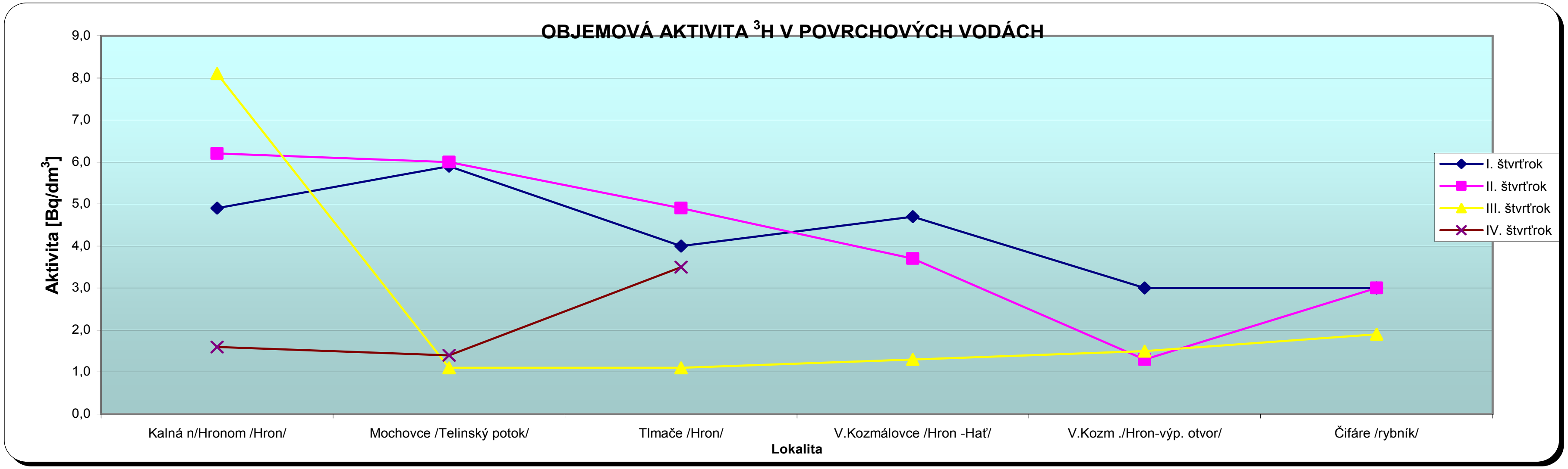

Table 283 ^{3}H volume activity in surface waters, 2008

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita alfa

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Tlmače Hron	2005/388	<4	2005/1018	<4	2005/1541	<4	2005/2150	<4
Kalná n/Hronom Hron	2005/389	4 ± 1	2005/1019	<4	2005/1542	<4	2005/2149	<4

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita beta

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Tlmače Hron	2005/388	66 ± 16	2005/1018	37 ± 9	2005/1541	61 ± 15	2005/2150	86 ± 21
Kalná n/Hronom Hron	2005/389	58 ± 14	2005/1019	45 ± 11	2005/1542	63 ± 15	2005/2149	82 ± 20

Table 284 Gross alpha and beta volume activities in surface waters, 2005

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita alfa

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Tlmače Hron	2006/404	<4	2006/926	<4	2006/1498	<4	2006/2050	5 ± 1
Kalná n/Hronom Hron	2006/405	<4	2006/925	<4	2006/1497	<4	2006/2049	<4

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita beta

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Tlmače Hron	2006/404	67 ± 18	2006/926	41 ± 11	2006/1498	67 ± 17	2006/2050	95 ± 20
Kalná n/Hronom Hron	2006/405	58 ± 16	2006/925	40 ± 11	2006/1497	67 ± 17	2006/2049	111 ± 24

Table 285 Gross alpha and beta volume activities in surface waters, 2006

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita alfa

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm³]
Tlmače Hron	2007/420	<4	2007/903	<4	2007/1434	<4	2007/1977	<4
Kalná n/Hronom Hron	2007/421	<4	2007/902	4 ± 1	2007/1433	<4	2007/1976	5 ± 1

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita beta

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm³]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm³]
Tlmače Hron	2007/420	62 ± 13	2007/903	52 ± 14	2007/1434	71 ± 18	2007/1977	74 ± 17
Kalná n/Hronom Hron	2007/421	55 ± 12	2007/902	54 ± 13	2007/1433	74 ± 18	2007/1976	68 ± 16

Table 286. Gross alpha and beta volume activities in surface waters,2007

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita alfa

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Tlmače Hron	2008/426	<50	2008/977	<50	2008/1530	<50	2008/2090	<50
Kalná n/Hronom Hron	2008/425	<50	2008/976	<50	2008/1529	<50	2008/2089	<50

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
celková aktivita beta

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
Tlmače Hron	2008/426	55 ± 4	2008/977	45 ± 3	2008/1530	70 ± 5	2008/2090	66 ± 5
Kalná n/Hronom Hron	2008/425	61 ± 5	2008/976	42 ± 3	2008/1529	71 ± 5	2008/2089	60 ± 5

Table 287. Gross alpha and beta volume activities in surface waters, 2008

OBJEMOVÁ AKTIVITA V PITNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{134}Cs [mBq/dm^3]	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Malé Kozmálovce*	1.	2005/0286	<5,56	<5,25	241 ± 24	<12,2	<19,0
	2.	2005/0709	<5,07	<4,97	230 ± 21	<11,1	<16,4
	3.	2005/1217	<5,38	<5,22	227 ± 22	<12,1	<18,4
	4.	2005/1792	<5,52	<5,27	266 ± 25	<14,4	<18,6
Starý Tekov*	1.	2005/0173	<5,56	<5,25	241 ± 24	<12,2	<19,0
	2.	2005/0712	<5,07	<4,97	230 ± 21	<11,1	<16,4
	3.	2005/1220	<5,38	<5,22	227 ± 22	<12,1	<18,4
	4.	2005/1795	<5,52	<5,27	266 ± 25	<14,4	<18,6
Nový Tekov*	1.	2005/0316	<5,56	<5,25	241 ± 24	<12,2	<19,0
	2.	2005/0731	<5,07	<4,97	230 ± 21	<11,1	<16,4
	3.	2005/1213	<5,38	<5,22	227 ± 22	<12,1	<18,4
	4.	2005/1798	<5,52	<5,27	266 ± 25	<14,4	<18,6
Kalná n/Hr.*	1.	2005/0364	<5,56	<5,25	241 ± 24	<12,2	<19,0
	2.	2005/0718	<5,07	<4,97	230 ± 21	<11,1	<16,4
	3.	2005/1230	<5,38	<5,22	227 ± 22	<12,1	<18,4
	4.	2005/1801	<5,52	<5,27	266 ± 25	<14,4	<18,6
Červený Hrádok*	1.	2005/0145	<5,56	<5,25	241 ± 24	<12,2	<19,0
	2.	2005/0715	<5,07	<4,97	230 ± 21	<11,1	<16,4
	3.	2005/1223	<5,38	<5,22	227 ± 22	<12,1	<18,4
	4.	2005/1828	<5,52	<5,27	266 ± 25	<14,4	<18,6

Poznámka: * - v tabuľke sú uvedené priemerné hodnoty aktivity všetkých piatych vzoriek, zmiešaných v rovnakom objemovom pomere

Table 288 Volume activity in drinking waters, 2005

OBJEMOVÁ AKTIVITA V PITNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Malé Kozmálovce*	**1.**	**2006/0159**	<4,81	339 ± 26	<11,3	<16,0
	2.	**2006/0672**	<3,98	307 ± 24	21,1 ± 3,9	<14,5
	3.	**2006/1269**	<3,95	208 ± 17	26,6 ± 3,9	<13,4
	4.	**2006/1696**	<3,81	361 ± 24	11,8 ± 3,3	<13,6
Starý Tekov*	**1.**	**2006/0162**	<4,81	339 ± 26	<11,3	<16,0
	2.	**2006/0675**	<3,98	307 ± 24	21,1 ± 3,9	<14,5
	3.	**2006/1265**	<3,95	208 ± 17	26,6 ± 3,9	<13,4
	4.	**2006/1699**	<3,81	361 ± 24	11,8 ± 3,3	<13,6
Nový Tekov*	**1.**	**2006/0314**	<4,81	339 ± 26	<11,3	<16,0
	2.	**2006/0656**	<3,98	307 ± 24	21,1 ± 3,9	<14,5
	3.	**2006/1184**	<3,95	208 ± 17	26,6 ± 3,9	<13,4
	4.	**2006/1595**	<3,81	361 ± 24	11,8 ± 3,3	<13,6
Kalná n/Hr.*	**1.**	**2006/0386**	<4,81	339 ± 26	<11,3	<16,0
	2.	**2006/0638**	<3,98	307 ± 24	21,1 ± 3,9	<14,5
	3.	**2006/1187**	<3,95	208 ± 17	26,6 ± 3,9	<13,4
	4.	**2006/1598**	<3,81	361 ± 24	11,8 ± 3,3	<13,6

Poznámka: * - v tabuľke sú uvedené priemerné hodnoty aktivity všetkých piatych vzoriek, zmiešaných v rovnakom objemovom pomere

Table 289 Volume activity in drinking waters, 2006

OBJEMOVÁ AKTIVITA V PITNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Malé Kozmálovce*	1.	**2007/0343**	<4,19	465 ± 37	<7,39	<13,5
	2.	**2007/0760**	2,18 ± 0,35	414 ± 35	18,9 ± 3,1	<13,9
	3.	**2007/1103**	1,56 ± 0,74	434 ± 35	<8,14	<12,9
	4.	**2007/1523**	<4,13	463 ± 36	<8,27	<14,7
Starý Tekov*	1.	**2007/0346**	<4,19	465 ± 37	<7,39	<13,5
	2.	**2007/0763**	2,18 ± 0,35	414 ± 35	18,9 ± 3,1	<13,9
	3.	**2007/1106**	1,56 ± 0,74	434 ± 35	<8,14	<12,9
	4.	**2007/1526**	<4,13	463 ± 36	<8,27	<14,7
Nový Tekov*	1.	**2007/0349**	<4,19	465 ± 37	<7,39	<13,5
	2.	**2007/0766**	2,18 ± 0,35	414 ± 35	18,9 ± 3,1	<13,9
	3.	**2007/1109**	1,56 ± 0,74	434 ± 35	<8,14	<12,9
	4.	**2007/1529**	<4,13	463 ± 36	<8,27	<14,7
Kalná n/Hr.*	1.	**2007/0352**	<4,19	465 ± 37	<7,39	<13,5
	2.	**2007/0769**	2,18 ± 0,35	414 ± 35	18,9 ± 3,1	<13,9
	3.	**2007/1112**	1,56 ± 0,74	434 ± 35	<8,14	<12,9
	4.	**2007/1532**	<4,13	463 ± 36	<8,27	<14,7

Poznámka: * - v tabuľke sú uvedené priemerné hodnoty aktivity všetkých piatych vzoriek, zmiešaných v rovnakom objemovom pomere

Table 290 Volume activity in drinking waters, 2007

OBJEMOVÁ AKTIVITA V PITNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Malé Kozmálovce	**1.**	**2008/0380**	4,57 ± 2,72	1100 ± 130	<12,7	<25,4
	2.	**2008/0813**	3,76 ± 2,83	870 ± 114	<14,2	<20,9
	3.	**2008/1252**	<6,33	1100 ± 100	<14,7	<20,4
	4.	**2008/1730**	<6,62	1170 ± 110	<15,6	<23,0
Starý Tekov	**1.**	**2008/0383**	3,06 ± 2,52	65,9 ± 80,4	<11,6	<19,7
	2.	**2008/0816**	4,83 ± 2,83	<88,4	<12,1	<19,7
	3.	**2008/1255**	<6,19	87,2 ± 29,7	27,4 ± 14,0	<21,1
	4.	**2008/1733**	<6,27	107 ± 35	<18,8	<21,2
Nový Tekov	**1.**	**2008/0386**	3,63 ± 2,67	354 ± 92	<12,7	<21,2
	2.	**2008/0820**	3,31 ± 2,82	265 ± 88	<11,9	<20,2
	3.	**2008/1258**	<6,34	378 ± 58	29,3 ± 14,0	<21,6
	4.	**2008/1769**	<6,09	312 ± 54	<14,1	<21,8
Kalná n/Hr.	**1.**	**2008/0389**	<5,91	<86,3	<11,8	<20,7
	2.	**2008/0823**	3,36 ± 2,73	<83,4	<14,1	<20,7
	3.	**2008/1261**	<6,08	83,3 ± 30,2	<13,7	<21,0
	4.	**2008/1930**	<6,28	101 ± 32	<15,4	<23,3

Table 291 Volume activity in drinking waters, 2008

OBJEMOVÁ AKTIVITA ^{90}Sr V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
M.Kozmálovce č.d. 116	2005/287	8 ± 1	2005/710	7 ± 1	2005/1218	19 ± 2	2005/1793	6 ± 1
Starý Tekov	2005/174	7 ± 1	2005/713	10 ± 1	2005/1221	14 ± 2	2005/1796	11 ± 1
Nový Tekov č.d. 298	2005/317	10 ± 1	2005/732	7 ± 1	2005/1214	12 ± 2	2005/1799	13 ± 2
Kalná n/Hronom	2005/365	6 ± 1	2005/719	7 ± 1	2005/1231	13 ± 2	2005/1802	8 ± 1
Červený Hrádok	2005/146	8 ± 1	2005/716	8 ± 1	2005/1224	11 ± 2	2005/1829	6 ± 1

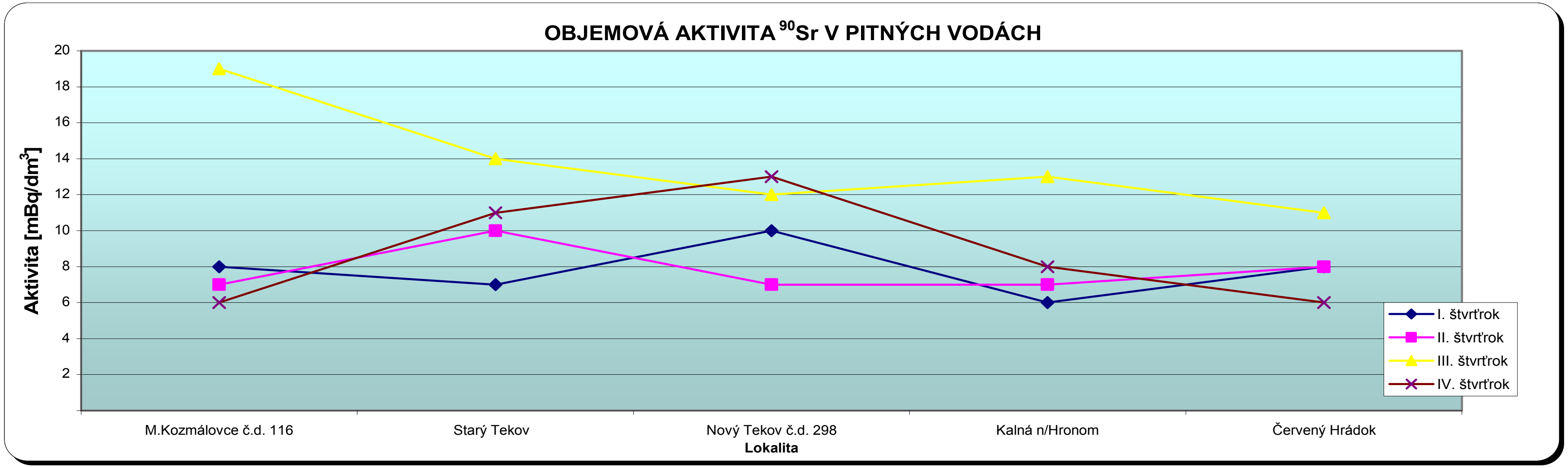

Table 292 ^{90}Sr volume activity in drinking waters, 2005

OBJEMOVÁ AKTIVITA ^{90}Sr V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
M.Kozmálovce	2006/160	6 ± 1	2006/673	6 ± 1	2006/1269	16 ± 2	2006/1697	15 ± 2
Starý Tekov	2006/163	10 ± 1	2006/676	6 ± 1	2006/1265	10 ± 1	2006/1700	9 ± 1
Nový Tekov	2006/315	6 ± 1	2006/657	9 ± 1	2006/1184	10 ± 1	2006/1596	18 ± 2
Kalná n/Hronom	2006/387	11 ± 1	2006/639	8 ± 1	2006/1187	7 ± 1	2006/1599	12 ± 1

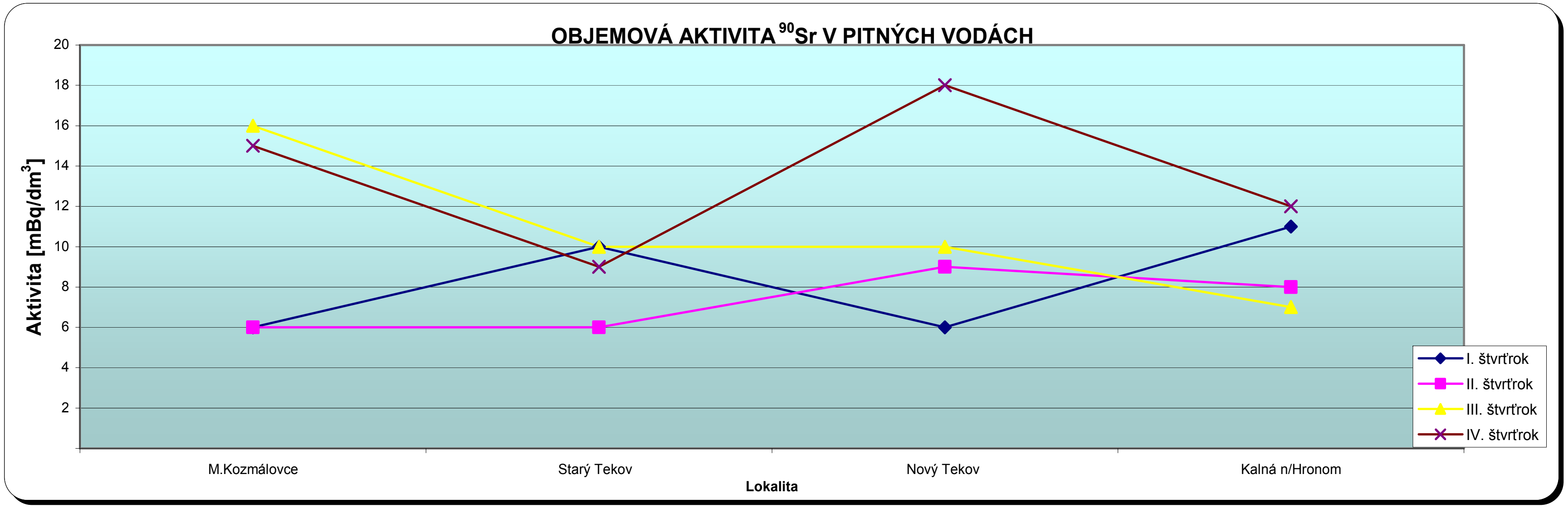

Table 293 ^{90}Sr volume activity in drinking waters, 2006

OBJEMOVÁ AKTIVITA ^{90}Sr V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
M.Kozmálovce	2007/343	10 ± 1	2007/761	<6	2007/1104	7 ± 1	2007/1524	10 ± 1
Starý Tekov	2007/346	8 ± 1	2007/764	7 ± 1	2007/1107	6 ± 1	2007/1527	9 ± 1
Nový Tekov	2007/349	<6	2007/767	<6	2007/1110	6 ± 1	2007/1530	<6
Kalná n/Hronom	2007/352	<6	2007/770	<6	2007/1113	8 ± 1	2007/1533	9 ± 1

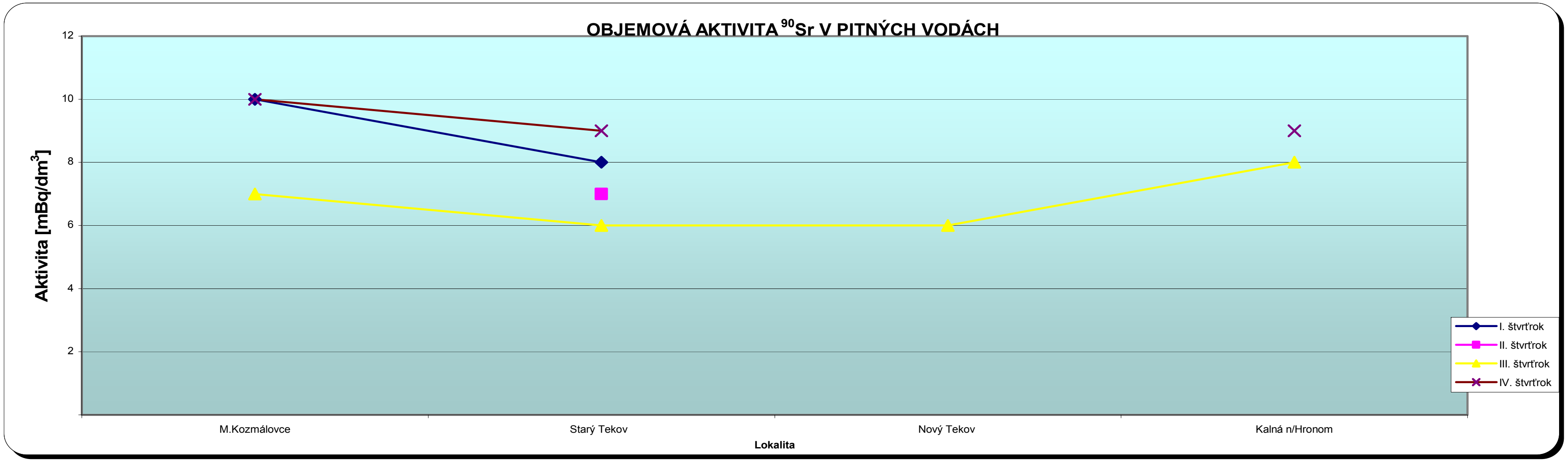

Table 294 ^{90}Sr volume activity in drinking waters, 2007

OBJEMOVÁ AKTIVITA ^{90}Sr V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [mBq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [mBq/dm^3]
M.Kozmálovce	2008/381	10 ± 2	2008/814	<6	2008/1253	7 ± 2	2008/1731	10 ± 2
Starý Tekov	2008/384	13 ± 3	2008/817	10 ± 2	2008/1256	6 ± 1	2008/1734	13 ± 3
Nový Tekov	2008/387	11 ± 2	2008/821	7 ± 2	2008/1259	<6	2008/1770	9 ± 2
Kalná n/Hronom	2008/390	13 ± 2	2008/824	<6	2008/1262	7 ± 2	2008/1931	10 ± 2

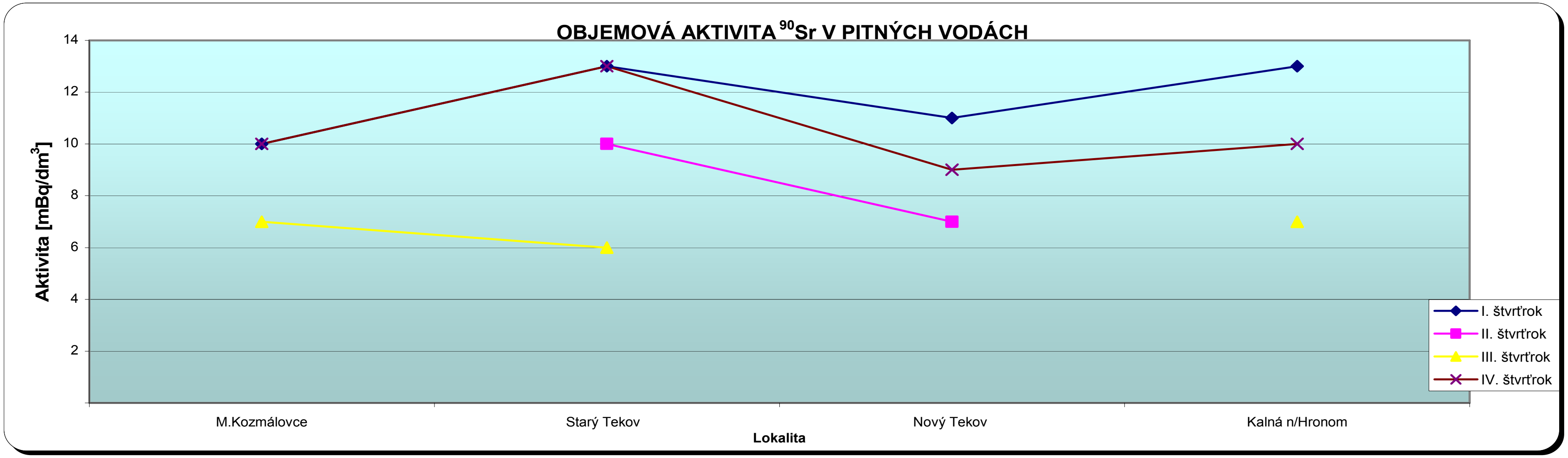

Table 295 ^{90}Sr volume activity in drinking waters, 2008

OBJEMOVÁ AKTIVITA ^{3}H V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
M.Kozmálovce č.d. 116	2005/288	1,0 ± 0,1	2005/711	1,0 ± 0,1	2005/1219	1,0 ± 0,1	2005/1794	1,0 ± 0,1
Starý Tekov	2005/175	1,0 ± 0,1	2005/714	1,0 ± 0,1	2005/1222	1,0 ± 0,1	2005/1797	1,0 ± 0,1
Nový Tekov č.d. 298	2005/318	4,2 ± 0,6	2005/733	1,0 ± 0,1	2005/1215	1,0 ± 0,1	2005/1800	1,0 ± 0,1
Kalná n/Hronom	2005/366	5,7 ± 0,8	2005/720	1,0 ± 0,1	2005/1232	1,0 ± 0,1	2005/1803	2,5 ± 0,3
Červený Hrádok	2005/147	1,0 ± 0,1	2005/717	1,0 ± 0,1	2005/1225	1,0 ± 0,1	2005/1830	1,0 ± 0,1

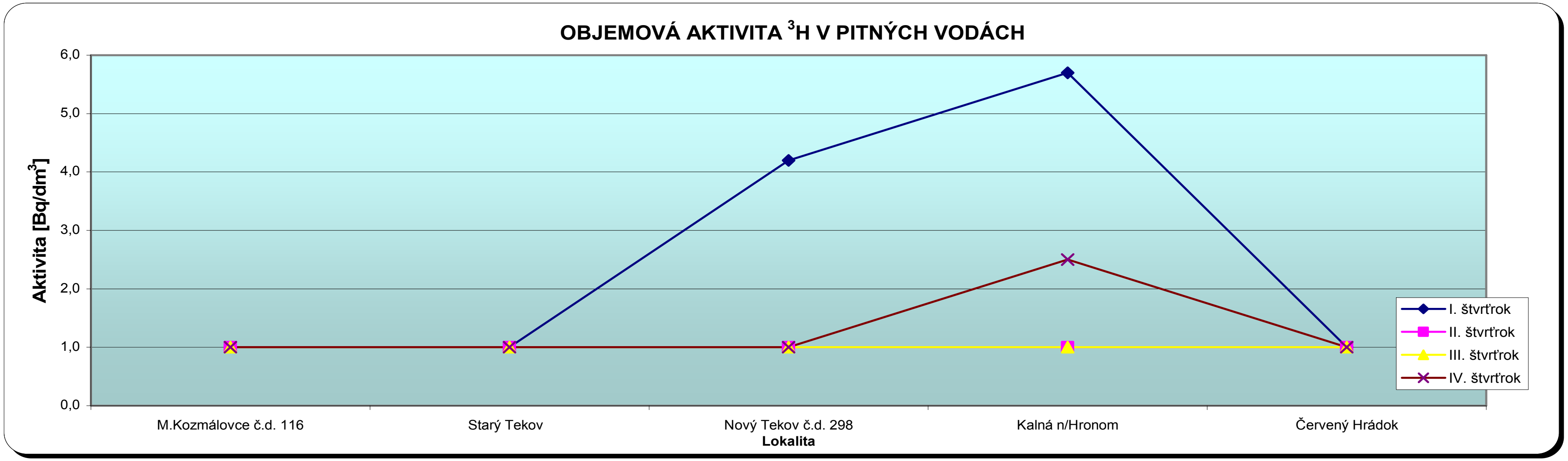

Table 296 ^{3}H volume activity in drinking waters, 2005

OBJEMOVÁ AKTIVITA ^{3}H V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
M.Kozmálovce	2006/161	1,0 ± 0,1	2006/674	2,2 ± 0,3	2006/1270	1,0 ± 0,1	2006/1698	4,1 ± 0,6
Starý Tekov	2006/164	1,0 ± 0,1	2006/677	1,0 ± 0,1	2006/1266	1,0 ± 0,1	2006/1701	3,9 ± 0,5
Nový Tekov	2006/316	1,0 ± 0,1	2006/658	2,5 ± 0,3	2006/1185	1,0 ± 0,1	2006/1597	4,6 ± 0,6
Kalná n/Hronom	2006/388	1,0 ± 0,1	2006/640	1,0 ± 0,1	2006/1188	1,0 ± 0,1	2006/1600	5,9 ± 0,8

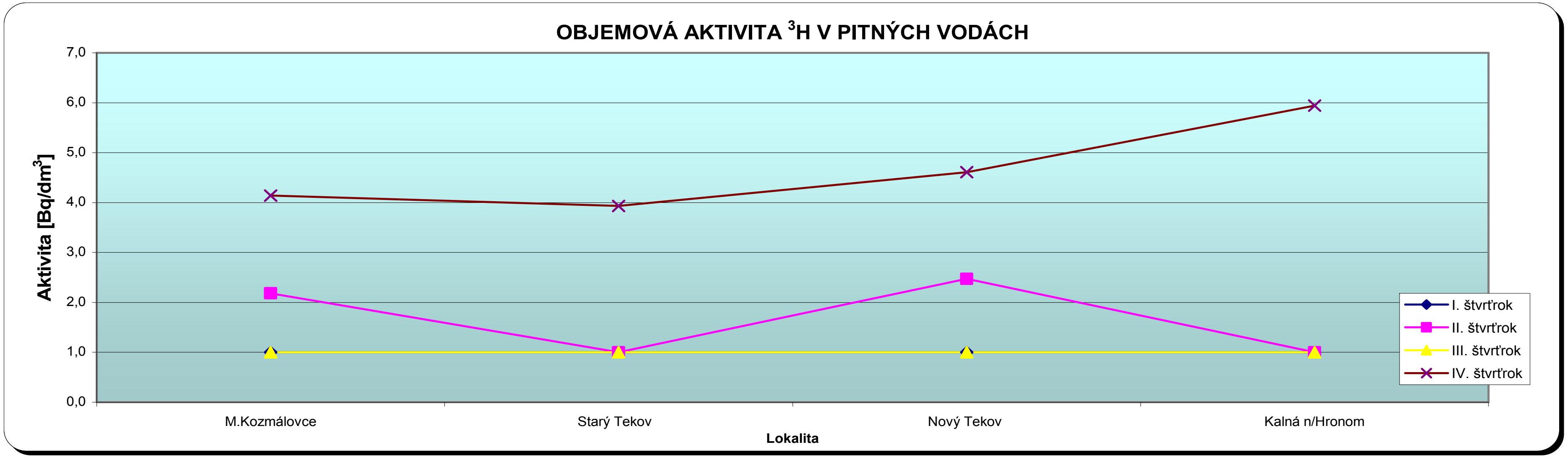

Table 297 ^{3}H volume activity in drinking waters, 2006

OBJEMOVÁ AKTIVITA ^{3}H V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
M.Kozmálovce	2007/344	1,2 ± 0,2	2007/762	4,4 ± 0,6	2007/1105	3,5 ± 0,5	2007/1525	1,1 ± 0,1
Starý Tekov	2007/347	5,6 ± 0,8	2007/765	4,6 ± 0,6	2007/1108	<1	2007/1528	<1
Nový Tekov	2007/350	2,1 ± 0,3	2007/768	3,6 ± 0,5	2007/1111	<1	2007/1531	1,7 ± 0,2
Kalná n/Hronom	2007/353	3,5 ± 0,5	2007/771	3,8 ± 0,5	2007/1114	<1	2007/1534	<1

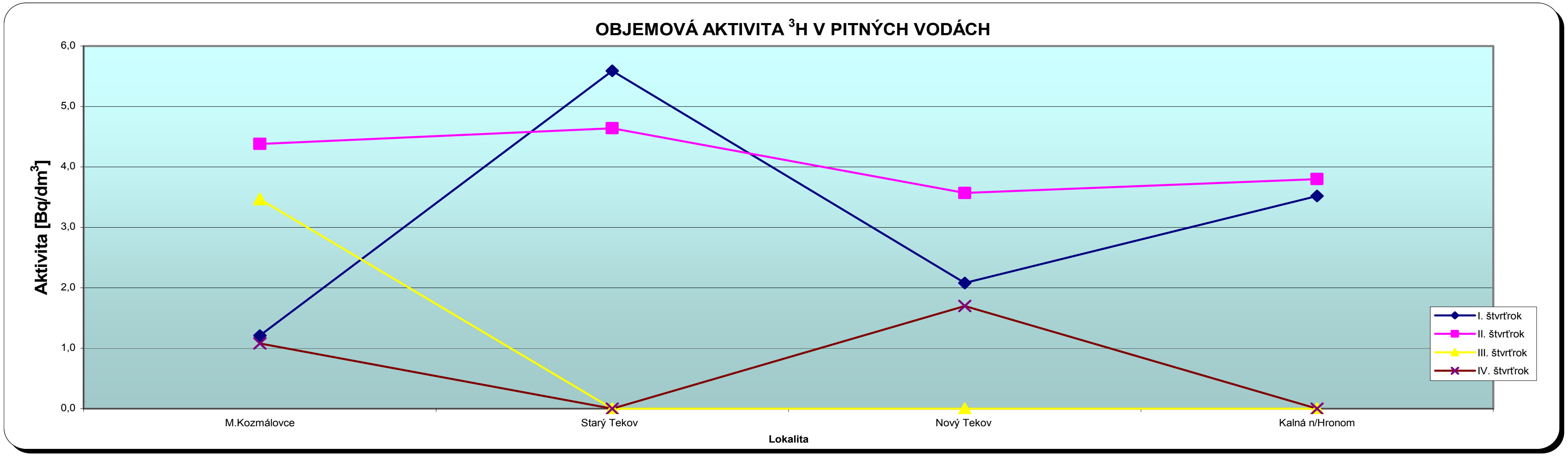

Table 298 ^{90}Sr volume activity in drinking waters, 2007

OBJEMOVÁ AKTIVITA ^{3}H V PITNÝCH VODÁCH

Lokalita	Evidenčné číslo protokolu	I. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	II. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	III. štvrťrok [Bq/dm^3]	Evidenčné číslo protokolu	IV. štvrťrok [Bq/dm^3]
M.Kozmálovce	2008/382	5,5 ± 0,6	2008/815	6,0 ± 0,7	2008/1254	4,5 ± 0,5	2008/1732	<1
Starý Tekov	2008/385	3,5 ± 0,4	2008/819	6,8 ± 0,7	2008/1257	2,2 ± 0,2	2008/1735	<1
Nový Tekov	2008/388	3,6 ± 0,4	2008/822	6,0 ± 0,7	2008/1260	1,8 ± 0,2	2008/1771	<1
Kalná n/Hronom	2008/391	3,1 ± 0,3	2008/825	6,2 ± 0,7	2008/1263	1,8 ± 0,2	2008/1932	<1

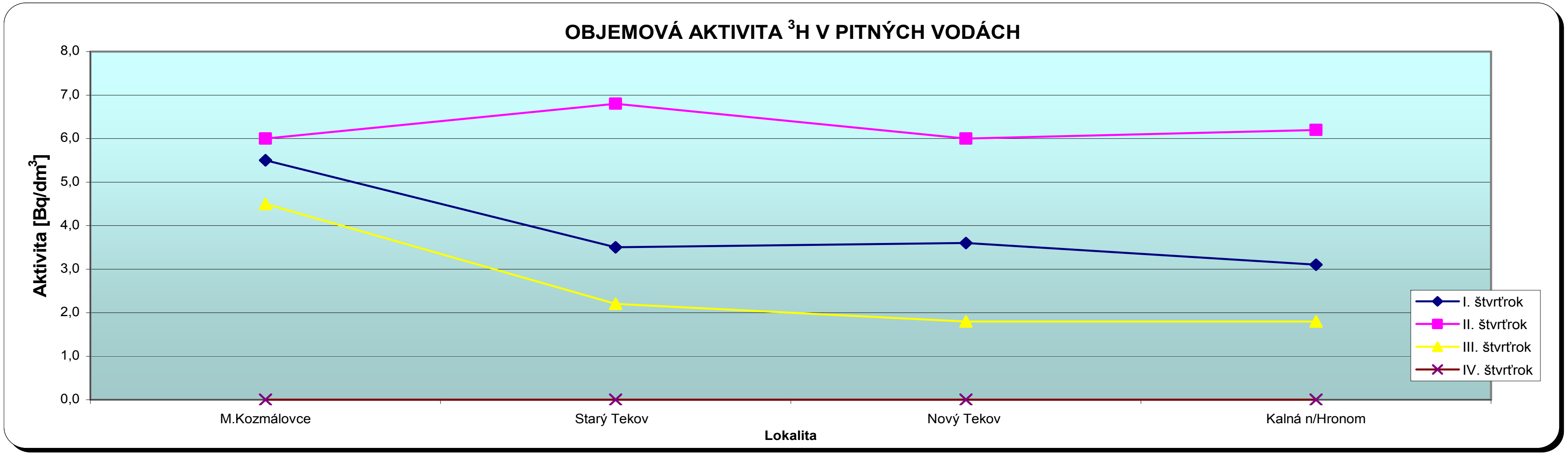

Table 299 ^{90}Sr volume activity in drinking waters, 2008

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{134}Cs [mBq/dm³]	^{137}Cs [mBq/dm³]	^{40}K [mBq/dm³]	U - rad [mBq/dm³]	Th - rad [mBq/dm³]
HG - 3*	1.	2005/0649	<5,74	<5,92	133 ± 17	<13,0	<19,5
	2.	2005/1758	<5,80	6,11 ± 1,48	130 ± 18	<15,4	<17,6
HG - 5*	1.	2005/0652	<5,74	<5,92	133 ± 17	<13,0	<19,5
	2.	2005/1761	<5,80	6,11 ± 1,48	130 ± 18	<15,4	<17,6
HG - 7*	1.	2005/0655	<5,74	<5,92	133 ± 17	<13,0	<19,5
	2.	2005/1764	<5,80	6,11 ± 1,48	130 ± 18	<15,4	<17,6
HG - 8*	1.	2005/0658	<5,74	<5,92	133 ± 17	<13,0	<19,5
	2.	2005/1767**					

Poznámka: * v tabuľke sú uvedené priemerné hodnoty aktivity všetkých štyroch vzoriek, zmiešaných v rovnakom objemovom pomere
** v 2. polroku nebola odobratá vzorka pre nedostupnosť k vrtu HG - 8

OBJEMOVÁ AKTIVITA ^{90}Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm³]	Evid. číslo protokolu	II. polrok [mBq/dm³]
HG - 3	2005/650	7 ± 1	2005/1759	5 ± 1
HG - 5	2005/653	11 ± 1	2005/1762	10 ± 1
HG - 7	2005/656	7 ± 1	2005/1765	9 ± 1
HG - 8	2005/659	* *	*	* *

OBJEMOVÁ AKTIVITA ^{3}H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm³]	Evid. číslo protokolu	II. polrok [Bq/dm³]
HG - 3	2005/651	1,2 ± 0,2	2005/1760	1,0 ± 0,1
HG - 5	2005/654	1,0 ± 0,1	2005/1763	1,0 ± 0,1
HG - 7	2005/657	1,5 ± 0,2	2005/1766	1,0 ± 0,1
HG - 8	2005/660	* *	*	* *

Poznámka: * - vzorka nebola odobratá z objektívnych príčin

Table 300 Volume activities in underground waters, 2005

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
HG - 3*	1.	2006/0629	<3,86	131 ± 15	16,2 ± 3,4	<14,1
	2.	2006/1471	<4,21	153 ± 15	41,9 ± 4,5	<14,8
HG - 5*	1.	2006/0632	<3,86	131 ± 15	16,2 ± 3,4	<14,1
	2.	2006/1474	<4,21	153 ± 15	41,9 ± 4,5	<14,8
HG - 7*	1.	2006/0635	<3,86	131 ± 15	16,2 ± 3,4	<14,1
	2.	2006/1477	<4,21	153 ± 15	41,9 ± 4,5	<14,8

Poznámka: * v tabuľke sú uvedené priemerné hodnoty aktivity všetkých troch vzoriek, zmiešaných v rovnakom objemovom pomere

OBJEMOVÁ AKTIVITA ^{90}Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm^3]	Evid. číslo protokolu	II. polrok [mBq/dm^3]
HG - 3	2006/630	<4	2006/1472	9 ± 1
HG - 5	2006/633	8 ± 1	2006/1475	6 ± 1
HG - 7	2006/636	5 ± 1	2006/1478	<4

OBJEMOVÁ AKTIVITA ^{3} H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm^3]	Evid. číslo protokolu	II. polrok [Bq/dm^3]
HG - 3	2006/631	1,0 ± 0,1	2006/1473	3,7 ± 0,5
HG - 5	2006/634	1,0 ± 0,1	2006/1476	2,4 ± 0,3
HG - 7	2006/637	1,0 ± 0,1	2006/1479	2,0 ± 0,3

Table 301 Volume activities in underground waters, 2006

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH

(gamaspektrometria)

Lokalita\Štvrťrok (Rádionuklid)		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
HG - 3*	1.	2007/0610	3,11 ± 0,55	145 ± 15	24,5 ± 3,9	11,7 ± 4,8
	2.	2007/1641	6,94 ± 1,28	145 ± 24	49,1 ± 5,5	22,7 ± 7,3
HG - 5*	1.	2007/0613	3,11 ± 0,55	145 ± 15	24,5 ± 3,9	11,7 ± 4,8
	2.	2007/1644	6,94 ± 1,28	145 ± 24	49,1 ± 5,5	22,7 ± 7,3
HG - 7*	1.	2007/0616	3,11 ± 0,55	145 ± 15	24,5 ± 3,9	11,7 ± 4,8
	2.	2007/1647	6,94 ± 1,28	145 ± 24	49,1 ± 5,5	22,7 ± 7,3

Poznámka: * v tabuľke sú uvedené priemerné hodnoty aktivity všetkých troch vzoriek, zmiešaných v rovnakom objemovom pomere

OBJEMOVÁ AKTIVITA ^{90}Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm^3]	Evid. číslo protokolu	II. polrok [mBq/dm^3]
HG - 3	2007/611	<6	2007/1642	<6
HG - 5	2007/614	<6	2007/1645	10 ± 1
HG - 7	2007/617	<6	2007/1648	11 ± 1

OBJEMOVÁ AKTIVITA ^3H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm^3]	Evid. číslo protokolu	II. polrok [Bq/dm^3]
HG - 3	2007/612	<1	2007/1643	1,4 ± 0,2
HG - 5	2007/615	2,4 ± 0,3	2007/1646	<1
HG - 7	2007/618	1,6 ± 0,2	2007/1649	<1

Table 302 Volume activities in underground waters, 2007

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
HG - 3	1.	2008/0766	12,1 ± 3,5	145 ± 85	37,7 ± 14,4	65,6 ± 27,6
	2.	2008/1629	13,2 ± 3,2	168 ± 45	<15,5	<18,5
HG - 5	1.	2008/0769	9,32 ± 4,26	72,9 ± 80,9	61,8 ± 14,7	50,1 ± 14,9
	2.	2008/1632	<6,48	128 ± 35	33,1 ± 16,1	30,2 ± 20,4
HG - 7	1.	2008/0772	5,34 ± 3,76	<89,7	<12,4	<21,3
	2.	2008/1635	<6,25	127 ± 36	<14,2	<18,5

OBJEMOVÁ AKTIVITA ^{90}Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm^3]	Evid. číslo protokolu	II. polrok [mBq/dm^3]
HG - 3	2008/767	<6	2008/1630	<6
HG - 5	2008/770	7 ± 1	2008/1633	7 ± 2
HG - 7	2008/773	7 ± 2	2008/1636	<6

OBJEMOVÁ AKTIVITA ^{3}H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm^3]	Evid. číslo protokolu	II. polrok [Bq/dm^3]
HG - 3	2008/768	2,8 ± 0,3	2008/1631	<1
HG - 5	2008/771	2,1 ± 0,2	2008/1634	<1
HG - 7	2008/774	1,6 ± 0,2	2008/1637	<1

Table 303 Volume activities in underground waters, 2008

OBJEMOVÁ AKTIVITA VO VRTOCH RADIAČNEJ KONTROLY
(lokalita: areál SE-EMO)

Rádionuklid / Lokalita\polrok		Evid. číslo protokolu	^{134}Cs [mBq/dm^3]	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
RK - 11*	1.	2005/0616	<5,78	<5,63	137 ± 17	<12,7	<19,1
	2.	2005/1740	<5,37	<5,34	109 ± 18	<13,9	<17,0
RK - 13*	1.	2005/0619	<5,78	<5,63	137 ± 17	<12,7	<19,1
	2.	2005/1743	<5,37	<5,34	109 ± 18	<13,9	<17,0
RK - 30*	1.	2005/0622	<5,78	<5,63	137 ± 17	<12,7	<19,1
	2.	2005/1746	<5,37	<5,34	109 ± 18	<13,9	<17,0
RK - 31*	1.	2005/0625	<5,78	<5,63	137 ± 17	<12,7	<19,1
	2.	2005/1749	<5,37	<5,34	109 ± 18	<13,9	<17,0
RK - 32*	1.	2004/0628	<5,78	<5,63	137 ± 17	<12,7	<19,1
	2.	2005/1752	<5,37	<5,34	109 ± 18	<13,9	<17,0
RK - 40*	1.	2005/0631	<5,78	<5,63	137 ± 17	<12,7	<19,1
	2.	2005/1755	<5,37	<5,34	109 ± 18	<13,9	<17,0

Poznámka: v tabuľke sú uvedené priemerné hodnoty aktivity všetkých vzoriek, zmiešaných v rovnakom objemovom pomere

OBJEMOVÁ AKTIVITA ^{90}Sr VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm^3]	Evid. číslo protokolu	II. polrok [mBq/dm^3]
RK - 11	2005/617	4 ± 1	2005/1741	9 ± 1
RK - 13	2005/620	9 ± 1	2005/1744	11 ± 2
RK - 30	2005/623	13 ± 2	2005/1747	7 ± 1
RK - 31	2005/626	6 ± 1	2005/1750	15 ± 2
RK - 32	2005/629	16 ± 2	2005/1753	6 ± 1
RK - 40	2005/632	11 ± 1	2005/1756	4 ± 1

OBJEMOVÁ AKTIVITA ^{3}H VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm^3]	Evid. číslo protokolu	II. polrok [Bq/dm^3]
RK - 11	2005/618	3,2 ± 0,4	2005/1742	1,0 ± 0,1
RK - 13	2005/621	1,7 ± 0,2	2005/1745	1,0 ± 0,1
RK - 30	2005/624	1,0 ± 0,1	2005/1748	1,0 ± 0,1
RK - 31	2005/627	1,0 ± 0,1	2005/1751	1,0 ± 0,1
RK - 32	2005/630	1,0 ± 0,1	2005/1754	1,0 ± 0,1
RK - 40	2005/633	1,0 ± 0,1	2005/1757	1,0 ± 0,1

Table 304 Volume activities in radiation monitoring bore holes, 2005

OBJEMOVÁ AKTIVITA VO VRTOCH RADIAČNEJ KONTROLY

(lokalita: areál SE-EMO)

Rádionuklid / Lokalita\polrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
RK - 11*	1.	2006/0606	<4,21	228 ± 20	21,3 ± 4,2	15,3 ± 4,9
	2.	2006/1453	<3,98	140 ± 16	32,5 ± 4,4	<13,1
RK - 13*	1.	2006/0609	<4,21	228 ± 20	21,3 ± 4,2	15,3 ± 4,9
	2.	2006/1456	<3,98	140 ± 16	32,5 ± 4,4	<13,1
RK - 30*	1.	2006/0612	<4,21	228 ± 20	21,3 ± 4,2	15,3 ± 4,9
	2.	2006/1459	<3,98	140 ± 16	32,5 ± 4,4	<13,1
RK - 31*	1.	2006/0615	<4,21	228 ± 20	21,3 ± 4,2	15,3 ± 4,9
	2.	2006/1462	<3,98	140 ± 16	32,5 ± 4,4	<13,1
RK - 32*	1.	2006/0618	<4,21	228 ± 20	21,3 ± 4,2	15,3 ± 4,9
	2.	2006/1465	<3,98	140 ± 16	32,5 ± 4,4	<13,1
RK - 40*	1.	2006/0621	<4,21	228 ± 20	21,3 ± 4,2	15,3 ± 4,9
	2.	2006/1468	<3,98	140 ± 16	32,5 ± 4,4	<13,1

Poznámka: v tabuľke sú uvedené priemerné hodnoty aktivity všetkých vzoriek, zmiešaných v rovnakom objemovom pomere

OBJEMOVÁ AKTIVITA ^{90}Sr VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm^3]	Evid. číslo protokolu	II. polrok [mBq/dm^3]
RK - 11	2006/607	9 ± 1	2006/1454	6 ± 1
RK - 13	2006/610	9 ± 1	2006/1457	6 ± 1
RK - 30	2006/613	9 ± 1	2006/1460	6 ± 1
RK - 31	2006/616	9 ± 1	2006/1463	6 ± 1
RK - 32	2006/619	9 ± 1	2006/1466	6 ± 1
RK - 40	2006/622	9 ± 1	2006/1469	6 ± 1

OBJEMOVÁ AKTIVITA ^{3}H VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm^3]	Evid. číslo protokolu	II. polrok [Bq/dm^3]
RK - 11	2006/608	2,5 ± 0,3	2006/1455	3,2 ± 0,4
RK - 13	2006/611	1,0 ± 0,1	2006/1458	2,5 ± 0,3
RK - 30	2006/614	1,0 ± 0,1	2006/1461	1,0 ± 0,1
RK - 31	2006/617	1,0 ± 0,1	2006/1464	1,0 ± 0,1
RK - 32	2006/620	1,0 ± 0,1	2006/1467	1,0 ± 0,1
RK - 40	2006/623	1,3 ± 0,2	2006/1470	3,8 ± 0,5

Table 305 Volume activities in radiation monitoring bore holes, 2006

OBJEMOVÁ AKTIVITA VO VRTOCH RADIAČNEJ KONTROLY
(lokalita: areál SE-EMO)

Rádionuklid / Lokalita\polrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
RK - 11*	1.	2007/0592	3,05 ± 0,42	114 ± 13	20,9 ± 3,6	11,6 ± 3,8
	2.	2007/1605	<4,06	157 ± 26	<9,76	<13,4
RK - 13*	1.	2007/0595	3,05 ± 0,42	114 ± 13	20,9 ± 3,6	11,6 ± 3,8
	2.	2007/1608	<4,06	157 ± 26	<9,76	<13,4
RK - 30*	1.	2007/0598	3,05 ± 0,42	114 ± 13	20,9 ± 3,6	11,6 ± 3,8
	2.	2007/1611	<4,06	157 ± 26	<9,76	<13,4
RK - 31*	1.	2007/0601	3,05 ± 0,42	114 ± 13	20,9 ± 3,6	11,6 ± 3,8
	2.	2007/1614	<4,06	157 ± 26	<9,76	<13,4
RK - 32*	1.	2007/0604	3,05 ± 0,42	114 ± 13	20,9 ± 3,6	11,6 ± 3,8
	2.	2007/1617	<4,06	157 ± 26	<9,76	<13,4
RK - 40*	1.	2007/0607	3,05 ± 0,42	114 ± 13	20,9 ± 3,6	11,6 ± 3,8
	2.	2007/1620	<4,06	157 ± 26	<9,76	<13,4

Poznámka: v tabuľke sú uvedené priemerné hodnoty aktivity všetkých vzoriek, zmiešaných v rovnakom objemovom pomere

OBJEMOVÁ AKTIVITA ^{90}Sr VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm^3]	Evid. číslo protokolu	II. polrok [mBq/dm^3]
RK - 11	2007/593	6 ± 1	2007/1606	15 ± 2
RK - 13	2007/596	6 ± 1	2007/1609	15 ± 2
RK - 30	2007/599	6 ± 1	2007/1612	15 ± 2
RK - 31	2007/602	6 ± 1	2007/1615	15 ± 2
RK - 32	2007/605	6 ± 1	2007/1618	15 ± 2
RK - 40	2007/608	6 ± 1	2007/1621	15 ± 2

OBJEMOVÁ AKTIVITA ^{3}H VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm^3]	Evid. číslo protokolu	II. polrok [Bq/dm^3]
RK - 11	2007/594	2,0 ± 0,3	2007/1607	3,4 ± 0,5
RK - 13	2007/597	2,1 ± 0,3	2007/1610	2,5 ± 0,3
RK - 30	2007/600	<1	2007/1613	<1
RK - 31	2007/603	1,0 ± 0,1	2007/1616	<1
RK - 32	2007/606	<1	2007/1619	1,0 ± 0,1
RK - 40	2007/609	2,2 ± 0,3	2007/1622	2,6 ± 0,4

Table 306. Volume activities in radiation monitoring bore holes, 2007

OBJEMOVÁ AKTIVITA VO VRTOCH RADIAČNEJ KONTROLY
(lokalita: areál SE-EMO)

Rádionuklid / Lokalita\polrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
RK - 11	1.	2008/0678	<5,86	<84,8	<14,2	<15,6
	2.	2008/1611	<6,20	142 ± 36	<14,4	<21,4
RK - 13	1.	2008/0681	<5,95	<86,5	33,9 ± 13,1	<18,8
	2.	2008/1614	<6,08	32,1 ± 24,7	<13,6	<19,9
RK - 30	1.	2008/0684	4,38 ± 3,00	101 ± 82	<14,1	<18,2
	2.	2008/1617	<5,88	317 ± 49	<13,8	<20,4
RK - 31	1.	2008/0687	2,66 ± 2,74	<89,7	<13,4	<21,2
	2.	2008/1620	<5,99	155 ± 36	<14,8	<22,3
RK - 32	1.	2008/0690	<5,86	<85,8	<11,7	<20,6
	2.	2008/1623	<6,60	127 ± 32	65,0 18,0	<19,7
RK - 40	1.	2008/0693	3,59 ± 2,26	<89,1	<15,3	<20,0
	2.	2008/1626	2,99 ± 2,39	101 ± 55	<14,7	<19,8

OBJEMOVÁ AKTIVITA ^{90}Sr VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [mBq/dm^3]	Evid. číslo protokolu	II. polrok [mBq/dm^3]
RK - 11	2008/679	11 ± 2	2008/1612	<6
RK - 13	2008/682	11 ± 2	2008/1615	<6
RK - 30	2008/685	11 ± 2	2008/1618	<6
RK - 31	2008/688	11 ± 2	2008/1621	<6
RK - 32	2008/691	11 ± 2	2008/1624	<6
RK - 40	2008/694	11 ± 2	2008/1627	<6

OBJEMOVÁ AKTIVITA ^{3}H VO VRTOCH RK

Lokalita	Evid. číslo protokolu	I. polrok [Bq/dm^3]	Evid. číslo protokolu	II. polrok [Bq/dm^3]
RK - 11	2008/680	5,0 ± 0,5	2008/1613	<1
RK - 13	2008/683	4,0 ± 0,4	2008/1616	<1
RK - 30	2008/686	1,1 ± 0,1	2008/1619	<1
RK - 31	2008/689	1,2 ± 0,1	2008/1622	<1
RK - 32	2008/692	1,2 ± 0,1	2008/1625	<1
RK - 40	2008/695	4,8 ± 0,5	2008/1628	<1

Table 307 Volume activities in radiation monitoring bore holes, 2008

OBJEMOVÁ AKTIVITA ^{90}Sr TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)

Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
2005/74	50 ± 4	*	* *	2005/1112	53 ± 5	2005/1791	56 ± 4
2005/282	68 ± 5	2005/870	25 ± 2	2005/1435	47 ± 4	2005/2026	58 ± 5
2005/423	64 ± 5	2005/1071	34 ± 3	2005/1544	86 ± 7	2005/2155	56 ± 5

Poznámka: * príslušné vzorky neboli dodané pre neskoré uzatvorenie zmluvy medzi SE a novým dodávateľom mlieka PD Kalná

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Čifáre)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{134}Cs [Bq/dm^3]	^{137}Cs [Bq/dm^3]	^{40}K [Bq/dm^3]	U - rad [Bq/dm^3]	Th - rad [Bq/dm^3]
1	**2005/0034**	<0,062	<0,065	43,2 ± 2,0	<0,13	<0,23
2	**2005/0035**	<0,060	<0,063	46,3 ± 2,1	<0,12	<0,23
3	**2005/0036**	<0,057	<0,061	46,8 ± 2,1	<0,12	<0,22
4	**2005/0073**	<0,065	<0,060	46,6 ± 2,1	0,36 ± 0,06	<0,21
5	**2005/0182**	<0,066	<0,066	45,8 ± 2,1	0,19 ± 0,05	<0,24
6	**2005/0183**	<0,068	<0,067	43,8 ± 2,0	<0,13	<0,25
7	**2005/0249**	<0,062	<0,066	48,9 ± 2,2	<0,13	<0,24
8	**2005/0250**	<0,063	<0,061	42,5 ± 1,9	0,34 ± 0,06	<0,22
9	**2005/0281**	<0,073	<0,068	45,5 ± 2,1	<0,15	<0,25
10	**2005/0343**	<0,069	<0,068	49,1 ± 2,2	<0,15	<0,24
11	**2005/0344**	<0,063	<0,065	48,3 ± 2,2	<0,13	<0,24
12	**2005/0390**	<0,063	<0,070	48,2 ± 2,2	<0,13	<0,24
13	**2005/0391**	<0,062	<0,063	49,5 ± 2,2	<0,13	<0,22

Table 308 Liquid milk volume activity, 2005

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{134}Cs [Bq/dm^3]	^{137}Cs [Bq/dm^3]	^{40}K [Bq/dm^3]	U - rad [Bq/dm^3]	Th - rad [Bq/dm^3]
14	2005/0546*					
15	2005/0547*					
16	2005/0548*					
17	2005/0676*					
18	2005/0678	<0,055	<0,055	46,8 ± 2,1	<0,11	<0,20
19	2005/0679	<0,061	<0,062	48,2 ± 2,2	<0,13	<0,23
20	2005/0734	<0,053	0,016 ± 0,011	45,6 ± 2,0	<0,11	<0,20
21	2005/0767	<0,063	<0,060	48,3 ± 2,2	<0,13	<0,22
22	2005/0871	<0,063	<0,064	48,1 ± 2,2	<0,13	<0,22
23	2005/0873	<0,060	<0,062	50,0 ± 2,3	<0,12	<0,23
24	2005/1020	<0,059	<0,065	47,1 ± 2,1	<0,12	<0,22
25	2005/1021	<0,060	0,042 ± 0,013	48,4 ± 2,2	<0,12	<0,24
26	2005/1022	<0,059	0,026 ± 0,013	50,0 ± 2,3	<0,12	<0,23
27	2005/1069	<0,056	0,028 ± 0,012	49,3 ± 2,2	<0,10	<0,21
28	2005/1070	<0,064	0,045 ± 0,013	49,0 ± 2,2	0,14 ± 0,06	<0,24
29	2005/1087	<0,064	0,046 ± 0,014	51,5 ± 2,3	<0,12	<0,24
30	2005/1111	<0,062	<0,066	50,2 ± 2,3	<0,13	<0,24
31	2005/1208	<0,064	<0,069	51,0 ± 2,3	<0,12	<0,24
32	2005/1209	<0,062	0,030 ± 0,014	50,5 ± 2,3	<0,10	<0,23
33	2005/1433	<0,062	<0,065	46,9 ± 2,1	<0,11	<0,24
34	2005/1434	<0,062	<0,065	47,7 ± 2,2	<0,13	<0,23
35	2005/1436	<0,058	0,037 ± 0,012	47,0 ± 2,1	<0,09	<0,22
36	2005/1437	<0,064	0,053 ± 0,015	51,3 ± 2,3	<0,12	<0,24
37	2005/1438	<0,062	0,058 ± 0,014	45,7 ± 2,1	0,23 ± 0,06	<0,22
38	2005/1469	<0,060	0,053 ± 0,015	46,3 ± 2,1	0,13 ± 0,05	<0,23
39	2005/1543	<0,058	0,061 ± 0,017	50,7 ± 2,3	<0,13	<0,23
40	2005/1623	<0,063	<0,065	46,6 ± 2,1	<0,13	<0,23
41	2005/1624	<0,065	<0,070	47,8 ± 2,2	<0,11	<0,24
42	2005/1625	<0,064	0,025 ± 0,013	49,5 ± 2,2	0,13 ± 0,05	<0,22
43	2005/1738	<0,051	<0,053	49,0 ± 2,2	<0,09	<0,20
44	2005/1739	<0,051	<0,056	49,0 ± 2,2	<0,11	<0,20
45	2005/1790	<0,057	<0,062	45,2 ± 2,1	<0,12	<0,22
46	2005/2023	<0,060	<0,065	46,3 ± 2,1	<0,10	<0,23
47	2005/2024	<0,061	0,045 ± 0,013	47,4 ± 2,2	<0,13	<0,24
48	2005/2025	<0,051	<0,057	43,9 ± 2,0	<0,10	<0,20
49	2005/2069	<0,064	0,026 ± 0,012	41,6 ± 1,9	0,15 ± 0,06	<0,22
50	2005/2070	<0,063	<0,066	41,7 ± 1,9	<0,12	<0,23
51	2005/2153	<0,061	<0,068	43,8 ± 2,0	<0,11	<0,23
52	2005/2154	<0,060	<0,065	44,5 ± 2,1	<0,13	<0,23

Poznámka: * príslušné vzorky neboli dodané pre neskoré uzatvorenie zmluvy medzi SE a novým dodávateľom mlieka PD Kalná

Table 309 Liquid milk volume activity, 2005

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{137}Cs [Bq/dm^3]	^{40}K [Bq/dm^3]	U - rad [Bq/dm^3]	Th - rad [Bq/dm^3]
1	2006/0182	<0,0727	49,1 ± 2,2	0,313 ± 0,078	<0,264
2	2006/0032	<0,0745	51,2 ± 2,3	<0,148	<0,259
3	2006/0183	<0,0722	50,3 ± 2,3	<0,165	<0,265
4	2006/0184	<0,0687	50,8 ± 2,3	0,310 ± 0,068	<0,245
5	2006/0095	<0,0714	47,4 ± 2,2	0,219 ± 0,070	<0,254
6	2006/0112	<0,0698	47,3 ± 2,1	<0,137	<0,247
7	2006/0142	<0,0649	46,0 ± 2,1	<0,135	<0,245
8	2006/0143	<0,0762	53,4 ± 2,4	<0,143	<0,266
9	2006/0165	<0,0688	54,1 ± 2,4	<0,138	<0,254
10	2006/0383	<0,0689	51,8 ± 2,3	<0,134	<0,247
11	2006/0384	<0,0703	54,1 ± 2,4	<0,134	<0,254
12	2006/0457	<0,0688	51,3 ± 2,3	<0,135	<0,251
13	2006/0458	<0,0704	49,7 ± 2,3	<0,141	<0,261
14	2006/0459	<0,0685	50,7 ± 2,3	<0,135	<0,249
15	2006/0624	<0,0522	51,5 ± 2,3	<0,101	<0,194
16	2006/0625	<0,0639	45,7 ± 2,1	<0,127	<0,236
17	2006/0626	<0,0679	51,4 ± 2,3	<0,137	<0,251
18	2006/0628	<0,0625	49,2 ± 2,2	<0,123	<0,234
19	2006/0769	<0,0548	52,8 ± 2,3	<0,109	<0,199
20	2006/0770	<0,0662	54,5 ± 2,4	<0,131	<0,244
21	2006/0772	<0,0669	51,8 ± 2,3	<0,126	<0,239
22	2006/0788	<0,0660	53,0 ± 2,4	<0,130	<0,245
23	2006/0943	<0,0699	54,3 ± 2,4	<0,135	<0,251
24	2006/0814	<0,0655	52,3 ± 2,3	<0,134	<0,239
25	2006/0859	<0,0695	58,8 ± 2,6	0,189 ± 0,075	<0,242
26	2006/0945	<0,0574	54,9 ± 2,4	0,178 ± 0,061	<0,216
27	2006/0946	<0,0658	53,1 ± 2,4	<0,129	<0,240
28	2006/1041	0,0384 ± 0,0133	54,7 ± 2,5	<0,130	<0,245
29	2006/1042	<0,0672	51,4 ± 2,3	<0,101	<0,242
30	2006/1165	0,0353 ± 0,0153	50,6 ± 2,3	<0,109	<0,223
31	2006/1166	<0,0676	49,4 ± 2,2	<0,111	<0,240
32	2006/1250	<0,0664	49,0 ± 2,2	<0,129	<0,238
33	2006/1251	<0,0706	51,2 ± 2,3	<0,123	<0,250
34	2006/1313	0,0451 ± 0,0156	49,4 ± 2,2	<0,117	<0,247
35	2006/1312	<0,0679	50,8 ± 2,3	<0,126	<0,239
36	2006/1367	0,0524 ± 0,0180	50,1 ± 2,3	<0,131	<0,242
37	2006/1368	<0,0703	49,2 ± 2,2	<0,133	<0,251
38	2006/1402	0,0369 ± 0,0148	49,3 ± 2,2	<0,121	<0,237
39	2006/1531	0,0643 ± 0,0180	53,3 ± 2,4	<0,118	<0,238

Table 310 Liquid milk volume activity, 2006

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{137}Cs [Bq/dm^3]	^{40}K [Bq/dm^3]	U - rad [Bq/dm^3]	Th - rad [Bq/dm^3]
40	**2006/1533**	0,0328 ± 0,0145	51,1 ± 2,3	0,329 ± 0,066	<0,247
41	**2006/1628**	<0,0708	53,5 ± 2,4	<0,103	<0,252
42	**2006/1629**	<0,0717	52,3 ± 2,4	0,175 ± 0,059	<0,243
43	**2006/1753**	<0,0711	55,6 ± 2,6	<0,141	<0,263
44	**2006/1754**	0,0240 ± 0,0123	54,3 ± 2,4	0,225 ± 0,053	<0,217
45	**2006/1756**	0,0382 ± 0,0131	53,0 ± 2,4	<0,100	<0,231
46	**2006/1757**	0,0323 ± 0,0155	52,4 ± 2,4	<0,142	<0,265
47	**2006/1880**	<0,0713	51,9 ± 2,4	0,192 ± 0,054	<0,259
48	**2006/1896**	<0,0741	53,7 ± 2,4	<0,142	<0,266
49	**2006/2028**	0,0540 ± 0,0158	52,5 ± 2,4	<0,138	<0,258
50	**2006/2029**	0,0357 ± 0,0079	52,1 ± 2,3	<0,124	<0,239
51	**2006/2030**	<0,0677	50,1 ± 2,3	<0,100	<0,241
52	**2006/2031**	<0,0639	50,6 ± 2,3	<0,100	<0,232

OBJEMOVÁ AKTIVITA ^{90} Sr TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)

Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
2006/141	54 ± 4	2006/627	43 ± 3	2006/1315	52 ± 4	2006/1755	54 ± 4
2006/385	53 ± 4	2006/1040	45 ± 4	2006/1366	44 ± 3	2006/2032	45 ± 4
2006/460	42 ± 3	2006/1039	51 ± 4	2006/1532	54 ± 4	2006/2033	59 ± 4

Table 311 Liquid milk volume activity, 2006

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{137}Cs [Bq/dm^3]	^{40}K [Bq/dm^3]	U - rad [Bq/dm^3]	Th - rad [Bq/dm^3]
1	2007/0033	0,0306 ± 0,0068	51,2 ± 2,3	<0,0957	<0,208
2	2007/0034	<0,0665	52,9 ± 2,4	<0,129	<0,243
3	2007/0116	<0,0662	51,4 ± 2,3	<0,113	<0,239
4	2007/0117	<0,0586	52,8 ± 2,3	<0,102	<0,213
5	2007/0151	<0,0649	52,4 ± 2,3	<0,127	<0,239
6	2007/0182	<0,0665	50,8 ± 2,3	<0,134	<0,237
7	2007/0265	<0,0672	53,5 ± 2,4	<0,130	<0,247
8	2007/0266	<0,0685	52,1 ± 2,4	0,116 ± 0,058	<0,239
9	2007/0267	<0,0678	44,4 ± 2,1	<0,110	<0,238
10	2007/0321	<0,0637	49,7 ± 2,3	<0,105	<0,235
11	2007/0322	<0,0521	51,2 ± 2,3	<0,106	<0,191
12	2007/0354	0,0259 ± 0,0135	52,9 ± 2,4	<0,121	<0,247
13	2007/0438	<0,0636	51,5 ± 2,4	<0,132	<0,236
14	2007/0439	<0,0659	50,8 ± 2,3	<0,127	<0,243
15	2007/0558	<0,0690	51,1 ± 2,3	<0,131	<0,243
16	2007/0559	<0,0558	49,3 ± 2,2	<0,123	<0,192
17	2007/0560	<0,0654	49,9 ± 2,2	0,231 ± 0,059	<0,244
18	2007/0712	<0,0638	50,5 ± 2,3	<0,106	<0,234
19	2007/0713	<0,0651	52,4 ± 2,3	<0,123	<0,225
20	2007/0714	<0,0517	52,3 ± 2,3	<0,0938	<0,198
21	2007/1005	<0,0673	54,7 ± 2,5	<0,131	<0,246
22	2007/0759	<0,0659	51,9 ± 2,3	<0,116	<0,240
23	2007/1006	<0,0651	50,1 ± 2,3	<0,117	<0,231
24	2007/1007	<0,0660	51,3 ± 2,3	<0,134	<0,241
25	2007/1008	<0,0712	54,1 ± 2,4	<0,119	<0,253
26	2007/1009	<0,0718	51,7 ± 2,3	0,144 ± 0,053	<0,258
27	2007/1010	0,0568 ± 0,0135	51,7 ± 2,3	<0,115	<0,205
28	2007/1011	0,0192 ± 0,0115	50,8 ± 2,3	<0,129	<0,230
29	2007/1030	<0,0665	50,6 ± 2,3	<0,136	<0,277
30	2007/1149	0,0315 ± 0,0139	50,9 ± 2,3	<0,131	<0,230
31	2007/1150	<0,0700	54,0 ± 2,4	<0,116	<0,246
32	2007/1210	0,0236 ± 0,0120	50,8 ± 2,3	<0,127	<0,237
33	2007/1211	<0,0650	49,3 ± 2,2	<0,131	<0,242
34	2007/1365	0,0368 ± 0,0133	50,6 ± 2,3	<0,130	<0,273
35	2007/1282	<0,0662	50,6 ± 2,3	<0,134	<0,235
36	2007/1300	0,0662 ± 0,0156	49,3 ± 2,2	<0,133	<0,234
37	20071387	0,0329 ± 0,0141	52,1 ± 2,3	<0,140	<0,239
38	2007/1388	0,0472 ± 0,0167	55,8 ± 2,5	<0,138	<0,243
39	2007/1443	<0,0681	49,7 ± 2,2	<0,134	<0,239

Table 312 Liquid milk volume activity, 2007

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{137}Cs [Bq/dm^3]	^{40}K [Bq/dm^3]	U - rad [Bq/dm^3]	Th - rad [Bq/dm^3]
40	2007/1480	0,0960 ± 0,0184	53,9 ± 2,4	<0,144	<0,251
41	2007/1537	0,0517 ± 0,0152	55,4 ± 2,5	<0,141	<0,248
42	2007/1538	0,0477 ± 0,0155	52,8 ± 2,4	<0,136	<0,246
43	2007/1666	<0,0682	51,3 ± 2,3	0,212 ± 0,072	<0,223
44	2007/1667	<0,0687	52,4 ± 2,4	0,371 ± 0,080	<0,247
45	2007/1668	<0,0675	52,0 ± 2,3	0,287 ± 0,068	<0,242
46	2007/1773	<0,0657	53,5 ± 2,4	<0,133	<0,245
47	2007/1843	<0,0665	51,8 ± 2,3	<0,133	<0,236
48	2007/1892	<0,0679	53,4 ± 2,4	<0,137	<0,242
49	2007/1894	<0,0596	50,4 ± 2,2	<0,123	<0,218
50	2007/2029	<0,0605	54,2 ± 2,4	<0,128	<0,220
51	2007/2030	<0,0629	52,0 ± 2,3	<0,126	<0,228
52	2007/2031	<0,0652	50,8 ± 2,3	<0,127	<0,233

OBJEMOVÁ AKTIVITA ^{90} Sr TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)

Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
2007/183	43 ± 3	2007/715	34 ± 3	2007/1212	38 ± 3	2007/1774	45 ± 3
2007/437	34 ± 3	2007/1003	34 ± 3	2007/1482	41 ± 3	2007/2028	35 ± 3
2007/561	40 ± 3	2007/1004	30 ± 3	2007/1483	39 ± 3	2007/2064	48 ± 4

Table 313 Liquid milk volume activity, 2007

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{137}Cs [Bq/dm^3]	^{40}K [Bq/dm^3]	U - rad [Bq/dm^3]	Th - rad [Bq/dm^3]
1	2008/0062	<0,0580	51,2 ± 3,7	0,167 ± 0,129	<0,213
2	2008/0063	<0,0694	52,0 ± 3,8	0,105 ± 0,135	<0,249
3	2008/0064	<0,0714	54,7 ± 4,0	<0,136	<0,243
4	2008/0066	<0,0668	51,3 ± 3,8	0,248 ± 0,144	<0,265
5	2008/0226	0,0214 ± 0,0243	49,9 ± 3,7	0,327 ± 0,140	<0,244
6	2008/0227	<0,0725	52,8 ± 3,9	<0,142	<0,257
7	2008/0228	<0,0701	53,1 ± 3,9	<0,146	<0,256
8	2008/0295	0,0376 ± 0,0292	54,2 ± 4,0	<0,142	<0,256
9	2008/0340	<0,0737	53,9 ± 4,0	<0,145	<0,260
10	2008/0341	<0,0706	55,0 ± 4,0	<0,145	<0,259
11	2008/0409	0,0254 ± 0,0264	55,2 ± 4,1	<0,148	<0,262
12	2008/0477	<0,0690	53,7 ± 3,9	<0,138	<0,239
13	2008/0511	<0,0720	52,8 ± 3,9	0,145 ± 0,128	<0,256
14	2008/0512	<0,0733	52,4 ± 3,9	<0,146	<0,261
15	2008/0548	<0,0716	53,9 ± 4,0	<0,145	<0,264
16	2008/0547	<0,0711	55,8 ± 4,1	<0,145	<0,258
17	2008/0620	0,0293 ± 0,0297	54,4 ± 4,0	<0,142	<0,240
18	2008/0660	0,0547 ± 0,0308	54,5 ± 4,0	<0,145	<0,245
19	2008/0661	0,0479 ± 0,0275	56,9 ± 4,1	<0,142	<0,254
20	2008/0696	0,0357 ± 0,0313	52,4 ± 3,8	<0,133	<0,222
21	2008/0714	0,0472 ± 0,0187	55,4 ± 4,1	<0,138	<0,255
22	2008/0931	0,0413 ± 0,0256	53,6 ± 3,9	<0,143	<0,243
23	2008/0932	<0,0672	53,7 ± 3,9	<0,134	<0,240
24	2008/0933	0,0429 ± 0,0309	55,1 ± 4,0	<0,159	<0,254
25	2008/0934	0,0366 ± 0,0250	54,1 ± 4,0	<0,147	<0,234
26	2008/1075	<0,0650	50,1 ± 3,7	<0,134	<0,239
27	2008/1076	0,0365 ± 0,0289	54,9 ± 4,0	0,231 ± 0,115	<0,246
28	2008/1077	0,0343 ± 0,0291	53,7 ± 3,9	<0,135	<0,250
29	2008/1083	0,0205 ± 0,0259	53,5 ± 3,9	0,180 ± 0,105	<0,250
30	2008/1115	0,0343 ± 0,0241	53,2 ± 3,9	<0,133	<0,228
31	2008/1249	0,0279 ± 0,0285	53,9 ± 4,0	0,130 ± 0,104	<0,256
32	2008/1201	0,0396 ± 0,0269	53,1 ± 3,9	<0,144	<0,252
33	2008/1233	0,0314 ± 0,0291	55,5 ± 4,1	<0,144	<0,256
34	2008/1324	<0,0710	54,1 ± 4,0	<0,143	<0,258
35	2008/1393	<0,0653	54,4 ± 4,0	<0,132	<0,237
36	2008/1392	<0,0729	54,6 ± 4,0	<0,154	<0,256
37	2008/1473	<0,0737	55,3 ± 4,1	<0,146	<0,236
38	2008/1474	0,0728 ± 0,0337	50,7 ± 3,7	<0,140	<0,238
39	2008/1607	<0,0665	52,0 ± 3,8	0,114 ± 0,119	<0,216

Table 314 Liquid milk volume activity, 2008

OBJEMOVÁ AKTIVITA TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)
(gamaspektrometria)

Rádionuklid / Týždeň	Evid. číslo protokolu	^{137}Cs [Bq/dm³]	^{40}K [Bq/dm³]	U - rad [Bq/dm³]	Th - rad [Bq/dm³]
40	2008/1608	<0,0717	52,4 ± 3,9	<0,153	<0,261
41	2008/1609	0,0220 ± 0,0252	51,7 ± 3,8	<0,157	<0,253
42	2008/1610	0,0254 ± 0,0283	50,4 ± 3,8	<0,144	<0,253
43	2008/1705	<0,0702	52,9 ± 3,9	<0,139	<0,250
44	2008/1706	<0,0707	53,9 ± 4,0	<0,145	<0,255
45	2008/1728	0,0269 ± 0,0322	56,3 ± 4,1	<0,154	<0,264
46	2008/1775	<0,0743	54,6 ± 4,0	<0,153	<0,261
47	2008/1776	<0,0695	52,7 ± 3,9	<0,154	<0,253
48	2008/1869	0,0368 ± 0,0292	53,7 ± 4,0	<0,142	<0,249
49	2008/1951	<0,0745	55,7 ± 4,1	<0,153	<0,272
50	2008/1952	<0,0748	54,7 ± 4,0	<0,151	<0,259
51	2008/1953	<0,0726	53,7 ± 3,9	<0,144	<0,252
52	2008/2072	<0,0732	53,6 ± 4,0	<0,148	<0,255

OBJEMOVÁ AKTIVITA ^{90} Sr TEKUTÉHO MLIEKA

(lokalita: Tekovský Hrádok)

Evid. číslo protokolu	I. štvrťrok [mBq/dm³]	Evid. číslo protokolu	II. štvrťrok [mBq/dm³]	Evid. číslo protokolu	III. štvrťrok [mBq/dm³]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm³]
2008/294	36 ± 4	2008/659	30 ± 3	2008/1250	33 ± 4	2008/1729	37 ± 4
2008/342	30 ± 3	2008/1081	43 ± 5	2008/1394	32 ± 4	2008/1983	36 ± 4
2008/513	33 ± 4	2008/1082	47 ± 5	2008/1586	34 ± 4	2008/2091	42 ± 5

Table 315 Liquid milk volume activity, 2008

HMOTNOSTNÁ AKTIVITA SEDIMENTOV V RIEKE HRON
(gamaspektrometria)

Lokalita: Tlmače - nad Haťou V. Kozmálovce

Evidenč. číslo protokolu	Š. r.	^{134}Cs [Bq/kg]	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2005/0367	1.	<0,700	12,8 ± 0,7	547 ± 26	33,8 ± 2,2	31,8 ± 3,4
2005/0742	2.	<0,897	13,4 ± 0,8	558 ± 34	31,3 ± 2,7	26,1 ± 3,7
2005/1227	3.	<0,698	15,0 ± 0,7	519 ± 24	35,8 ± 2,3	33,1 ± 3,6
2005/2004	4.	<0,946	15,0 ± 0,8	469 ± 23	36,5 ± 2,5	31,1 ± 3,8

Lokalita: výpustný otvor pod Haťou N. Tekov - elektráreň

Evidenč. číslo protokolu	Š. r.	^{134}Cs [Bq/kg]	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2005/0370	1.	<0,687	19,4 ± 0,9	527 ± 25	35,8 ± 2,3	34,1 ± 3,6
2005/0721	2.	<0,723	26,3 ± 1,2	524 ± 25	38,0 ± 2,5	34,5 ± 3,7
2005/1212	3.	<0,764	27,9 ± 1,3	515 ± 24	39,0 ± 2,6	33,1 ± 3,7
2005/2007	4.	<1,17	22,9 ± 1,2	474 ± 23	34,1 ± 2,5	30,8 ± 4,0

Lokalita: Kalná n/Hronom

Evidenč. číslo protokolu	Š. r.	^{134}Cs [Bq/kg]	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2005/0368	1.	<0,712	9,33 ± 0,56	554 ± 26	32,2 ± 2,1	31,5 ± 2,4
2005/0747	2.	<0,903	4,34 ± 0,31	589 ± 36	27,0 ± 2,4	25,7 ± 3,6
2005/1233	3.	<0,768	3,43 ± 0,30	595 ± 28	33,4 ± 2,2	32,7 ± 3,2
2005/2005	4.	<0,913	7,19 ± 0,53	551 ± 26	29,5 ± 2,0	27,1 ± 3,5

Lokalita: Perec - Čerpacia stanica - V. Kozmálovce

Evidenč. číslo protokolu	Š. r.	^{134}Cs [Bq/kg]	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2005/0369	1.	<0,708	7,62 ± 0,49	531 ± 25	33,0 ± 2,2	31,0 ± 3,4
2005/0722	2.	<0,861	3,80 ± 0,33	551 ± 26	34,2 ± 2,3	32,6 ± 3,6
2005/1226	3.	<0,714	3,46 ± 0,20	556 ± 26	33,6 ± 2,2	31,9 ± 3,6
2005/2006	4.	<1,19	2,91 ± 0,41	523 ± 26	31,3 ± 2,3	30,1 ± 3,9

Table 316 Specific activity of sediments in the Hron River, 2005

HMOTNOSTNÁ AKTIVITA SEDIMENTOV V RIEKE HRON
(gamaspektrometria)

Lokalita: Tlmače - nad Haťou V. Kozmálovce

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2006/0310	**1.**	17,3 ± 0,8	530 ± 25	41,0 ± 2,6	34,5 ± 3,7
2006/0663	**2.**	13,1 ± 0,7	562 ± 26	37,4 ± 2,5	34,8 ± 3,7
2006/1127	**3.**	22,8 ± 1,1	567 ± 27	36,7 ± 2,4	38,2 ± 4,2
2006/1695	**4.**	23,6 ± 1,1	592 ± 28	42,4 ± 2,8	37,2 ± 3,7

Lokalita: výpustný otvor pod Haťou N. Tekov - elektráreň

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2006/0409	**1.**	10,2 ± 0,6	592 ± 28	35,1 ± 2,3	34,6 ± 3,7
2006/0665	**2.**	26,3 ± 1,2	543 ± 26	37,3 ± 2,5	35,3 ± 3,8
2006/1129	**3.**	20,4 ± 1,0	539 ± 25	37,4 ± 2,5	35,2 ± 3,8
2006/1693	**4.**	22,4 ± 1,1	540 ± 25	40,6 ± 2,7	34,6 ± 3,7

Lokalita: Kalná n/Hronom

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2006/0317	**1.**	6,81 ± 0,39	531 ± 25	29,3 ± 1,9	27,9 ± 3,2
2006/0664	**2.**	7,02 ± 0,40	637 ± 30	32,5 ± 2,2	31,5 ± 3,6
2006/1128	**3.**	5,61 ± 0,28	569 ± 27	30,3 ± 2,0	31,7 ± 3,1
2006/1694	**4.**	8,85 ± 0,49	638 ± 30	36,5 ± 2,4	33,5 ± 3,8

Table 317 Specific activity of sediments in the Hron River, 2006

HMOTNOSTNÁ AKTIVITA SEDIMENTOV V RIEKE HRON
(gamaspektrometria)

Lokalita: Tlmače - nad Haťou V. Kozmálovce

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2007/0338	1.	11,0 ± 0,7	501 ± 29	33,3 ± 2,7	30,6 ± 4,0
2007/0716	2.	22,0 ± 1,1	556 ± 26	38,1 ± 2,5	34,1 ± 3,6
2007/1083	3.	24,9 ± 1,2	570 ± 27	38,8 ± 2,6	35,8 ± 3,8
2007/1926	4.	23,5 ± 1,1	551 ± 26	38,3 ± 2,5	35,7 ± 4,0

Lokalita: výpustný otvor pod Haťou N. Tekov - elektráreň

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2007/0340	1.	21,3 ± 1,2	492 ± 28	35,9 ± 2,9	33,1 ± 4,2
2007/0718	2.	31,5 ± 1,5	545 ± 26	38,6 ± 2,5	36,2 ± 3,9
2007/1085	3.	23,7 ± 1,1	557 ± 26	38,9 ± 2,6	36,9 ± 3,9
2007/1928	4.	27,6 ± 1,3	542 ± 26	39,2 ± 2,6	35,0 ± 3,8

Lokalita: Kalná n/Hronom

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2007/0339	1.	7,52 ± 0,45	568 ± 32	30,1 ± 2,4	30,0 ± 3,9
2007/0717	2.	6,88 ± 0,50	599 ± 28	32,5 ± 2,2	32,8 ± 3,6
2007/1084	3.	1,67 ± 0,13	639 ± 30	34,1 ± 2,3	33,9 ± 3,6
2007/1927	4.	5,71 ± 0,39	638 ± 30	34,9 ± 2,3	34,0 ± 3,7

Table 318 Specific activity of sediments in the Hron River, 2007

HMOTNOSTNÁ AKTIVITA SEDIMENTOV V RIEKE HRON
(gamaspektrometria)

Lokalita: Tlmače - nad Haťou V. Kozmálovce

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2008/0361	1.	15,0 ± 1,3	517 ± 41	39,3 ± 4,3	34,2 ± 6,5
2008/0794	2.	20,9 ± 1,6	512 ± 41	36,7 ± 4,0	33,4 ± 6,3
2008/1197	3.	21,0 ± 1,7	577 ± 45	37,7 ± 4,1	34,9 ± 6,7
2008/1864	4.	26,5 ± 2,1	530 ± 42	40,4 ± 4,4	35,0 ± 6,5

Lokalita: výpustný otvor pod Haťou N. Tekov - elektráreň

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2008/0363	1.	24,8 ± 2,0	538 ± 42	39,0 ± 4,2	35,5 ± 6,8
2008/0796	2.	25,4 ± 2,0	544 ± 43	39,3 ± 4,3	34,7 ± 7,0
2008/1199	3.	24,7 ± 1,9	561 ± 44	38,1 ± 4,2	34,7 ± 5,9
2008/1866	4.	23,3 ± 1,9	579 ± 46	38,0 ± 4,1	35,5 ± 7,1

Lokalita: Kalná n/Hronom

Evidenč. číslo protokolu	Š. r.	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
2008/0362	1.	7,47 ± 0,64	581 ± 46	35,3 ± 3,9	32,8 ± 5,7
2008/0795	2.	6,74 ± 0,59	623 ± 49	33,4 ± 3,7	31,5 ± 5,5
2008/1198	3.	11,8 ± 0,9	597 ± 47	35,8 ± 3,9	35,1 ± 6,8
2008/1865	4.	5,45 ± 0,65	570 ± 45	32,6 ± 3,6	31,9 ± 6,1

Table 319 Specific activity of sediments in the Hron River, 2008

HMOTNOSTNÁ AKTIVITA SEDIMENTOV V RIEKE HRON
rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	90Sr [Bq/kg]
Tlmače /Hron/	2005/1227	1,3 ± 0,2
N. Tekov elektráreň	2005/1212	1,4 ± 0,2
Kalná n/Hronom /Hron/	2005/1233	1,9 ± 0,2
V. Kozmálovce /ČS-Perec/	2005/1226	1,7 ± 0,2

Table 320 Specific activity of sediments in the Hron River, 2005

HMOTNOSTNÁ AKTIVITA SEDIMENTOV
rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	^{90}Sr [Bq/kg]		
Tlmače /Hron/	2006/1127	1,4	±	0,2
N. Tekov elektráreň	2006/1129	1,3	±	0,2
Kalná n/Hronom /Hron/	2006/1128	1,0	±	0,1
Čifáre /rybník/	2006/1130	0,4	±	0,1

Table 321 Specific activity of sediments in the Hron River, 2006

HMOTNOSTNÁ AKTIVITA SEDIMENTOV
rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	^{90}Sr [Bq/kg]		
Tlmače /Hron/	2007/1083	1,3	±	0,1
N. Tekov elektráreň	2007/1085	0,9	±	0,1
Kalná n/Hronom /Hron/	2007/1084	1,0	±	0,1
Čifáre (rybník)	2007/1086	1,1	±	0,1

Table 322 Specific activity of sediments in the Hron River, 2007

HMOTNOSTNÁ AKTIVITA SEDIMENTOV
rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	^{90}Sr [Bq/kg]		
Tlmače /Hron/	2008/1197	1,0	±	0,2
N. Tekov elektráreň	2008/1199	0,8	±	0,1
Kalná n/Hronom /Hron/	2008/1198	1,0	±	0,2
Čifáre (rybník)	2008/1200	1,8	±	0,3

Table 323 Specific activity of sediments in the Hron River, 2008

PLOŠNÁ AKTIVITA SNEHOVEJ ZRÁŽKY
(Lokalita: strecha LRKO)

Rádionuklid / Odber	Evid. číslo protokolu	^{134}Cs [Bq/m^2]	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]
21.1.2005	**2005/0031**	<0,0666	<0,0652	0,50 ± 0,162	15,3 ± 0,831	<0,147	<0,234
27.1.2005	**2005/0067**	<0,0348	<0,0359	<0,356	6,27 ± 0,348	<0,0782	<0,126
1.2.2005	**2005/0070**	<0,0339	<0,0338	<0,326	8,99 ± 0,457	<0,0789	<0,120
14.2.2005	**2005/0151**	<0,139	<0,138	<1,30	38,4 ± 2,19	<0,284	<0,486
16.2.2005	**2005/0184**	<0,0564	<0,0590	<0,575	3,75 ± 0,28	<0,128	<0,208
22.2.2005	**2005/0185**	<0,0150	<0,0158	<0,143	1,09 ± 0,08	<0,0327	<0,0567
23.2.2005	**2005/0201**	<0,0836	<0,0828	<0,835	6,80 ± 0,483	<0,196	<0,291
24.2.2005	**2005/0202**	<0,0606	<0,0593	<0,606	10,60 ± 0,582	<0,123	<0,210
21.12.2005	**2005/2071**	<0,0951	<0,0976	<0,943	<1,22	<0,245	<0,341

Rádionuklid / Odber	Evid. číslo protokolu	^{3}H [Bq/m2]
21.1.2005	2005/33	12,2 ± 1,6
27.1.2005	2005/69	6,6 ± 0,9
1.2.2005	2005/72	6,4 ± 0,9

Rádionuklid / Odber	Evid. číslo protokolu	^{90}Sr [mBq/m2]
21.1.2005	2005/32	134 ± 12
27.1.2005	2005/68	53 ± 7
1.2.2005	2005/71	64 ± 6

Table 324 Snow surface activity, 2005

PLOŠNÁ AKTIVITA SNEHOVEJ ZRÁŽKY
(Lokalita: strecha LRKO)

Rádionuklid / Odber	Evid. číslo protokolu	^{137}Cs [mBq/m^2]	^{40}K [mBq/m^2]	^{7}Be [mBq/m^2]	U - rad [mBq/m^2]	Th - rad [mBq/m^2]
19.1.2006	**2006/0048**	7,30 ± 3,48	91,3 ± 46,6	5,05 ± 0,29	204 ± 33	<81,5
8.2.2006	**2006/0094**	14,6 ± 7,5	<464	12,3 ± 0,7	<107	<159
10.2.2006	**2006/0096**	<43,0	<427	16,0 ± 0,8	<108	<155
6.3.2006	**2006/0181**	<45,3	330 ± 95	7,33 ± 0,42	<111	<161

Rádionuklid / Odber	Evid. číslo protokolu	^{3}H [Bq/m2]
19.1.2006	2006/48	3,7 ± 0,5
8.2.2006	2006/94	9,5 ± 1,3
10.2.2006	2006/96	9,0 ± 1,2

Rádionuklid / Odber	Evid. číslo protokolu	^{90}Sr [mBq/m2]
19.1.2006	2006/48	22 ± 4
8.2.2006	2006/94	38 ± 10
10.2.2006	2006/96	108 ± 18

Table 325 Snow surface activity, 2006

OBJEMOVÁ AKTIVITA SNEHOVEJ ZRÁŽKY
(Lokalita: strecha LRKO)

Rádionuklid / Odber	Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	^{7}Be [Bq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]	Celkový objem* [dm^3]
26.2.2007	2007/0199	<4,84	<46,6	2,38 ± 0,12	18,1 ± 4,2	<17,1	18,0
12.11.2007	2007/1724	<3,56	<51,6	0,257 ± 0,190	<7,40	<12,5	22,4

Rádionuklid / Odber	Evid. číslo protokolu	^{3}H [Bq/dm^3]	Celkový objem* [dm^3]
26.2.2007	2007/0199	<1	18,0
12.11.2007	2007/1724	<1	22,4

Rádionuklid / Odber	Evid. číslo protokolu	^{90}Sr [mBq/dm^3]	Celkový objem* [dm^3]
26.2.2007	2007/0199	9 ± 1	18,0
12.11.2007	2007/1724	12 ± 1	22,4

* - sneh odoberáme do odberovej nádoby s plochou 1 m^2. Uvádzaný celkový objem je objem vody z rozpusteného snehu.

Table 326 Snow volume activity, 2007

OBJEMOVÁ AKTIVITA SNEHOVEJ ZRÁŽKY

(Lokalita: strecha LRKO)

Rádionuklid / Odber	Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	^{7}Be [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]	Celkový objem* [dm^3]
7.1.2008	**2008/0016**	<4,04	<59,4	2080 ± 170	<8,22	<14,0	19,5
24.11.2008	**2008/1774**	<6,18	31,9 ± 20,4	1130 ± 100	<15,0	<21,6	3,2
25.11.2008	**2008/1829**	<5,65	<54,7	1730 ± 150	<13,7	<21,1	17,4

Rádionuklid / Odber	Evid. číslo protokolu	^{3}H [Bq/dm^3]	Celkový objem* [dm^3]
7.1.2008	2008/16	1,1 ± 0,1	19,5
25.11.2008	2008/1829	<1	17,4
24.11.2008	2008/1774	<1	3,2

Rádionuklid / Odber	Evid. číslo protokolu	^{90}Sr [mBq/dm^3]	Celkový objem* [dm^3]
7.1.2008	2008/16	12 ± 2	19,5
25.11.2008	2008/1829	<6	17,4
24.11.2008	2008/1774	<6	3,2

* - sneh odoberáme do odberovej nádoby s plochou 1 m^2. Uvádzaný celkový objem je objem vody z rozpusteného snehu.

Table 327 Snow volume activity, 2008

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

KRMOVINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]					
Ďatelina	Levice	2005/0738	<0,569	<0,615	802 ± 50	54,7 ± 4,8	<1,13	<2,24
Ďatelina	Zl.Moravce	2005/0746	<0,655	<0,710	749 ± 47	51,6 ± 5,2	<1,32	<2,63
Tráva	T.Hrádok	2005/0927	<0,685	<0,705	860 ± 60	16,9 ± 2,6	<1,35	<2,69
Tráva	Vráble	2005/0928	<0,647	<0,671	684 ± 48	39,3 ± 4,1	<1,29	<2,46
Tráva	T.Mlýňany	2005/0929	<0,615	<0,672	621 ± 44	55,1 ± 5,1	<1,24	<2,43
Tráva	N.Tekov	2005/0930	<0,627	1,31 ± 0,21	578 ± 41	65,2 ± 6,8	<1,27	<2,38
Tráva	Mochovce	2005/0931	<0,584	<0,574	272 ± 21	154 ± 12	<1,25	<2,10
Jačmeň	V.Ďur	2005/1105	<0,348	<0,355	147 ± 8	<5,19	<0,611	<1,26
Jačmeň	Zl.Moravce	2005/1106	<0,377	<0,390	151 ± 8	6,84 ± 1,64	<0,773	<1,43
Pšenica	Vráble	2005/1108	<0,380	<0,379	101 ± 6	<5,68	<0,638	<1,37
Pšenica	Rybník	2005/1109	<0,334	<0,351	141 ± 8	<4,93	<0,677	<1,24
Kukurica	Čaradice	2005/1585	<0,295	0,12 ± 0,06	109 ± 6	<3,68	<0,597	<1,12
Kukurica	M.Kozmálovce	2005/1588	<0,302	<0,324	135 ± 7	<3,78	<0,541	<1,15
Tráva	T.Hrádok	2005/1650	<0,867	<0,892	566 ± 40	177 ± 15	1,55 ± 0,47	<3,02
Tráva	N.Tekov	2005/1651	<0,952	2,55 ± 0,34	616 ± 44	67,8 ± 7,1	2,68 ± 0,76	<3,15
Tráva	T.Mlýňany	2005/1652	<0,868	<0,986	597 ± 42	123 ± 11	<1,73	<3,16
Tráva	Vráble	2005/1653	<0,520	0,63 ± 0,15	136 ± 10	233 ± 17	<0,921	<1,78
Tráva*	Mochovce	2005/1654						

Poznámka: * vzorka nebola odobratá pre nízky stav porastu

CUKROVÁ REPA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]					
Repa	H.Seč	2005/1577	<0,282	<0,290	70,3 ± 4,0	<2,92	<0,479	<1,09
Repa	Tehla	2005/1604	<0,286	<0,293	58,0 ± 3,5	<2,90	<0,620	<1,07

OVOCIE

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]					
Čerešne	Tajná	2005/0852	<0,290	<0,296	72,5 ± 4,0	<5,63	<0,579	<0,948
Čerešne	Nemčiňany	2005/0853	<0,295	<0,297	67,7 ± 3,8	<5,10	<0,486	<1,05
Jahody	Č.Hrádok	2005/0869	<0,293	<0,302	55,1 ± 3,2	<5,14	<0,576	<1,03
Jahody	St.Tekov	2005/0921	<0,287	0,15 ± 0,05	42,9 ± 2,7	<4,22	<0,521	<1,02
Maliny	T.Lužany	2005/1159	<0,264	0,10 ± 0,06	94,5 ± 5,0	<3,23	<0,472	<0,966
Jablká	M.Kozmálovce	2005/1578	<0,269	<0,285	29,9 ± 2,2	<2,31	<0,574	<1,00
Jablká	Vráble	2005/1581	<0,265	0,10 ± 0,05	23,0 ± 2,0	<2,21	<0,558	<1,00
Hrušky	Telince	2005/1580	<0,266	<0,284	50,6 ± 3,2	<2,42	<0,569	<1,00
Hrušky	Volkovce	2005/1586	<0,276	0,11 ± 0,06	47,3 ± 3,0	<3,04	0,41 ± 0,22	<1,02
Hrozno	Levice	2005/1576	<0,283	<0,305	87,5 ± 4,8	<3,09	<0,600	<1,08
Hrozno	Č.Hrádok	2005/1605	<0,274	<0,298	78,7 ± 4,4	<2,88	<0,571	<1,04

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

ZELENINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]					
Hrach*	Kalná n/Hr.	2005/1103	<0,429	0,27 ± 0,11	356 ± 19	<7,00	<0,836	<1,28
Hrach*	Rybník	2005/1110	<0,432	0,32 ± 0,11	357 ± 19	<6,87	<0,863	<1,67
Uhorky	H.Seč	2005/1185	<0,272	0,19 ± 0,06	55,0 ± 3,4	<2,55	<0,582	<1,04
Uhorky	V.Ďur	2005/1228	<0,282	0,12 ± 0,06	63,3 ± 3,7	<2,92	<0,587	<1,06
Cuketa	Č.Hrádok	2005/1184	<0,282	<0,302	64,2 ± 3,8	<2,84	<0,587	<1,04
Paprika	Vráble	2005/1190	<0,272	<0,297	57,4 ± 3,5	<2,81	<0,581	<1,05
Paprika	T.Lužany	2005/1417	<0,285	<0,309	68,8 ± 4,0	<2,24	<0,608	<1,08
Paradajky	T.Lužany	2005/1210	<0,288	<0,312	94,3 ± 5,2	<3,05	<0,601	<1,11
Paradajky	Volkovce	2005/1229	<0,280	<0,307	85,8 ± 4,7	<2,95	<0,591	<1,07
Petržlen	Podlužany	2005/1583	<0,253	<0,274	161 ± 8	<2,17	<0,491	<0,912
Petržlen	Volkovce	2005/1607	<0,251	<0,273	131 ± 7	<2,13	<0,577	<0,829
Kapusta	Zl.Moravce	2005/1606	<0,269	<0,288	87,5 ± 4,7	<3,37	<0,493	<1,03
Kapusta	H.Seč	2005/1626	<0,288	0,12 ± 0,05	52,5 ± 3,3	<6,03	0,45 ± 0,21	<1,04
Zemiaky	St.Tekov	2005/1584	<0,297	0,19 ± 0,08	120 ± 6	<3,07	0,44 ± 0,17	<1,11
Zemiaky	M.Vozokany	2005/1628	<0,267	<0,283	113 ± 6	<2,88	<0,509	<1,01
Mrkva	Č.Klačany	2005/1587	<0,289	<0,305	72,3 ± 4,1	<2,64	0,56 ± 0,19	<1,07
Mrkva	Levice	2005/1970	<0,290	<0,314	99,1 ± 5,4	<4,21	<0,517	<1,11
Fazuľa*	Č.Hrádok	2005/1627	<0,446	<0,510	466 ± 24	<4,54	<0,785	<1,85
Fazuľa*	T.Lužany	2005/2172	<0,493	<0,475	408 ± 21	<9,43	1,63 ± 0,35	<1,73
Fazuľa*	T.Hrádok	2005/2173	<0,492	<0,486	478 ± 25	<9,76	0,91 ± 0,32	<1,71

Poznámka: * Bq/kg sušenej vzorky

ČAJOVINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]					
Agát-kvet	Levice	2005/0763	<0,489	<0,523	663 ± 41	13,3 ± 2,1	<0,976	<1,85
Agát-kvet	Č.Hrádok	2005/0765	<0,550	<0,586	672 ± 42	21,1 ± 3,2	<1,10	<2,17
Baza-kvet	Vráble	2005/0764	<0,601	<0,649	976 ± 61	37,7 ± 3,6	<1,21	<2,72
Baza-kvet	Kozárovce	2005/0766	<0,537	0,59 ± 0,17	676 ± 42	33,9 ± 3,4	<1,11	<2,12
Lipa-kvet	St.Tekov	2005/0904	<0,468	0,20 ± 0,09	510 ± 32	25,0 ± 3,0	<0,921	<1,75
Lipa-kvet	Nevidzany	2005/0905	<0,489	<0,516	431 ± 27	27,2 ± 3,2	<0,975	<1,84
Šípky	Kozárovce	2005/1736	<0,482	<0,463	354 ± 19	6,56 ± 2,7	<0,833	<1,70
Šípky	Tajná	2005/1737	<0,455	<0,455	318 ± 17	11,7 ± 3,0	1,00 ± 0,29	<1,63

OLEJNINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]					
Repka	V.Ďur	2005/1104	<0,367	0,28 ± 0,09	236 ± 13	<6,04	<0,732	<1,37
Repka	Zl.Moravce	2005/1107	<0,415	<0,453	262 ± 14	2,39 ± 1,45	<0,827	<1,58
Slnečnica	N.Tekov	2005/1579	<0,361	<0,386	235 ± 13	<4,05	<0,556	<1,39
Slnečnica	Zl.Moravce	2005/1582	<0,409	0,44 ± 0,13	281 ± 15	<6,18	<0,841	<1,65
Orechy	T.Lužany	2005/2174	<0,353	<0,343	175 ± 9	<6,42	0,97 ± 0,23	<1,23
Orechy	T.Hrádok	2005/2175	<0,415	<0,453	262 ± 14	2,39 ± 1,45	<0,827	<1,58

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

VODNÉ RASTLINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]					
Rastliny	Hron-Kozárovce	2005/1805	<1,57	5,47 ± 0,42	489 ± 33	82,5 ± 12,2	140 ± 13	44,4 ± 8,4
Rastliny	Hron-V.Kozmál.	2005/1804	1,48 ± 0,15	11,3 ± 0,72	360 ± 23	70,0 ± 10,0	105 ± 9	36,5 ± 6,3

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{58}Co	^{60}Co	^{110M}Ag			
			[Bq/kg sušenej vzorky]					
Rastliny	Hron-V.Kozmál.	2005/1804	1,11 ± 0,24	3,43 ± 0,31	3,78 ± 0,27			

Poznámka: * pokračovanie tabuľky pre ďalšie rádionuklidy doteraz nezistených

HRÍBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]					
Kozáky	Jabloňovce	2005/1206	<0,218	1,43 ± 0,11	119 ± 6	<2,37	<0,458	<0,800
Plávky	Jabloňovce	2005/1207	<0,215	0,47 ± 0,07	119 ± 6	<2,27	<0,447	<0,816

RYBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]					
Kapor	EMO-chl.veža	2005/0549	<0,166	<0176	102 ± 5	<1,79	<0,362	<0,610
Nosáľ	Hron-V.Kozml.	2005/1771	<0,326	<0,323	94,7 ± 5,2	<3,90	<0,608	<1,11
Podustva	Hron-V.Kozml.	2005/1770	<0,314	0,21 ± 0,07	90,8 ± 4,9	<3,81	<0,588	<1,06
Pleskáč	Hron-V.Kozml.	2005/1773	<0,296	<0,304	95,5 ± 5,2	<3,71	<0,607	<1,10
Nosáľ	Hron-V.Kozml.	2005/1772	<0,284	<0,309	97,2 ± 5,2	<3,79	<0594	<1,08
Nosáľ	Hron-V.Kozml.	2005/2151	<0,293	<0,317	91,6 ± 5,1	<3,43	0,91 ± 0,25	<1,12

MÄSO

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{134}Cs	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]					
Bravčovina	Zbrojníky	2005/2118	<0,263	<0,293	38,3 ± 2,7	<4,51	0,35 ± 0,18	<1,03

Table 328 Specific activity of agricultural production samples, 2005

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

KRMOVINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Jačmeň	V.Ďur	2006/1119	0,196 ± 0,088	151 ± 8	14,1 ± 1,9	1,02 ± 0,27	<1,37
Jačmeň	Kozárovce	2006/1120	<0,415	164 ± 9	4,62 ± 0,91	0,572 ± 0,244	<1,42
Pšenica	Zl.Moravce	2006/1121	0,239 ± 0,088	153 ± 8	<5,16	1,30 ± 0,30	<1,22
Pšenica	Vráble	2006/1122	0,149 ± 0,070	135 ± 8	<5,81	<0,677	<1,28
Ďatelina	St.Tekov	2006/1149	0,839 ± 0,177	547 ± 34	78,1 ± 6,2	1,75 ± 0,47	<2,56
Ďatelina	Kozárovce	2006/1148	0,906 ± 0,181	539 ± 34	75,0 ± 6,0	1,44 ± 0,40	<2,12
Tráva	Mochovce	2006/1546	<0,806	894 ± 63	121 ± 11	1,77 ± 0,54	<2,79
Tráva	Vráble	2006/1547	0,901 ± 0,231	528 ± 38	111 ± 12	1,68 ± 0,68	<3,02
Tráva	T.Hrádok	2006/1548	<0,949	705 ± 50	148 ± 14	2,13 ± 0,85	<3,08
Tráva	T.Mlýňany	2006/1549	0,598 ± 0,230	619 ± 44	128 ± 15	2,46 ± 0,72	<3,07
Tráva	N.Tekov	2006/1569	3,12 ± 0,39	527 ± 38	57,6 ± 7,9	4,29 ± 0,91	3,52 ± 1,13
Ďatelina	Kozárovce	2006/1566	1,57 ± 0,24	837 ± 52	17,2 ± 2,9	1,66 ± 0,49	<2,69
Ďatelina	St.Tekov	2006/1567	1,30 ± 0,20	342 ± 22	51,1 ± 4,2	2,59 ± 0,49	<1,98
Kukurica	Čifáre	2006/1589	<0,384	134 ± 8	<9,81	<0,627	<1,44
Kukurica	M.Vozokany	2006/1591	<0,332	127 ± 7	<7,46	0,520 ± 0,239	<1,15

CUKROVÁ REPA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Repa	Levice	2006/1384	<0,259	45,4 ± 2,9	<2,48	<0,428	<0,909
Repa	Vráble	2006/1480	<0,256	56,7 ± 3,4	<2,18	<0,391	<0,913

OVOCIE

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Jahody	Volkovce	2006/0875	<0,278	48,2 ± 3,1	<2,27	0,539 ± 0,185	<0,973
Jahody	Č.Hrádok	2006/0877	0,178 ± 0,054	40,4 ± 2,7	2,64 ± 0,61	0,860 ± 0,199	<0,914
Čerešne	Zl.Moravce	2006/0878	<0,259	55,4 ± 3,4	<2,21	<0,459	<0,926
Čerešne	V.Ďur	2006/0876	<0,260	54,4 ± 3,3	<2,13	0,339 ± 0,172	<0,911
Maliny	Krškany	2006/0942	<0,260	57,4 ± 3,4	<1,91	<0,462	<0,909
Marhule	Levice	2006/1146	<0,283	108 ± 6	<2,18	<0,410	<0,970
Marhule	Č.Hrádok	2006/1147	<0,289	71,3 ± 4,1	<2,44	<0,411	<1,02
Slivky	Rybník	2006/1336	<0,260	51,2 ± 3,1	<2,32	<0,480	<0,890
Slivky	Nemčiňany	2006/1342	0,112 ± 0,053	64,1 ± 3,7	<2,42	<0,356	<0,920
Hrušky	Tajná	2006/1590	<0,265	41,2 ± 2,8	<2,13	<0,422	<0,934
Hrušky	Volkovce	2006/1601	0,212 ± 0,073	50,4 ± 3,2	<2,29	0,326 ± 0,173	<0,953
Hrozno	V.Vozokany	2006/1592	0,134 ± 0,053	89,5 ± 4,9	<2,31	<0,502	<0,933
Hrozno	M.Kozmálovce	2006/1593	<0,264	85,3 ± 4,7	<2,37	<0,493	<0,973
Jablká	M.Kozmálovce	2006/1602	<0,252	45,1 ± 2,8	<2,43	<0,448	<0,908
Jablká	Vráble	2006/1603	<0,254	34,7 ± 2,4	<2,32	<0,402	<0,873

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

ZELENINA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Hrach*	Vráble	2006/1125	<0,437	353 ± 19	<6,86	0,819 ± 0,309	<1,61
Hrach*	N.Tekov	2006/1126	0,355 ± 0,132	376 ± 20	<6,92	<0,634	<1,52
Paradajky	Rybník	2006/1338	0,127 ± 0,046	76,1 ± 4,3	<2,54	<0,445	<0,985
Paradajky	Zl.Moravce	2006/1343	<0,278	77,9 ± 4,4	<2,49	0,352 ± 0,157	<0,970
Cuketa	Č.Hrádok	2006/1341	0,0854 ± 0,0476	47,6 ± 3,0	<2,65	<0,413	<0,926
Cuketa	St.Tekov	2006/1481	<0,250	46,5 ± 2,9	<2,17	<0,391	<0,887
Uhorky	T.Lužany	2006/1347	<0,245	64,1 ± 3,7	<2,39	<0,465	<0,873
Uhorky	Čifáre	2006/1348	<0,271	62,9 ± 3,7	<2,57	<0,501	<0,948
Paprika	Vráble	2006/1344	0,104 ± 0,056	40,0 ± 2,7	<2,67	0,201 ± 0,154	<0,909
Paprika	T.Lužany	2006/1346	<0,258	69,1 ± 3,9	<2,69	<0,359	<0,911
Zemiaky	Volkovce	2006/1345	<0,284	140 ± 7	<3,04	<0,457	<0,975
Zemiaky	Krškany	2006/1594	<0,292	142 ± 7	<2,25	0,287 ± 0,208	<1,08
Tekvica	T.Lužany	2006/1499	<0,274	65,6 ± 3,8	<2,35	0,301 ± 0,157	<0,937
Petržlen	Volkovce	2006/1604	<0,318	158 ± 8	<2,95	0,710 ± 0,204	<1,06
Petržlen	St.Tekov	2006/1605	<0,310	161 ± 8	<3,12	0,596 ± 0,200	<0,831
Kapusta	T.Hrádok	2006/1606	<0,264	75,8 ± 4,3	<2,80	0,346 ± 0,155	<0,982
Fazuľa*	Č.Hrádok	2006/1735	0,305 ± 0,118	539 ± 28	<9,48	<0,954	<1,91
Fazuľa*	T.Lužany	2006/1764	<0,463	541 ± 28	<7,33	<0,856	<1,72
Mrkva	Č.Hrádok	2006/2051	<0,267	89,6 ± 4,9	<3,46	<0,475	<0,961
Mrkva	T.Lužany	2006/2079	<0,293	163 ± 8	<4,04	0,655 ± 0,204	<1,04

Poznámka: * Bq/kg sušenej vzorky

CUKROVÁ REPA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Repa	Levice	2006/1384	<0,259	45,4 ± 2,9	<2,48	<0,428	<0,909
Repa	Vráble	2006/1480	<0,256	56,7 ± 3,4	<2,18	<0,391	<0,913

OLEJNINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Repka	Zl.Moravce	2006/1123	<0,423	251 ± 13	6,65 ± 1,95	<0,677	<1,41
Repka	V.Ďur	2006/1124	<0,421	280 ± 15	<6,92	<0,645	<1,51
Slnečnica	Kozárovce	2006/1385	<0,387	236 ± 13	<5,16	<0,657	<1,40
Slnečnica	Nevidzany	2006/1386	<0,282	220 ± 12	<3,80	0,651 ± 0,219	<0,947

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

ČAJOVINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Baza-kvet	Č.Hrádok	2006/0806	<0,884	1320 ± 80	64,8 ± 6,1	<1,30	<2,86
Baza-kvet	Šándorhalm	2006/0805	0,539 ± 0,238	1410 ± 90	106 ± 8	1,32 ± 0,57	1,39 ± 0,94
Agát-kvet	V.Vozokany	2006/0807	0,391 ± 0,187	706 ± 44	57,8 ± 5,4	<1,32	<2,72
Agát-kvet	Kozárovce	2006/0808	0,552 ± 0,208	700 ± 44	59,8 ± 5,4	<1,22	<2,70
Šípky	Kozárovce	2006/1736	<0,452	385 ± 20	14,2 ± 2,5	0,759 ± 0,261	<1,60
Šípky	Tajná	2006/1737	<0,476	336 ± 18	9,93 ± 2,10	<0,753	<1,71

HRÍBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Hliva	T.Lužany	2006/1898	<0,315	141 ± 8	<2,32	0,433 ± 0,171	<1,10

RYBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Podustva	V.Kozmálov	2006/0789	0,276 ± 0,080	96,5 ± 5,3	<5,40	0,726 ± 0,244	<1,04
Nosáľ	/.Kozmálovc	2006/1314	0,199 ± 0,057	98,3 ± 5,4	<2,90	<0,455	<1,03
Jalec	V.Kozmálov	2006/2027	0,230 ± 0,072	104 ± 6	<4,89	0,590 ± 0,192	<1,06

MÄSO

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Bravčovina	Zbrojníky	2006/1897	<0,278	93,5 ± 5,1	<2,16	0,522 ± 0,163	<1,00
Repka	V.Ďur	2006/1124	<0,421	280 ± 15	<6,92	<0,645	<1,51
Slnečnica	Kozárovce	2006/1385	<0,387	236 ± 13	<5,16	<0,657	<1,40
Slnečnica	Nevidzany	2006/1386	<0,282	220 ± 12	<3,80	0,651 ± 0,219	<0,947

VODNÉ RASTLINY - HRON

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{60}Co	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]					
V.rastliny	Kozárovce	2006/1335	<0,971	7,90 ± 0,64	610 ± 38	184 ± 14	33,8 ± 3,0	37,1 ± 6,5
V.rastliny	V.Kozmálovce	2006/1334	<0,989	6,54 ± 0,58	595 ± 37	95,9 ± 9,9	41,4 ± 3,7	35,3 ± 6,6
V.rastliny	V.Kozmálovce	2006/1734	1,31 ± 0,37	9,86 ± 0,67	553 ± 35	149 ± 12	77,3 ± 6,7	31,1 ± 6,0

Table 329 Specific activity of agricultural production samples, 2006

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

TRÁVNATÝ PORAST

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Tráva	Vráble	2007/1825	2,28 ± 0,31	530 ± 43	325 ± 28	3,67 ± 1,01	2,18 ± 0,92
Tráva	T.Mlýňany	2007/1824	1,05 ± 0,26	437 ± 38	285 ± 26	4,96 ± 1,12	<2,95
Tráva	T.Hrádok	2007/1822	1,19 ± 0,22	219 ± 17	392 ± 31	4,79 ± 0,90	4,52 ± 1,52
Tráva	N.Tekov	2007/1823	0,582 ± 0,155	153 ± 12	261 ± 21	2,35 ± 0,69	1,39 ± 0,81
Tráva	Mochovce	2007/1826	<0,713	562 ± 42	225 ± 18	2,23 ± 0,80	<2,57

KRMIVO

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Ďatelina	Kozárovce	2007/0772	0,579 ± 0,224	1390 ± 100	75,2 ± 8,7	<1,84	<4,31
Ďatelina	Hr.Klačany	2007/0804	<1,07	1280 ± 90	63,5 ± 7,7	<1,49	<3,93
Jačmeň	Kozárovce	2007/1275	<0,397	190 ± 10	9,08 ± 2,03	<0,772	<1,42
Jačmeň	Vráble	2007/1276	<0,407	141 ± 8	<13,0	1,46 ± 0,40	<1,39
Pšenica	Kozárovce	2007/1277	0,140 ± 0,067	143 ± 8	<9,01	1,29 ± 0,32	<1,10
Pšenica	Vráble	2007/1278	<0,392	162 ± 9	<13,0	<0,779	<1,31
Kukurica	M.Kozmálovce	2007/1439	<0,352	121 ± 7	<3,79	<0,707	<1,20
Kukurica	M.Vozokany	2007/1478	<0,365	113 ± 6	<3,84	<0,723	<1,32
Ďatelina	M.Kozmálovce	2007/1723	<0,662	1060 ± 70	1,01 ± 0,83	2,26 ± 0,63	<2,49
Ďatelina	Kozárovce	2007/1899	0,353 ± 0,143	733 ± 46	235 ± 16	1,26 ± 0,65	1,95 ± 0,67

OVOCIE

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Jahody	Volkovce	2007/0740	<0,266	66,5 ± 3,8	<2,27	0,545 ± 0,188	<0,936
Jahody	T.Lužany	2007/0788	<0,259	73,4 ± 4,1	<2,19	0,625 ± 0,187	<0,953
Čerešne	V.Ďur	2007/0805	<0,261	67,0 ± 3,8	<2,23	0,463 ± 0,184	<0,933
Čerešne	Č.Klačany	2007/0806	<0,276	75,5 ± 4,5	<2,30	0,422 ± 0,151	<0,977
Višne	Č.Hrádok	2007/0904	<0,254	66,6 ± 3,8	<3,31	<0,442	<0,922
Hrušky	Volkovce	2007/1338	0,174 ± 0,056	44,7 ± 2,8	<2,45	<0,503	<0,893
Hrušky	Tajná	2007/1437	0,092 ± 0,048	49,4 ± 3,0	<2,17	<0,484	<0,853
Jablká	T.Hrádok	2007/1440	0,109 ± 0,062	39,9 ± 2,6	<2,25	<0,501	<0,892
Jablká	Vráble	2007/1441	<0,253	34,6 ± 2,4	<2,25	<0,505	<0,881
Hrozno	Levice	2007/1438	<0,267	93,1 ± 5,0	<2,69	<0,524	<0,959
Hrozno	Č.Hrádok	2007/1442	0,153 ± 0,055	96,3 ± 5,2	1,80 ± 0,77	<0,548	<0,968

Table 330 Specific activity of agricultural production samples, 2007

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

ZELENINA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Hrach*	Lúčnica n/Žit.	2007/1279	<0,442	356 ± 19	<12,5	<0,859	<1,51
Hrach*	Mochovce	2007/1280	0,465 ± 0,116	395 ± 21	<12,1	<0,817	<1,53
Paradajky	Č.Hrádok	2007/1301	0,213 ± 0,066	83,5 ± 4,5	<2,62	<0,478	<0,895
Paradajky	Levice	2007/1672	0,139 ± 0,055	59,4 ± 3,5	<3,22	<0,539	<0,921
Uhorky	T.Lužany	2007/1444	<0,277	82,5 ± 4,5	<2,42	<0,520	<0,938
Tekvica	St.Tekov	2007/1477	<0,266	65,7 ± 3,8	<2,69	<0,509	<0,909
Tekvica	T.Lužany	2007/1484	0,105 ± 0,048	80,5 ± 4,4	<2,53	<0,531	<0,955
Cuketa	Č.Hrádok	2007/1501	<0,259	58,6 ± 3,5	<3,05	<0,539	<0,904
Paprika	T.Lužany	2007/1485	<0,271	80,1 ± 4,4	<3,14	<0,519	<0,935
Paprika	Rybník	2007/1521	<0,259	79,0 ± 4,4	<3,09	0,728 ± 0,254	<0,952
Zemiaky	Krškany	2007/1476	0,186 ± 0,066	164 ± 8	<3,63	<0,566	<1,07
Zemiaky	T.Lužany	2007/2066	<0,265	172 ± 9	<3,41	1,56 ± 0,24	<1,02
Kapusta	H.Ohaj	2007/1624	0,193 ± 0,058	82,8 ± 4,6	<2,76	<0,535	<0,962
Kapusta	Č.Hrádok	2007/1625	0,205 ± 0,057	86,5 ± 4,7	<2,77	<0,527	<0,964
Mrkva	Rybník	2007/1740	<0,310	214 ± 11	<2,88	<0,580	<1,11
Mrkva	T.Lužany	2007/2048	<0,263	157 ± 8	<3,85	2,19 ± 0,26	<1,01
Petržlen	Rybník	2007/1741	<0,322	232 ± 12	<3,06	<0,631	<1,17
Petržlen	T.Lužany	2007/2049	<0,267	175 ± 9	<3,79	0,880 ± 0,217	<0,930
Fazuľa*	T.Lužany	2007/2052	<0,405	584 ± 30	<5,31	<0,760	<1,51
Fazuľa*	T.Hrádok	2007/2065	<0,362	449 ± 23	<4,17	<0,770	<1,37

Poznámka: * Bq/kg sušenej vzorky

OLEJNINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Repka	Zl.Moravce	2007/1273	<0,432	272 ± 14	<14,2	<0,807	<1,48
Repka	Kalná n/Hr.	2007/1274	<0,411	320 ± 17	<15,6	<0,793	<1,33
Slnečnica	Nemčiňany	2007/1337	0,444 ± 0,105	277 ± 15	4,49 ± 1,81	<0,827	<1,52
Slnečnica	Kozárovce	2007/1479	<0,392	210 ± 11	<7,05	<0,809	<1,32
Orechy	V.Ďur	2007/1671	<0,375	141 ± 8	<3,71	<0,745	<1,35
Orechy	T.Lužany	2007/2051	<0,295	144 ± 8	<4,66	0,957 ± 0,398	<1,09

ČAJOVINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Baza-kvet	Šándorhalma	2007/0643	<0,930	1200 ± 70	49,6 ± 5,5	<1,53	<3,40
Baza-kvet	Č.Hrádok	2007/0646	<0,738	1060 ± 80	4,40 ± 1,24	<1,43	<2,94
Agát-kvet	Kozárovce	2007/0644	<0,782	720 ± 45	15,9 ± 3,1	<1,35	<2,93
Agát-kvet	V.Vozokany	2007/0645	<0,690	843 ± 52	63,2 ± 5,8	2,24 ± 0,57	<2,33
Šípky	Tajná	2007/1554	<0,416	346 ± 18	11,8 ± 3,0	1,25 ± 0,33	<1,50
Šípky	Mochovce	2007/1623	<0,395	434 ± 22	12,3 ± 2,7	1,08 ± 0,37	<1,50

Table 331 Specific activity of agricultural production samples, 2007

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

CUKROVÁ REPA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Repa	V.Ďur	2007/1522	<0,253	69,7 ± 3,9	<3,17	<0,524	<0,947
Repa	Vráble	2007/1536	<0,250	35,3 ± 2,4	<2,86	<0,495	<0,894

VODNÉ RASTLINY - HRON

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Vod. mach	V.Kozmálovce	2007/1335	4,32 ± 0,42	571 ± 36	82,7 ± 7,8	32,3 ± 2,9	23,8 ± 4,7
Vod. mach	Kozárovce	2007/1336	2,99 ± 0,38	534 ± 33	120 ± 10	36,8 ± 3,3	24,4 ± 4,6

HRÍBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Pôvabnica	N.Tekov	2007/1816	<0,275	103 ± 5	<2,45	<0,530	<0,976
Hliva	T.Lužany	2007/2050	<0,200	147 ± 7	<3,09	1,07 ± 0,17	<0,756

RYBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Jalec	V.Kozmálovce	2007/0035	0,264 ± 0,070	98,6 ± 5,3	<4,33	<0,407	<0,929
Podustva	V.Kozmálovce	2007/1665	0,235 ± 0,069	92,2 ± 5,0	<5,40	<0,541	<0,965
Podustva	Kalná n/Hr.	2007/1670	0,382 ± 0,079	87,7 ± 4,8	<5,01	<0,544	<0,975
Nosáľ	V.Kozmálovce	2007/1893	0,248 ± 0,710	88,2 ± 4,8	<4,77	<0,532	<0,973

MÄSO

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Bravčovina	Zbrojníky	2007/1842	0,208 ± 0,085	125 ± 7	<3,62	<0,538	<0,976

Table 332 Specific activity of agricultural production samples, 2007

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY
(gamaspektrometria)

TRÁVNATÝ PORAST

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Tráva	Vráble	2008/2115	0,218 ± 0,275	316 ± 43	512 ± 70	2,66 ± 1,26	<2,24
Tráva	T.Mlýňany	2008/2121	0,600 ± 0,316	376 ± 51	461 ± 63	4,99 ± 1,54	<2,28
Tráva	T.Hrádok	2008/2127	0,214 ± 0,228	210 ± 29	631 ± 86	2,32 ± 1,28	1,76 ± 2,12
Tráva	Mochovce	2008/2133	0,642 ± 0,309	422 ± 57	514 ± 71	2,02 ± 1,20	<2,35

KRMIVO

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Ďatelina	Mochovce	2008/0655	1,11 ± 0,40	616 ± 71	27,6 ± 8,8	<1,26	<2,30
Ďatelina	Prílepy	2008/0656	0,572 ± 0,323	684 ± 78	45,9 ± 10,5	<1,22	<2,29
Pšenica	Č.Hrádok	2008/1202	<0,350	118 ± 12	<8,82	<0,816	<1,19
Pšenica	Zl.Moravce	2008/1203	<0,381	145 ± 14	<9,71	<0,758	<1,27
Jačmeň	Vráble	2008/1204	0,160 ± 0,151	133 ± 13	5,70 ± 3,92	<0,704	<1,27
Jačmeň	V.Ďur	2008/1205	<0,376	148 ± 15	10,3 ± 4,7	<0,741	<1,29
Kukurica	Č.Klačany	2008/1429	<0,376	111 ± 12	<4,65	<0,814	<1,33
Kukurica	Kozárovce	2008/1431	<0,380	130 ± 13	<4,74	<0,778	<1,34
Ďatelina	Mochovce	2008/1711	0,521 ± 0,326	1030 ± 120	136 ± 17	1,75 ± 1,14	2,64 ± 2,63
Ďatelina	Prílepy	2008/1712	0,915 ± 0,346	369 ± 43	163 ± 20	2,07 ± 1,04	<2,21

OVOCIE

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Jahody	Rybník	2008/0826	<0,284	43,4 ± 5,3	<4,45	<0,524	<0,971
Jahody	Volkovce	2008/0842	<0,280	58,8 ± 6,5	<4,30	<0,536	<0,927
Čerešne	V.Ďur	2008/0875	<0,278	57,2 ± 6,3	<3,93	<0,517	<0,967
Čerešne	Č.Klačany	2008/0876	0,102 ± 0,116	55,7 ± 6,3	<3,87	<0,533	<0,951
Višne	Č.Hrádok	2008/1009	<0,273	45,3 ± 5,4	<3,42	<0,455	<0,952
Marhule	Levice	2008/1078	<0,267	78,4 ± 7,9	<3,36	<0,532	<0,972
Marhule	Č.Hrádok	2008/1079	<0,206	88,9 ± 8,1	2,78 ± 1,35	<0,456	<0,735
Broskyne	T.Lužany	2008/1208	<0,256	47,3 ± 5,4	1,65 ± 1,52	<0,495	<0,909
Broskyne	Levice	2008/1251	0,104 ± 0,086	70,6 ± 7,2	<2,53	<0,527	<0,926
Slivky	Levice	2008/1230	<0,268	71,1 ± 7,2	<2,82	<0,513	<0,924
Slivky	Č.Hrádok	2008/1425	<0,262	64,3 ± 6,7	<2,00	<0,511	<0,934
Hrušky	Tajná	2008/1547	<0,252	52,1 ± 5,8	<2,10	<0,499	<0,913
Hrušky	Volkovce	2008/1549	0,108 ± 0,101	38,8 ± 4,8	<2,14	<0,504	<0,884
Jablká	Vráble	2008/1548	0,111 ± 0,096	40,0 ± 4,9	<2,06	<0,504	<0,897
Jablká	Rybník	2008/1566	0,101 ± 0,086	53,7 ± 6,0	1,30 ± 1,05	<0,506	<0,915
Hrozno	Levice	2008/1565	<0,275	102 ± 10	3,48 ± 1,36	<0,562	<0,973
Hrozno	Č.Hrádok	2008/1567	<0,257	78,3 ± 7,8	<2,23	<0,516	<0,937

Table 333 Specific activity of agricultural production samples, 2008

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

ZELENINA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Uhorky	Tehla	2008/1114	<0,263	53,3 ± 5,9	<2,63	<0,520	<0,918
Uhorky	Levice	2008/1166	<0,258	71,5 ± 7,2	<2,57	<0,505	<0,926
Paprika	Rybník	2008/1264	<0,276	114 ± 11	<2,54	<0,526	<0,969
Paprika	T.Lužany	2008/1426	<0,261	90,4 ± 8,7	<1,96	<0,524	<0,967
Paradajky	Volkovce	2008/1265	<0,260	57,6 ± 6,2	<2,40	<0,490	<0,897
Paradajky	T.Lužany	2008/1427	<0,278	83,4 ± 8,2	<2,15	<0,581	<0,965
Hrach*	Levice	2008/1266	0,358 ± 0,239	346 ± 32	<7,46	<0,834	<1,58
Hrach*	Lúčnica n/Ž.	2008/1267	<0,415	348 ± 32	<8,98	<0,802	<1,53
Fazuľa*	T.Hrádok	2008/1707	<0,489	505 ± 46	<3,56	1,09 ± 0,68	<1,81
Fazuľa*	T.Lužany	2008/1708	<0,521	625 ± 56	<3,84	0,835 ± 0,811	<1,94
Zemiaky	Č.Hrádok	2008/2092	<0,260	163 ± 14	<4,85	1,85 ± 0,48	<0,965
Zemiaky	Volkovce	2008/2096	<0,266	165 ± 15	<4,76	1,65 ± 0,46	<0,964
Mrkva	Č.Hrádok	2008/2094	<0,288	111 ± 10	<5,16	1,05 ± 0,49	<1,05
Mrkva	Volkovce	2008/2095	<0,235	166 ± 14	<4,36	<0,497	<0,870
Kapusta	T.Lužany	2008/2109	<0,225	63,3 ± 6,2	<4,31	<0,531	<0,810

Poznámka: * Bq/kg sušenej vzorky

OLEJNINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Repka	Mochovce	2008/1206	<0,426	265 ± 25	<8,06	<0,777	<1,53
Repka	Nemčiňany	2008/1207	<0,409	255 ± 24	<6,31	<0,776	<1,44
Slnečnica	N.Ves n/Ž	2008/1428	<0,423	251 ± 24	3,87 ± 2,71	<0,888	<1,45
Slnečnica	Zl.Moravce	2008/1430	<0,401	240 ± 23	<5,54	<0,802	<1,39
Orechy	Levice	2008/1709	<0,383	165 ± 16	<3,57	<0,757	<1,42
Orechy	T.Lužany	2008/1710	<0,382	155 ± 15	<4,23	0,994 ± 0,595	<1,29

ČAJOVINY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Baza-kvet	Šándorhalma	2008/0712	<0,719	1010 ± 110	130 ± 19	<1,36	<2,57
Baza-kvet	Č.Hrádok	2008/0713	<0,700	1070 ± 120	99,2 ± 15,5	<1,39	<2,62
Agát-kvet	Kozárovce	2008/0790	<0,607	557 ± 64	36,4 ± 8,4	<1,24	<2,25
Agát-kvet	Nevidzany	2008/0791	0,371 ± 0,226	599 ± 68	32,4 ± 8,3	<1,08	<1,99
Šípky	Mochovce	2008/1933	0,197 ± 0,194	367 ± 34	25,2 ± 4,8	1,04 ± 0,63	<1,61
Šípky	Tajná	2008/1934	0,329 ± 0,212	326 ± 30	12,1 ± 3,7	1,65 ± 0,62	<1,49

Table 334 Specific activity of agricultural production samples, 2008

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

(gamaspektrometria)

KŔMNA REPA

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Repa	Č.Hrádok	2008/2093	<0,284	76,8 ± 7,8	<4,87	<0,476	<0,947
Repa	T.Lužany	2008/2108	<0,308	185 ± 16	<5,11	0,763 ± 0,461	<1,14

VODNÉ RASTLINY - HRON

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg sušenej vzorky]				
Vod. mach	V.Kozmálovce	2008/1231	5,95 ± 1,02	637 ± 73	138 ± 21	55,9 ± 9,0	37,7 ± 13,4
Vod. mach	Kozárovce	2008/1232	4,84 ± 0,69	671 ± 77	175 ± 25	42,3 ± 6,9	30,5 ± 10,7
Vod. mach	V.Kozmálovce	2008/1591	7,07 ± 1,07	523 ± 61	91,8 ± 13,9	35,1 ± 5,8	34,2 ± 11,9

HRÍBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Hliva	T.Lužany	2008/1768	<0,274	105 ± 10	<2,07	<0,487	<0,966
Pôvabnica	T.Hrádok	2008/2110	<0,297	147 ± 13	2,62 ± 2,54	<0,576	<1,08

RYBY

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Nosáľ	V.Kozmálovce	2008/1080	<0,290	98,1 ± 9,4	<5,01	0,443 ± 0,445	<1,00
Nosáľ	V.Kozmálovce	2008/1496	<0,266	96,1 ± 9,1	<3,47	<0,540	<0,955
Pleskáč	V.Kozmálovce	2008/1585	<0,287	91,5 ± 8,9	<3,67	<0,565	<1,01
Nosáľ	V.Kozmálovce	2008/1777	0,278 ± 0,144	95,0 ± 9,0	<3,07	<0,475	<0,973
Podustva	V.Kozmálovce	2008/1950	0,231 ± 0,156	113 ± 11	<3,03	<0,520	<0,984

MÄSO

Druh	Lokalita	Rádionuklid / Ev. č. prot.	^{137}Cs	^{40}K	^{7}Be	U - rad	Th - rad
			[Bq/kg surovej vzorky]				
Bravčovina	V.Ďur	2008/1778	0,135 ± 0,127	89,8 ± 8,7	<3,06	<0,562	<0,961

Table 335 Specific activity of agricultural production samples, 2008

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

rádiochémia: ^{90}Sr

Druh	Lokalita	Evid.č.prot.	90Sr [mBq/kg]		
Fazula	Červený Hrádok	**2005/1627**	371	±	43
Zemiaky	Starý Tekov	**2005/1584**	67	±	10
Paprika	Tekovské Lužany	**2005/1417**	40	±	5
Hrušky	Volkovce	**2005/1586**	49	±	7
Uhorky	Horná Seč	**2005/1185**	91	±	12
Jablká	Malé Kozmálovce	**2005/1578**	23	±	3
Cuketa	Červený Hrádok	**2005/1184**	54	±	7
Kapusta	Zlaté Moravce	**2005/1606**	135	±	16
Hrach	Kalná n. Hronom	**2005/1103**	194	±	27
Pšenica	Vráble	**2005/1108**	221	±	27
Mrkva	Čierne Kľačany	**2005/1587**	160	±	19
Slnečnica	Zlaté Moravce	**2005/1582**	445	±	61
Repka olejka	Zlaté Moravce	**2005/1107**	1457	±	160
Jačmeň	V.Ďúr	**2005/1105**	202	±	25
Kukurica	Malé Kozmálovce	**2005/1588**	84	±	13
Cukrová repa	Horná Seč	**2005/1577**	143	±	18
Mäso	Zbrojníky	**2005/2118**	29	±	4
Ryby	Velké Kozmálovce	**2005/1774**	193	±	21

Table 336 Specific activity of agricultural production samples, 2005

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

rádiochémia: ^{90}Sr

Druh	Lokalita	Evid.č.prot.	90Sr [mBq/kg]		
Tekovské Lužany	Paprika	**2006/1346**	58	±	7
Volkovce	Zemiaky	**2006/1345**	133	±	18
Nemčiňany	Slivky	**2006/1342**	104	±	12
Tajná	Hrušky	**2006/1590**	54	±	7
Tekovské Lužany	Uhorky	**2006/1347**	48	±	6
Malé Kozmálovce	Jablká	**2006/1602**	66	±	8
Červený Hrádok	Cuketa	**2006/1341**	51	±	6
Starý Hrádok	Kapusta	**2006/1606**	80	±	9
Čifáre	Kukurica	**2006/1589**	107	±	13
Zlaté Moravce	Pšenica	**2006/1121**	248	±	26
Tekovské Lužany	Fazuľa	**2006/1764**	183	±	23
Kozárovce	Slnečnica	**2006/1385**	258	±	30
V.Ďúr - Rohožnica	Repka olejka	**2006/1124**	959	±	119
Kozárovce	Jačmeň	**2006/1120**	224	±	28
Vráble	Hrach	**2006/1125**	242	±	33
Levice	Cukrová repa	**2006/1384**	50	±	7
Zbrojníky	M ä s o	**2006/1897**	73	±	8
Velké Kozmálovce	R y b y	**2006/789**	196	±	22

Table 337 Specific activity of agricultural production samples, 2006

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

rádiochémia: ^{90}Sr

Druh	Lokalita	Evid.č.prot.	90Sr [mBq/kg]		
Tekovské Lužany	Paprika	**2007/1485**	37	±	5
Krškany	Zemiaky	**2007/1476**	25	±	3
Malé Kozmálovce	Kukurica	**2007/1439**	52	±	9
Volkovce	Hrušky	**2007/1338**	25	±	3
Tekovské Lužany	Uhorky	**2007/1444**	55	±	8
Vráble	Jablká	**2007/1441**	30	±	4
Červený Hrádok	Cuketa	**2007/1501**	57	±	7
Horný Oháj	Kapusta	**2007/1624**	67	±	11
Lúčnica	Hrach	**2007/1279**	182	±	23
Vráble	Pšenica	**2007/1278**	398	±	41
Rybník	Mrkva	**2007/1740**	381	±	36
Kozárovce	Slnečnica	**2007/1479**	559	±	82
Kalná n/Hronom	Repka olejka	**2007/1274**	109	±	13
Kozárovce	Jačmeň	**2007/1275**	58	±	7
Starý Tekov	Tekvica	**2007/1477**	194	±	21
Veľký Ďúr	Cukrová repa	**2007/1522**	37	±	5
Zbrojníky	M ä s o	**2007/1842**	37	±	5
Velké Kozmálovce	R y b y	**2007/1893**	170	±	20

Table 338 Specific activity of agricultural production samples, 2007

HMOTNOSTNÁ AKTIVITA VZORIEK POĽNOHOSPODÁRSKEJ VÝROBY

rádiochémia: ^{90}Sr

Druh	Lokalita	Evid.č.prot.	90Sr [mBq/kg]		
Tekovské Lužany	Paprika	**2008/1426**	56	±	5
Červený Hrádok	Zemiaky	**2008/2092**	57	±	5
Levice	Slivky	**2008/1230**		<50	
Volkovce	Hrušky	**2008/1549**	68	±	6
Tehla	Uhorky	**2008/1114**	65	±	6
Vráble	Jablká	**2008/1548**		<50	
EMO Mochovce	Šípky	**2008/1933**	1021	±	92
Tekovské Lužany	Kapusta	**2008/2109**	63	±	6
Lúčnica nad Žitavou	Hrach	**2008/1267**	210	±	19
Z.Moravce	Pšenica	**2008/1203**	272	±	25
Červený Hrádok	Mrkva	**2008/2094**	209	±	19
Vieska nad Žitavou	Slnečnica	**2008/1428**	362	±	33
EMO Mochovce	Repka olejka	**2008/1206**	860	±	77
Vráble	Jačmeň	**2008/1204**	130	±	12
Č.Kľačany	Kukurica	**2008/1429**	52	±	5
Červený Hrádok	Repa	**2008/2093**	143	±	13
V.Ďur	M ä s o	**2008/1778**		<50	
Velké Kozmálovce	R y b y	**2008/1080**	187	±	17

Table 339 Specific activity of agricultural production samples, 2008

ALFASPEKTROMETRIA
(vybrané vzorky)

Pôda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
EMO Horáreň	146/2005	0,352 ± 0,088	0,069 ± 0,045	0,077 ± 0,055
EMO ZS	145/2005	0,308 ± 0,071	0,058 ± 0,034	0,087 ± 0,059

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
Kalná n/Hr.-Hron	150/2005	0,0016 ± 0,0003	<0,0002	0,0006 ± 0,0002
Čifáre rybník	149/2005	0,0005 ± 0,0002	<0,0002	0,0009 ± 0,0003
N. Tekov - č.d. 96	148/2005	0,0016 ± 0,0004	0,0004 ± 0,0002	0,0019 ± 0,0004

Sediment

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
Kalná n/Hr.-elektráreň	147/2005	0,092 ± 0,048	<0,0002	0,079 ± 0,059

Table 340 Alpha spectrometry of selected samples, 2005

ALFASPEKTROMETRIA
(vybrané vzorky)

Pôda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
EMO Horáreň	1340/2006	0,289 ± 0,088	0,068 ± 0,049	0,077 ± 0,055
EMO ZS	1339/2006	0,276 ± 0,087	0,056 ± 0,049	0,069 ± 0,052

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
Kalná n/Hr.-Hron	1271/2006	0,0012 ± 0,0003	<0,0002	0,0005 ± 0,0002
Čifáre rybník	1293/2006	0,0007 ± 0,0002	<0,0002	0,0006 ± 0,0002
Starý Tekov	1267/2006	0,0015 ± 0,0003	0,0004 ± 0,0001	0,001 ± 0,0003

Sediment

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
Kalná n/Hr.-elektráreň	1318/2006	0,117 ± 0,061	<0,0002	0,062 ± 0,054

Table 341 Alpha spectrometry of selected samples, 2006

ALFASPEKTROMETRIA
(vybrané vzorky)

Pôda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
EMO Horáreň	492/2007	0,101 ± 0,050	<0,00008	0,081 ± 0,046
EMO ZS	491/2007	0,120 ± 0,052	<0,00008	0,159 ± 0,088

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/dm^3]	^{238}PU [Bq/dm^3]	^{241}AM [Bq/dm^3]
Kalná n/Hr.-Hron	495/2007	<0,00008	<0,00008	<0,00008
Čifáre rybník	496/2007	0,00014 ± 0,00009	<0,00008	0,00066 ± 0,00047
Starý Tekov	494/2007	0,00015 ± 0,00010	<0,00008	0,00059 ± 0,00042

Sediment

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
Nový Tekov -elektráreň	493/2007	0,060 ± 0,048	<0,00008	0,092 ± 0,059

Table 342 Alpha spectrometry of selected samples, 2007

ALFASPEKTROMETRIA
(vybrané vzorky)

Pôda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
EMO Horáreň	1334/2008	0,46 ± 0,19	<0,085	<0,085
EMO ZS	1433/2008	0,26 ± 0,12	<0,085	<0,085

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/dm^3]	^{238}PU [Bq/dm^3]	^{241}AM [Bq/dm^3]
Kalná n/Hr.-Hron	1440/2008	0,0010 ± 0,0004	<0,0002	0,0004 ± 0,0003
Čifáre rybník	1441/2008	0,0006 ± 0,0003	<0,0002	0,0003 ± 0,0002
Starý Tekov	1439/2008	0,0013 ± 0,0004	<0,0002	0,0009 ± 0,0004

Sediment

Rádionuklid / Lokalita	Evid. číslo protokolu	^{239,240}PU [Bq/kg]	^{238}PU [Bq/kg]	^{241}AM [Bq/kg]
Nový Tekov -elektráreň	1432/2008	0,190 ± 0,08	<0,085	<0,085

Table 343 Alpha spectrometry of selected samples, 2008

BETA ANALÝZA ^{14}C
(vybrané vzorky)

Poľnohospodárske produkty

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
Kalná n/Hr.- pšenica	154/2005	2,19 ± 0,31
Telince - jačmeň	155/2005	2,88 ± 0,40
Č. Hrádok - jačmeň	156/2005	3,23 ± 0,45

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/dm^3]
Kalná n/Hr.- elektráreň	151/2005	<1,0

Mlieko

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
T. Hrádok	152/2005	<1,0
T. Hrádok	153/2005	<1,0

Poznámky: výsledky sú udávané s rozšírenou neistotou (k=2), čísla protokolov sú uvedené od dodávateľa analýz

Table 344 ^{14}C activity in selected samples, 2005

BETA ANALÝZA ^{14}C
(vybrané vzorky)

Poľnohospodárske produkty

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
N. Tekov - hrach	1126/2006	2,13 ± 0,3
Vráble - pšenica	1122/2006	2,15 ± 0,30
V.Ďúr (Rohožnica)- jačmeň	1119/2006	2,58 ± 0,36

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/dm^3]
Kalná n/Hr.- elektráreň	1317/2006	<1,0

Mlieko

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
T. Hrádok (7 mesiac)	1349/2006	<1,0
T. Hrádok (8 mesiac)	1350/2006	<1,0

Poznámky: výsledky sú udávané s rozšírenou neistotou (k=2), čísla protokolov sú uvedené od dodávateľa analýz

Table 345 ^{14}C activity in selected samples, 2006

BETA ANALÝZA ^{14}C
(vybrané vzorky)

Poľnohospodárske produkty

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
EMO okolie - hrach	500/2007	<2,0
Zlaté Moravce - pšenica	498/2007	2,52 ± 0,35
Kalná n/ Hronom - jačmeň	499/2007	2,78 ± 0,39

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/dm^3]
Nový Tekov - elektráreň	497/2007	<1,0

Mlieko

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
T. Hrádok (5 mesiac)	501/2007	<1,0
T. Hrádok (6 mesiac)	502/2007	<1,0

Poznámky: výsledky sú udávané s rozšírenou neistotou (k=2), čísla protokolov sú uvedené od dodávateľa analýz

Table 346 ^{14}C activity in selected samples, 2007

BETA ANALÝZA ^{14}C
(vybrané vzorky)

Vodné rastliny a poľnohospodárske produkty

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
Hron - vodné rastliny	1437/2008	1,280 ± 0,015
Veľký Ďur - pšenica	1436/2008	0,287 ± 0,072
Nevidzany - jačmeň	1435/2008	0,314 ± 0,072

Voda

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/dm^3]
Nový Tekov - elektráreň	1438/2008	<0,05

Mlieko

Rádionuklid / Lokalita	Evid. číslo protokolu	^{14}C [Bq/kg]
T. Hrádok (7 mesiac)	1442/2008	0,330 ± 0,014
T. Hrádok (8 mesiac)	1443/2008	1,260 ± 0,150

Poznámky: výsledky sú udávané s rozšírenou neistotou (k=2), čísla protokolov sú uvedené od dodávateľa analýz

Table 347 ^{14}C activity in selected samples, 2008

PRÍKON DÁVKY

(TLD 100 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	77 ± 6	87 ± 7	57 ± 7	73 ± 7	70 ± 6	69 ± 6	68 ± 6	71 ± 8	64 ± 5	70 ± 7	76 ± 6	74 ± 8
RÚ RAO 2	89 ± 7	92 ± 8	64 ± 7	80 ± 7	79 ± 6	75 ± 6	75 ± 6	85 ± 9	75 ± 6	83 ± 8	89 ± 6	94 ± 9
RÚ RAO 3	86 ± 6	88 ± 8	69 ± 7	85 ± 8	74 ± 6	79 ± 6	74 ± 6	80 ± 8	74 ± 6	75 ± 7	84 ± 6	98 ± 10
RÚ RAO 4	85 ± 6	94 ± 8	66 ± 7	91 ± 8	79 ± 6	81 ± 7	75 ± 6	88 ± 9	74 ± 6	85 ± 8	87 ± 6	115 ± 11
RÚ RAO SDS	54 ± 5	79 ± 7	70 ± 8	80 ± 7	81 ± 7	73 ± 6	79 ± 6	82 ± 8	81 ± 6	80 ± 7	95 ± 7	88 ± 9
Doba expozície [dni]	37	28	35	27	27	31	28	33	34	28	30	20

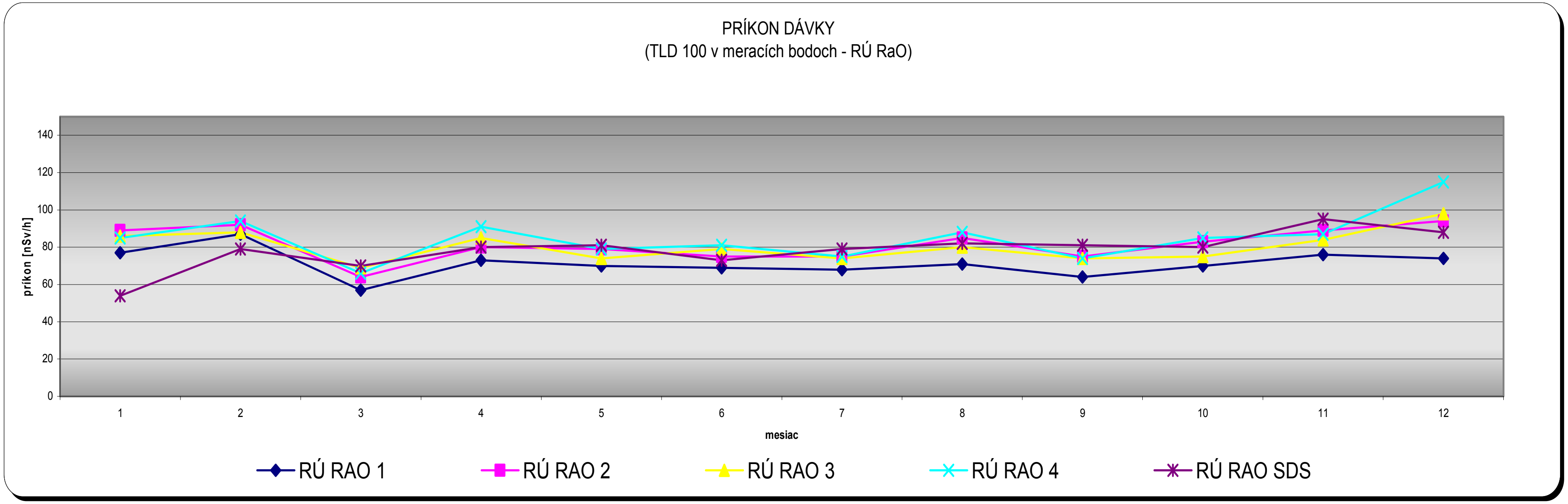

Table 348 Dose rate at RR RAW measured by TLD 100, 2005

PRÍKON DÁVKY

(TLD 100 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	65 ± 6	46 ± 6	67 ± 5	75 ± 6	67 ± 6	74 ± 5	65 ± 5	75 ± 6	75 ± 5	79 ± 7	72 ± 6	82 ± 7
RÚ RAO 2	75 ± 6	53 ± 6	78 ± 6	86 ± 7	85 ± 7	80 ± 6	73 ± 5	85 ± 7	90 ± 6	93 ± 8	86 ± 7	104 ± 8
RÚ RAO 3	74 ± 6	56 ± 6	77 ± 6	76 ± 6	85 ± 7	74 ± 5	73 ± 5	79 ± 6	84 ± 6	90 ± 8	80 ± 6	90 ± 8
RÚ RAO 4	78 ± 6	73 ± 7	85 ± 6	85 ± 7	90 ± 8	77 ± 6	73 ± 5	87 ± 7	82 ± 6	96 ± 8	84 ± 6	102 ± 8
RÚ RAO SDS	90 ± 7	56 ± 6	93 ± 7	76 ± 6	92 ± 8	71 ± 5	80 ± 6	78 ± 6	94 ± 6	89 ± 8	86 ± 7	90 ± 8
Doba expozície [dni]	42	30	33	29	27	34	26	32	33	28	31	36

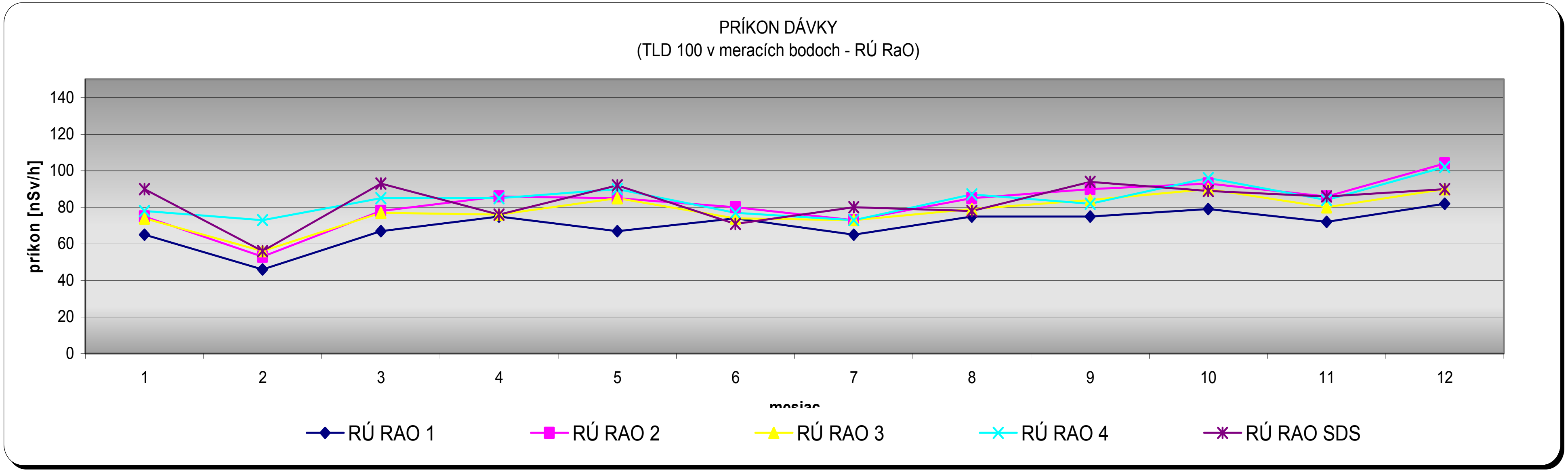

Table 349 Dose rate at RR RAW measured by TLD 100 ,2006

PRÍKON DÁVKY
(TLD 100 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január [nSv/h]	Február [nSv/h]	Marec [nSv/h]	Apríl [nSv/h]	Máj [nSv/h]	Jún [nSv/h]	Júl [nSv/h]	August [nSv/h]	September [nSv/h]	Október [nSv/h]	November [nSv/h]	December [nSv/h]
RÚ RAO 1	80 ± 6	89 ± 7	62 ± 6	77 ± 6	72 ± 6	71 ± 6	71 ± 5	72 ± 6	79 ± 6	87 ± 7	95 ± 8	95 ± 7
RÚ RAO 2	93 ± 7	98 ± 8	82 ± 7	88 ± 7	79 ± 6	79 ± 6	74 ± 6	84 ± 7	93 ± 7	98 ± 7	112 ± 9	114 ± 8
RÚ RAO 3	87 ± 6	90 ± 7	67 ± 6	80 ± 6	76 ± 6	72 ± 6	74 ± 6	78 ± 6	89 ± 7	94 ± 7	100 ± 9	91 ± 6
RÚ RAO 4	88 ± 7	98 ± 8	74 ± 6	86 ± 7	80 ± 6	80 ± 6	77 ± 6	88 ± 7	90 ± 7	96 ± 7	114 ± 9	103 ± 7
RÚ RAO SDS	95 ± 7	89 ± 7	78 ± 6	82 ± 6	83 ± 7	79 ± 6	81 ± 6	78 ± 6	92 ± 7	90 ± 7	113 ± 9	88 ± 6
Doba expozície [dni]	35	29	34	27	28	30	33	28	36	29	26	29

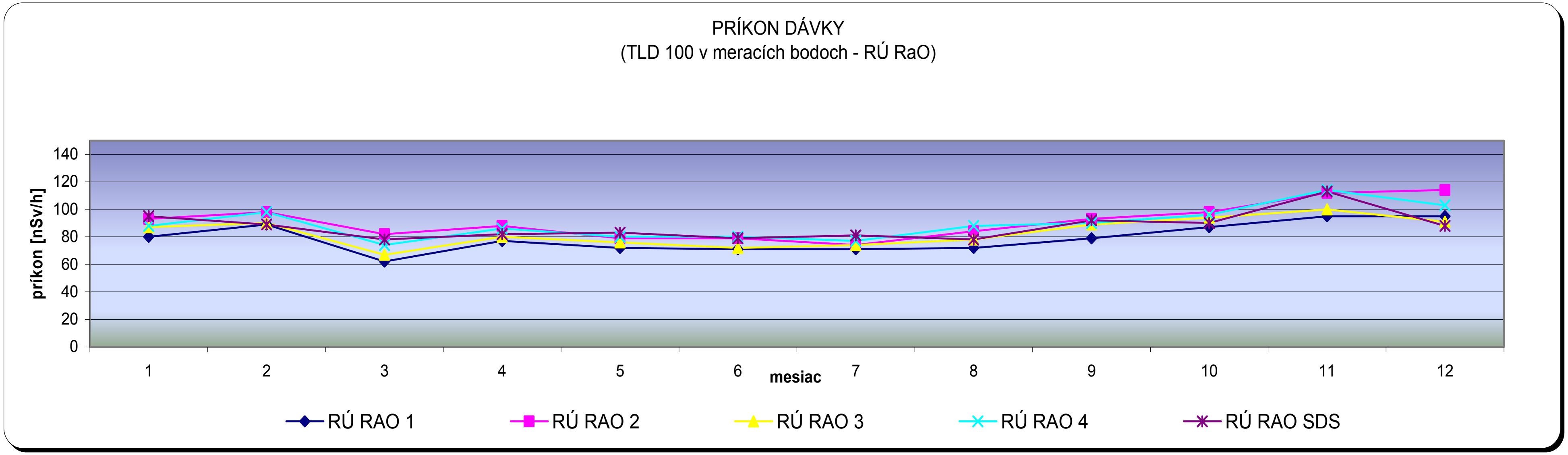

Table 350 Dose rate at RR RAW measured by TLD 100, 2007

PRÍKON DÁVKY
(TLD 100 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	89 ± 14	89 ± 13	75 ± 15	85 ± 15	81 ± 12	80 ± 12	78 ± 12	88 ± 13	77 ± 13	92 ± 14	81 ± 12	94 ± 17
RÚ RAO 2	105 ± 16	100 ± 14	85 ± 16	97 ± 17	86 ± 13	95 ± 14	81 ± 13	101 ± 14	92 ± 14	101 ± 15	97 ± 14	107 ± 18
RÚ RAO 3	95 ± 15	86 ± 13	80 ± 16	90 ± 16	82 ± 12	84 ± 13	84 ± 13	96 ± 14	92 ± 14	95 ± 14	91 ± 13	101 ± 18
RÚ RAO 4	101 ± 15	98 ± 14	85 ± 16	96 ± 17	87 ± 13	89 ± 13	83 ± 13	102 ± 14	95 ± 15	103 ± 15	91 ± 13	106 ± 18
RÚ RAO SDS	99 ± 15	84 ± 13	93 ± 17	90 ± 16	87 ± 13	80 ± 12	83 ± 13	95 ± 14	94 ± 15	92 ± 14	94 ± 13	97 ± 17
Doba expozície [dni]	41	28	30	28	34	27	36	29	27	36	31	18

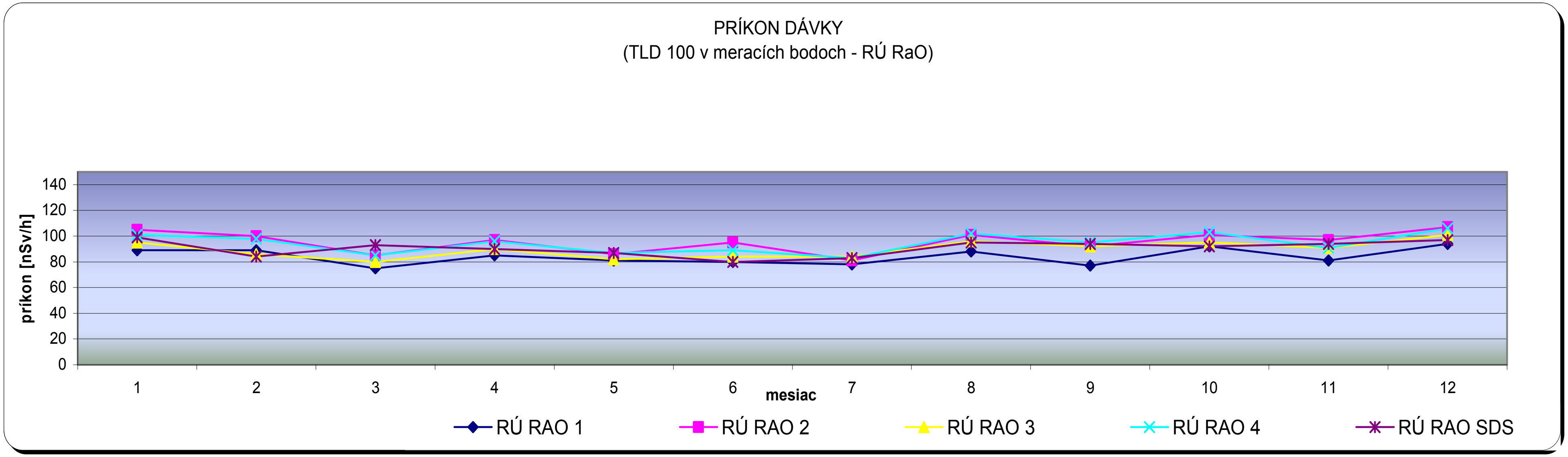

Table 351 Dose rate at RR RAW measured by TLD 100, 2008

PRÍKON DÁVKY
(TLD 200 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	85 ± 5	73 ± 4	67 ± 4	75 ± 5	80 ± 4	72 ± 4	75 ± 4	75 ± 4	76 ± 4	78 ± 5	85 ± 5	76 ± 5
RÚ RAO 2	95 ± 5	80 ± 5	72 ± 4	84 ± 5	86 ± 5	77 ± 4	83 ± 5	84 ± 5	86 ± 5	89 ± 5	95 ± 5	84 ± 5
RÚ RAO 3	91 ± 5	76 ± 4	71 ± 4	80 ± 5	86 ± 5	75 ± 4	81 ± 5	80 ± 4	82 ± 5	83 ± 5	92 ± 5	80 ± 5
RÚ RAO 4	91 ± 5	85 ± 5	74 ± 4	87 ± 5	86 ± 5	80 ± 5	81 ± 5	85 ± 5	83 ± 5	90 ± 5	94 ± 5	90 ± 5
RÚ RAO SDS	55 ± 4	76 ± 4	68 ± 4	78 ± 5	75 ± 4	70 ± 4	71 ± 4	77 ± 4	77 ± 4	83 ± 5	87 ± 5	79 ± 5
Doba expozície [dni]	37	28	35	27	27	31	28	33	34	28	30	20

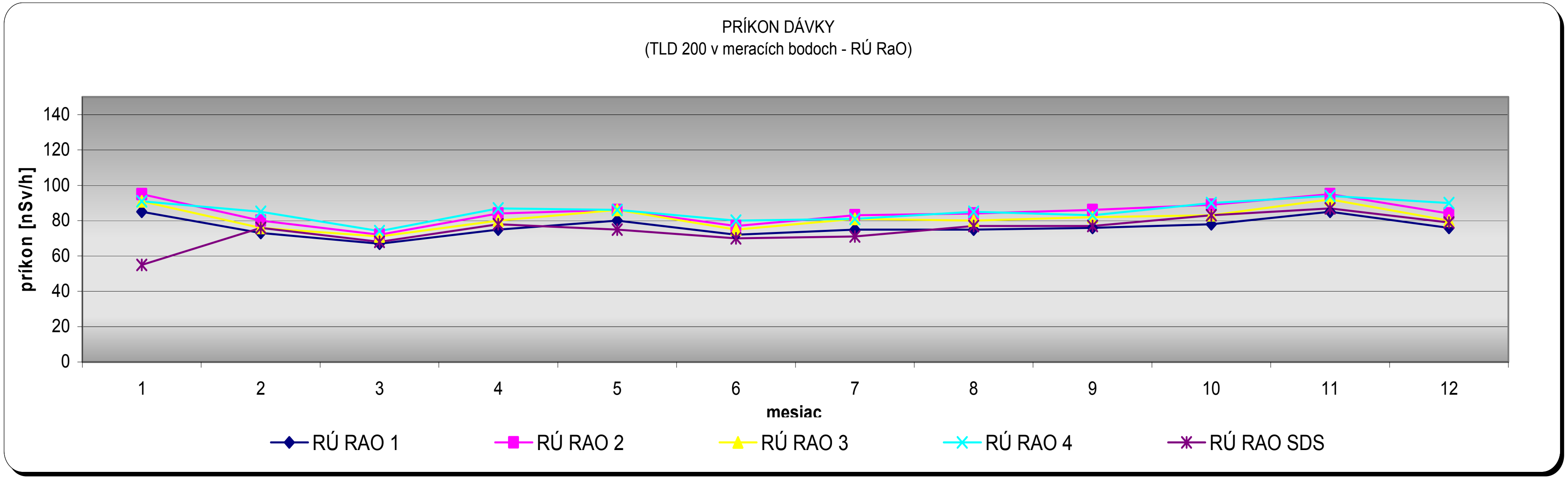

Table 352 Dose rate at RR RAW measured by TLD 200, 2005

PRÍKON DÁVKY

(TLD 200 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január [nSv/h]	Február [nSv/h]	Marec [nSv/h]	Apríl [nSv/h]	Máj [nSv/h]	Jún [nSv/h]	Júl [nSv/h]	August [nSv/h]	September [nSv/h]	Október [nSv/h]	November [nSv/h]	December [nSv/h]
RÚ RAO 1	73 ± 4	57 ± 4	73 ± 4	77 ± 4	85 ± 5	72 ± 4	68 ± 4	84 ± 5	83 ± 5	88 ± 5	85 ± 5	93 ± 5
RÚ RAO 2	79 ± 4	62 ± 4	79 ± 4	85 ± 5	94 ± 5	78 ± 4	73 ± 4	90 ± 5	93 ± 5	98 ± 5	96 ± 5	103 ± 5
RÚ RAO 3	80 ± 4	60 ± 4	81 ± 4	78 ± 4	92 ± 5	75 ± 4	75 ± 4	84 ± 5	90 ± 5	93 ± 5	93 ± 5	95 ± 5
RÚ RAO 4	83 ± 4	72 ± 4	88 ± 5	87 ± 5	94 ± 5	82 ± 4	74 ± 4	92 ± 5	91 ± 5	99 ± 5	94 ± 5	106 ± 6
RÚ RAO SDS	78 ± 4	66 ± 4	82 ± 5	77 ± 4	81 ± 5	70 ± 4	66 ± 4	81 ± 5	84 ± 5	92 ± 5	87 ± 5	97 ± 5
Doba expozície [dni]	42	30	33	29	27	34	26	32	33	28	31	36

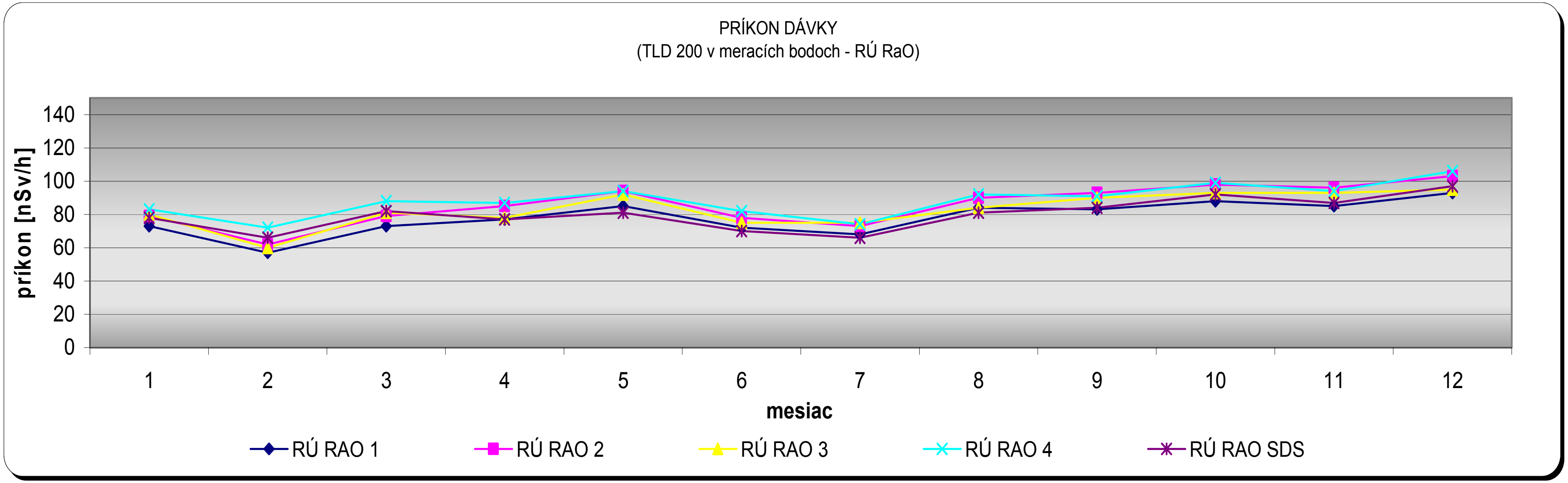

Table 353 Dose rate at RR RAW measured by TLD 200, 2006

PRÍKON DÁVKY

(TLD 200 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	88 ± 5	86 ± 5	84 ± 4	80 ± 4	80 ± 4	76 ± 4	77 ± 4	82 ± 5	85 ± 5	89 ± 5	93 ± 5	94 ± 5
RÚ RAO 2	98 ± 5	95 ± 5	92 ± 5	87 ± 5	87 ± 5	83 ± 5	82 ± 4	88 ± 5	94 ± 5	100 ± 5	109 ± 6	119 ± 6
RÚ RAO 3	95 ± 5	87 ± 5	85 ± 5	82 ± 4	83 ± 4	79 ± 5	83 ± 4	86 ± 5	95 ± 5	96 ± 5	103 ± 5	97 ± 5
RÚ RAO 4	95 ± 5	96 ± 5	86 ± 5	90 ± 5	86 ± 5	86 ± 5	84 ± 5	93 ± 5	93 ± 5	100 ± 5	103 ± 5	107 ± 6
RÚ RAO SDS	89 ± 5	89 ± 5	89 ± 5	82 ± 4	74 ± 4	74 ± 4	71 ± 4	80 ± 4	85 ± 5	93 ± 5	94 ± 5	99 ± 5
Doba expozície [dni]	35	29	34	27	28	30	33	28	36	29	26	29

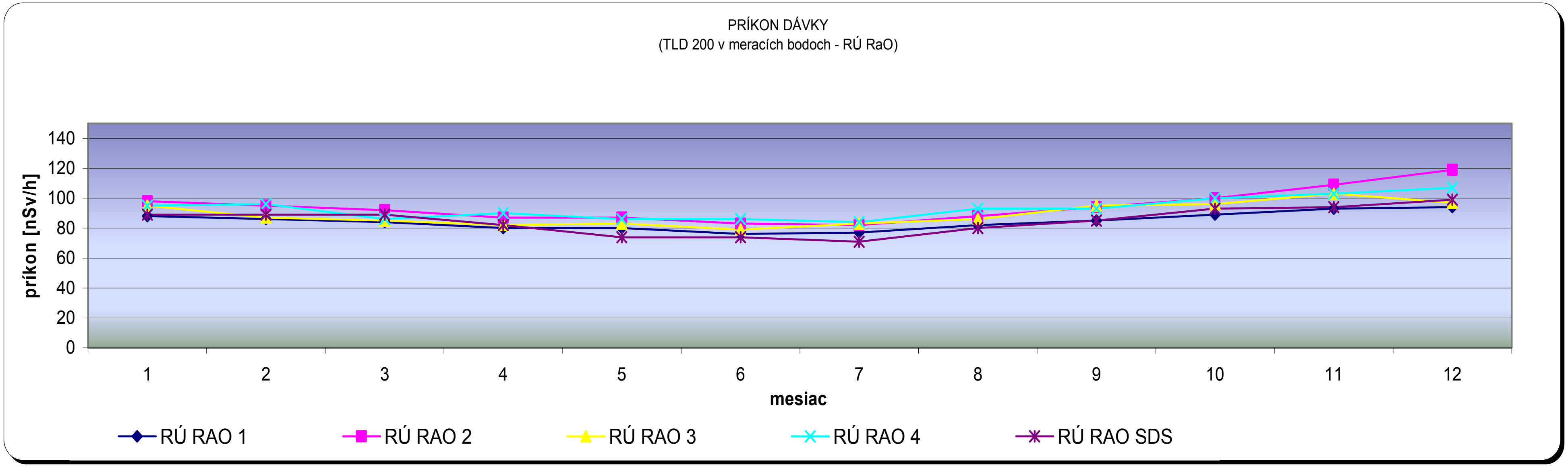

Table 354 Dose rate at RR RAW measured by TLD 200, 2007

PRÍKON DÁVKY

(TLD 200 v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	94 ± 10	87 ± 9	90 ± 10	83 ± 9	84 ± 9	79 ± 9	77 ± 8	81 ± 9	89 ± 10	87 ± 9	83 ± 9	93 ± 11
RÚ RAO 2	106 ± 11	98 ± 10	100 ± 10	91 ± 10	92 ± 10	88 ± 9	86 ± 9	91 ± 9	100 ± 10	101 ± 10	94 ± 10	105 ± 12
RÚ RAO 3	99 ± 10	91 ± 10	95 ± 10	85 ± 9	90 ± 9	84 ± 9	86 ± 9	85 ± 9	96 ± 10	92 ± 10	89 ± 9	97 ± 11
RÚ RAO 4	101 ± 10	98 ± 10	98 ± 10	91 ± 10	92 ± 10	90 ± 10	84 ± 9	90 ± 9	97 ± 10	97 ± 10	90 ± 9	106 ± 12
RÚ RAO SDS	95 ± 10	92 ± 10	91 ± 10	84 ± 9	78 ± 9	77 ± 9	71 ± 8	79 ± 9	89 ± 9	93 ± 10	84 ± 9	97 ± 11
Doba expozície [dni]	41	28	30	28	34	27	36	29	27	36	31	18

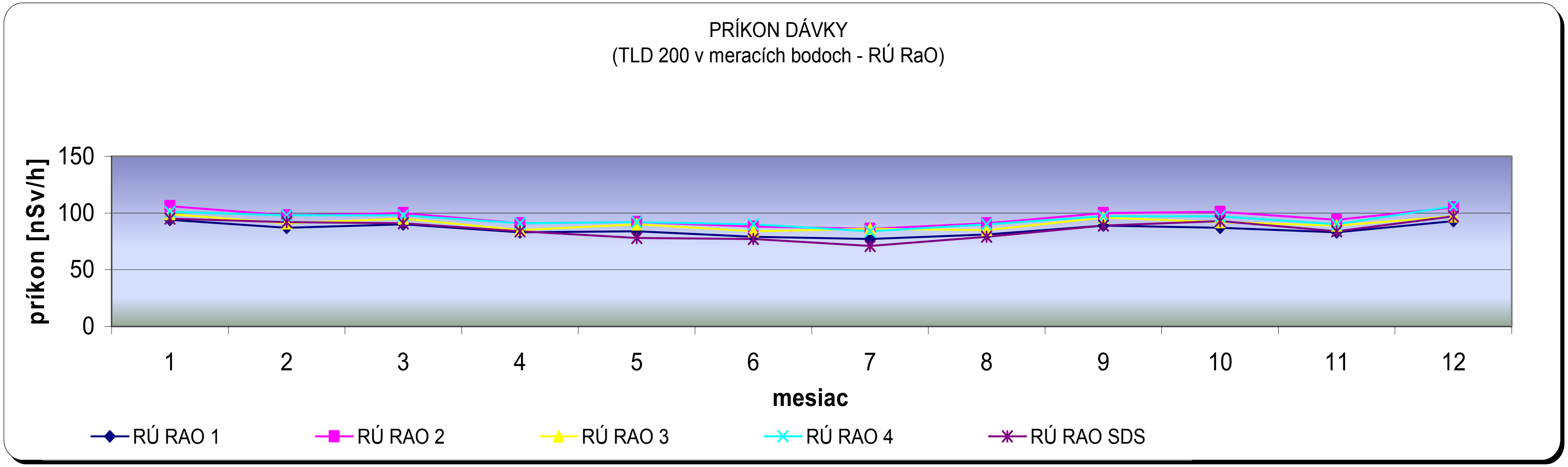

Table 355 Dose rate at RR RAW measured by TLD 200, 2008

PRÍKON DÁVKY
(IK v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	72 ± 4	73 ± 3	74 ± 6	75 ± 5	74 ± 5	80 ± 4	77 ± 5	83 ± 5	77 ± 4	78 ± 5	76 ± 5	82 ± 4
RÚ RAO 2	69 ± 3	69 ± 4	71 ± 4	73 ± 4	71 ± 4	80 ± 4	74 ± 4	81 ± 5	72 ± 6	72 ± 4	73 ± 4	79 ± 6
RÚ RAO 3	64 ± 4	67 ± 3	69 ± 5	70 ± 4	71 ± 3	84 ± 4	69 ± 3	76 ± 3	71 ± 4	73 ± 5	72 ± 4	72 ± 3
RÚ RAO 4	70 ± 5	69 ± 5	74 ± 3	76 ± 5	74 ± 6	80 ± 3	73 ± 4	77 ± 3	79 ± 4	77 ± 4	75 ± 5	76 ± 3
RÚ RAO SDS	75 ± 4	72 ± 4	77 ± 10	80 ± 5	78 ± 4	80 ± 3	79 ± 6	82 ± 7	79 ± 7	77 ± 4	80 ± 5	78 ± 5
Tlak [hPa]	976	975	990	975	984	989	985	979	992	990	1000	992

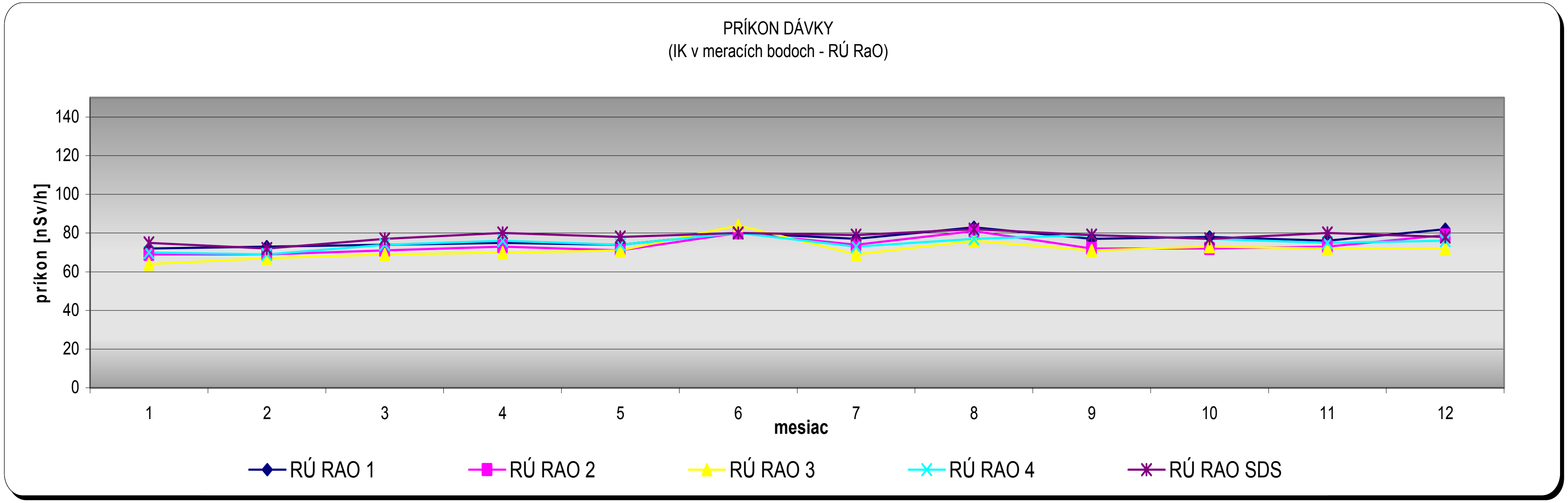

Table 356 Dose rate at RR RAW measured by IC RSS 112, 2005

PRÍKON DÁVKY

(IK v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január			Február			Marec			Apríl			Máj			Jún			Júl			August			September			Október			November			December		
	[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]			[nSv/h]		
RÚ RAO 1	67	±	4	64	±	4	77	±	4	75	±	4	75	±	4	77	±	7	78	±	3	74	±	5	77	±	5	78	±	3	85	±	5	74	±	5
RÚ RAO 2	66	±	4	67	±	5	76	±	3	70	±	4	71	±	4	72	±	3	71	±	3	73	±	3	76	±	4	76	±	4	81	±	3	71	±	4
RÚ RAO 3	67	±	4	66	±	4	74	±	4	66	±	4	66	±	4	69	±	3	68	±	4	74	±	4	68	±	4	73	±	3	80	±	4	67	±	3
RÚ RAO 4	73	±	7	70	±	5	72	±	4	73	±	5	72	±	4	71	±	4	72	±	3	73	±	4	75	±	5	77	±	3	83	±	5	69	±	4
RÚ RAO SDS	66	±	5	65	±	4	86	±	6	82	±	6	83	±	5	83	±	3	84	±	5	83	±	4	86	±	6	87	±	5	92	±	6	80	±	5
Tlak [hPa]	1050			985			971			981			989			990			991			987			985			978			972			1001		

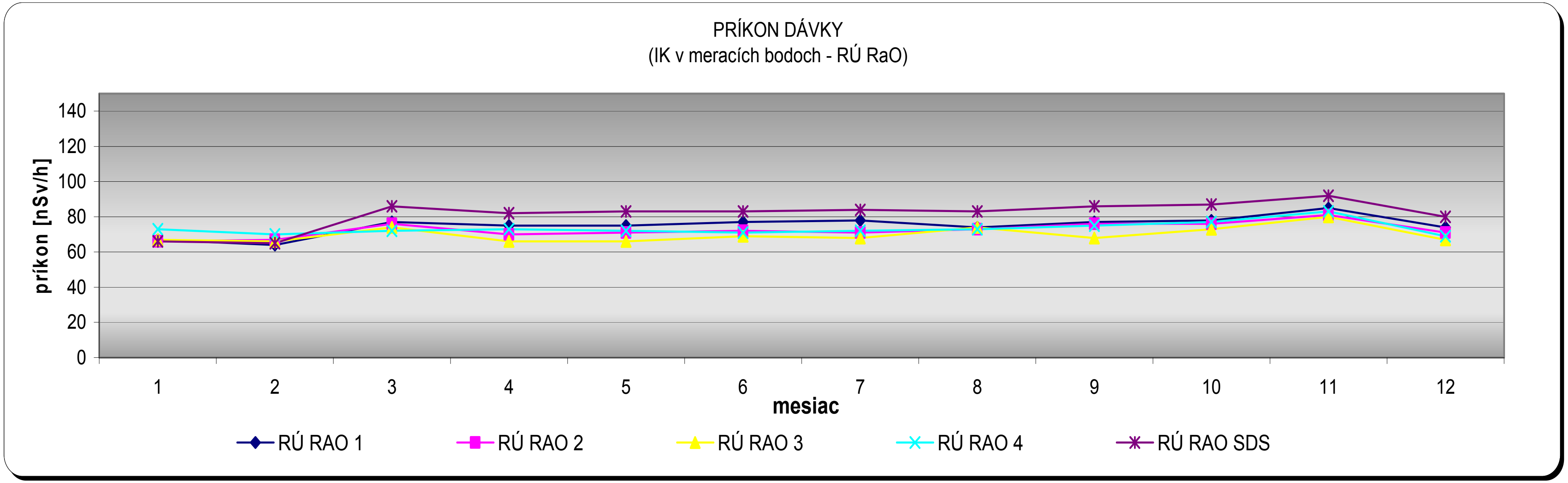

Table 357 Dose rate at RR RAW measured by IC RSS 112, 2006

PRÍKON DÁVKY

(IK v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	83 ± 4	78 ± 5	74 ± 4	79 ± 4	74 ± 3	75 ± 4	80 ± 5	78 ± 4	80 ± 5	83 ± 5	77 ± 4	78 ± 3
RÚ RAO 2	79 ± 4	73 ± 4	71 ± 3	74 ± 4	71 ± 4	72 ± 4	75 ± 5	77 ± 4	76 ± 4	85 ± 4	85 ± 4	95 ± 3
RÚ RAO 3	77 ± 5	72 ± 4	69 ± 4	75 ± 4	70 ± 3	71 ± 3	73 ± 4	75 ± 4	75 ± 4	84 ± 5	72 ± 4	80 ± 3
RÚ RAO 4	77 ± 4	73 ± 4	70 ± 5	77 ± 4	74 ± 4	74 ± 4	78 ± 5	76 ± 4	78 ± 4	81 ± 4	72 ± 6	80 ± 3
RÚ RAO SDS	87 ± 6	85 ± 8	81 ± 4	87 ± 4	85 ± 5	85 ± 5	88 ± 5	87 ± 4	88 ± 4	91 ± 7	82 ± 4	83 ± 4
Tlak [hPa]	965	984	992	988	984	983	976	980	983	992	997	1008

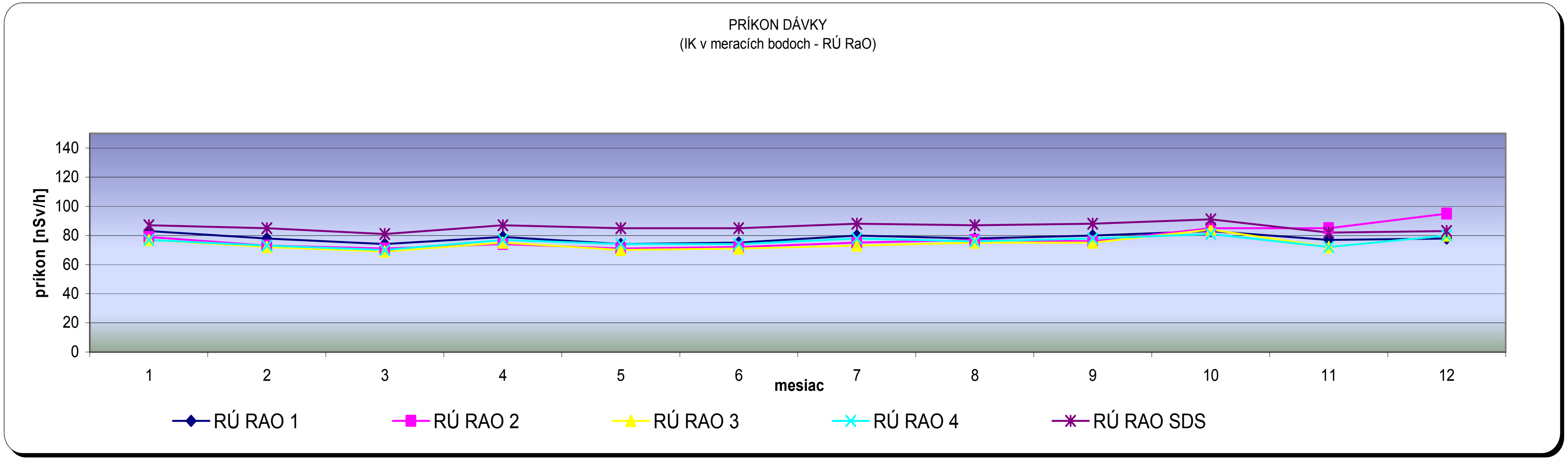

Table 358 Dose rate at RR RAW measured by IK RSS 112, 2007

PRÍKON DÁVKY
(IK v meracích bodoch - RÚ RaO)

Mesiac / Lokalita	Január	Február	Marec	Apríl	Máj	Jún	Júl	August	September	Október	November	December
	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]	[nSv/h]
RÚ RAO 1	83 ± 4	78 ± 5	74 ± 4	79 ± 4	74 ± 3	75 ± 4	80 ± 5	78 ± 4	80 ± 5	83 ± 5	77 ± 4	78 ± 3
RÚ RAO 2	79 ± 4	73 ± 4	71 ± 3	74 ± 4	71 ± 4	72 ± 4	75 ± 5	77 ± 4	76 ± 4	85 ± 4	85 ± 4	95 ± 3
RÚ RAO 3	77 ± 5	72 ± 4	69 ± 4	75 ± 4	70 ± 3	71 ± 3	73 ± 4	75 ± 4	75 ± 4	84 ± 5	72 ± 4	80 ± 3
RÚ RAO 4	77 ± 4	73 ± 4	70 ± 5	77 ± 4	74 ± 4	74 ± 4	78 ± 5	76 ± 4	78 ± 4	81 ± 4	72 ± 6	80 ± 3
RÚ RAO SDS	87 ± 6	85 ± 8	81 ± 4	87 ± 4	85 ± 5	85 ± 5	88 ± 5	87 ± 4	88 ± 4	91 ± 7	82 ± 4	83 ± 4
Tlak [hPa]	965	984	992	988	984	983	976	980	983	992	997	1008

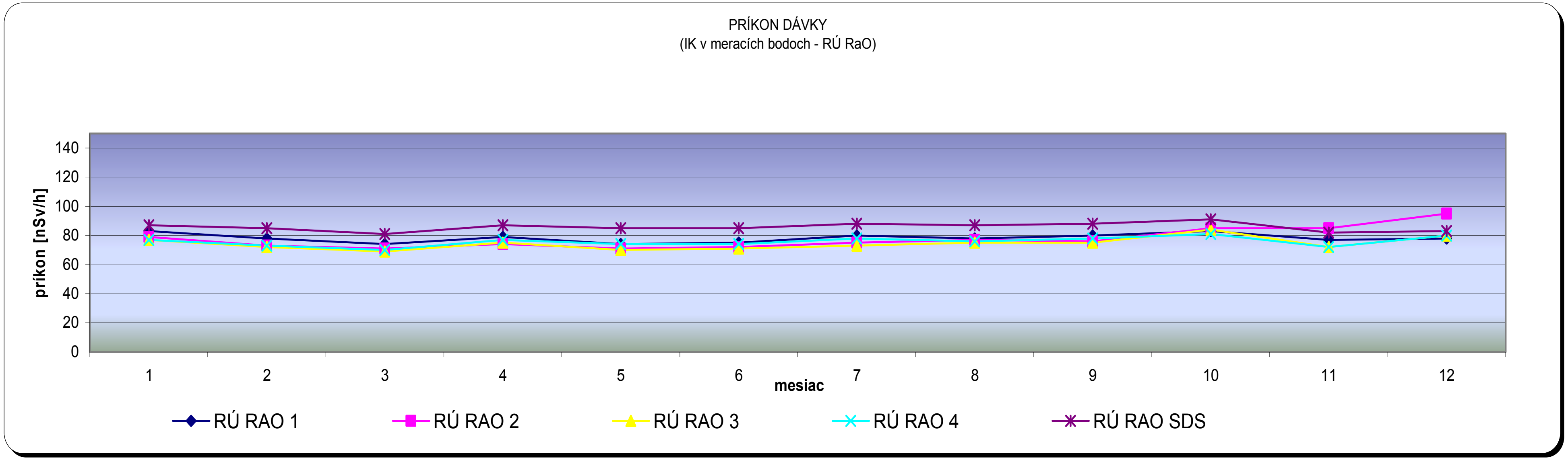

Table 359 Dose rate at RR RAW measured by IC RSS 112, 2008

AKTIVITA SPADOV

Lokalita RÚ RaO - dozimetrická stanička
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evidenč. číslo protokolu	^{134}Cs [Bq/m^2]	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	Celk. hmotnosť spádov [g]
RÚ RaO	**1.**	**2005/0422**	<1,07	<0,94	<11,6	52,6 ± 5,6	<2,30	<3,49	0,5181
	2.	**2005/1053**	<1,34	<1,28	<17,7	104 ± 9	<3,12	<4,29	0,5418
	3.	**2005/1575**	<1,38	<1,32	87,5 ± 8,4	109 ± 9	<2,65	<4,54	0,7719
	5.	**2005/2171**	<1,26	<1,18	25,7 ± 4,5	133 ± 11	5,15 ± 1,39	<4,13	0,5107

AKTIVITA SPADOV

(dozimetrická stanička - celková aktivita beta)

Lokalita	**Evid. číslo protokolu**	**I. štvrťrok [Bq/m^2]**	**Evid. číslo protokolu**	**II. štvrťrok [Bq/m^2]**	**Evid. číslo protokolu**	**III. štvrťrok [Bq/m^2]**	**Evid. číslo protokolu**	**IV. štvrťrok [Bq/m^2]**
RÚ RaO	2005/422	9,5 ± 1,4	2005/1053	12,3 ± 1,7	2005/1575	25,5 ± 3,4	2005/2171	18,4 ± 2,3

Table 360 Fallout activity at RR RAW, 2005

AKTIVITA SPADOV

Lokalita RÚ RaO - dozimetrická stanička
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok	Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M_c [g]
RÚ RaO Mochovce 1.	2006/0441	<0,889	10,6 ± 2,5	85,3 ± 6,2	<2,29	<3,11	0,3585
2.	2006/0962	<1,04	16,8 ± 2,9	225 ± 14	<2,36	<3,64	0,4543
3.	2006/1530	<1,07	12,5 ± 2,6	145 ± 10	<2,51	<3,43	0,3408
4.	2006/2067	<1,05	35,8 ± 4,5	64,3 ± 5,9	3,84 ± 1,14	<3,73	0,3713

AKTIVITA SPADOV

(dozimetrická stanička - celková aktivita beta)

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/m^2]	Evid. číslo protokolu	II. štvrťrok [Bq/m^2]	Evid. číslo protokolu	III. štvrťrok [Bq/m^2]	Evid. číslo protokolu	IV. štvrťrok [Bq/m^2]
RÚ RaO	2006/441	7,2 ± 1,0	2006/962	13,3 ± 1,8	2006/1530	14,8 ± 1,8	2006/2067	18,0 ± 2,2

Table 361 Fallout activity at RR RAW, 2006

AKTIVITA SPADOV

Lokalita RÚ RaO - dozimetrická stanička
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok	Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M_c [g]
RÚ RaO Mochovce 1.	**2007/0477**	<1,06	12,7 ± 3,0	110 ± 8	<2,70	<3,67	0,2640
2.	**2007/0920**	<1,02	15,1 ± 3,4	187 ± 12	<2,55	<3,25	0,4481
3.	**2007/1475**	<1,04	50,2 ± 4,8	152 ± 10	<2,61	<3,49	0,5071
4.	**2007/2047**	<0,985	20,4 ± 2,9	82,7 ± 6,8	<2,79	<3,52	0,2559

AKTIVITA SPADOV

(dozimetrická stanička - celková aktivita beta)

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/m^2]	Evid. číslo protokolu	II. štvrťrok [Bq/m^2]	Evid. číslo protokolu	III. štvrťrok [Bq/m^2]	Evid. číslo protokolu	IV. štvrťrok [Bq/m^2]
RÚ RaO	2007/477	19,0 ± 2,3	2007/920	21,8 ± 2,8	2007/1475	32,9 ± 4,0	2007/2047	21,5 ± 2,4

Table 362 Fallout activity at RR RAW, 2007

AKTIVITA SPADOV

Lokalita RÚ RaO - dozimetrická stanička
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok	Evid. číslo protokolu	^{137}Cs [Bq/m^2]	^{40}K [Bq/m^2]	^{7}Be [Bq/m^2]	U - rad [Bq/m^2]	Th - rad [Bq/m^2]	M_c [g]
RÚ RaO Mochovce 1.	2008/0495	<1,16	19,5 ± 6,6	117 ± 17	<2,83	<4,03	0,4037
2.	2008/1008	<1,22	22,1 ± 8,1	211 ± 28	<3,12	<4,28	0,3803
3.	2008/1546	<1,12	77,6 ± 13,1	247 ± 30	<2,70	<3,86	0,4986
4.	2008/2088	<1,22	25,8 ± 7,7	136 ± 21	<2,74	<3,72	0,2839

AKTIVITA SPADOV

(dozimetrická stanička - celková aktivita beta)

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/m^2]	Evid. číslo protokolu	II. štvrťrok [Bq/m^2]	Evid. číslo protokolu	III. štvrťrok [Bq/m^2]	Evid. číslo protokolu	IV. štvrťrok [Bq/m^2]
RÚ RaO	2008/495	19,7 ± 0,8	2008/1008	22,1 ± 0,9	2008/1546	50,3 ± 1,9	2008/2088	25,4 ± 1,0

Table 363 Fallout activity at RR RAW, 2008

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH

(gamaspektrometria)

Lokalita\Štvrťrok (Rádionuklid)		Evid. číslo protokolu	^{134}Cs [mBq/dm^3]	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Čifáre-rybník*	1.	2005/0179	<5,33	<5,01	197 ± 22	<11,4	<18,5
	2.	2005/0727	<5,46	<5,18	200 ± 20	<12,1	<19,3
	3.	2005/1181	<5,04	<5,02	220 ± 20	<11,3	<18,0
	4.	2005/1976	<6,61	<6,36	198 ± 24	68,7 ± 8,2	<23,2
RÚ RaO-stružka*	1.	2005/0176	<5,33	<5,01	197 ± 22	<11,4	<18,5
	2.	2005/0724	<5,46	<5,18	200 ± 20	<12,1	<19,3
	3.	2005/0724	<5,04	<5,02	220 ± 20	<11,3	<18,0
	4.	2005/0724	<6,61	<6,36	198 ± 24	68,7 ± 8,2	<23,2

Poznámka: * v tabuľke sú uvedené priemerné hodnoty aktivity obidvoch vzoriek, zmiešaných v rovnakom objemovom pomere

OBJEMOVÁ AKTIVITA ^{90} Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
ČIFÁRE - rybník	2005/180	12 ± 1	2005/728	8 ± 1	2005/1182	9 ± 1	2005/1977	18 ± 2
RÚ RaO - stružka	2005/177	15 ± 2	2005/725	12 ± 1	2005/1177	28 ± 3	2005/1964	29 ± 3

OBJEMOVÁ AKTIVITA ^{3} H V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	II. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	III. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm^3]
ČIFÁRE - rybník	2005/181	1,0 ± 0,1	2005/729	1,0 ± 0,1	2005/1183	1,0 ± 0,1	2005/1978	1,0 ± 0,1
RÚ RaO - stružka	2005/178	1,0 ± 0,1	2005/726	1,0 ± 0,1	2005/1178	1,0 ± 0,1	2005/1965	1,0 ± 0,1

Table 364 Volume activities in surface waters at RR RAW, 2005

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Čifáre /rybník/	**1.**	**2006/0406**	<6,03	265 ± 27	<13,9	<21,4
	2.	**2006/0667**	<5,73	217 ± 23	28,4 ± 5,4	<19,6
	3.	**2006/1290**	<4,98	243 ± 22	10,2 ± 3,5	<17,2
	4.	**2006/1690**	<4,98	281 ± 24	11,2 ± 4,0	<18,4

OBJEMOVÁ AKTIVITA ^{90} Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
Čifáre /rybník/	2006/407	14 ± 2	2006/668	17 ± 2	2006/1291	21 ± 2	2006/1691	15 ± 2

OBJEMOVÁ AKTIVITA ^{3} H V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	II. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	III. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm^3]
Čifáre /rybník/	2006/408	1,2 ± 0,2	2006/669	1,0 ± 0,1	2006/1292	1,0 ± 0,1	2006/1692	1,3 ± 0,2

Table 365 Volume activities in surface waters at RR RAW, 2006

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Čifáre /rybník/	**1.**	**2007/0149**	<5,36	229 ± 23	25,1 ± 4,6	<19,2
	2.	**2007/0721**	5,41 ± 0,86	221 ± 21	27,9 ± 4,9	<20,8
	3.	**2007/1145**	5,75 ± 1,43	301 ± 41	<11,9	<20,3
	4.	**2007/1922**	<5,62	203 ± 39	<11,7	<18,5

OBJEMOVÁ AKTIVITA ^{90} Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
Čifáre /rybník/	2007/149	10 ± 1	2007/722	11 ± 2	2007/1146	6 ± 1	2007/1923	12 ± 2

OBJEMOVÁ AKTIVITA ^{3} H V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	II. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	III. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm^3]
Čifáre /rybník/	2007/150	1,1 ± 0,2	2007/723	2,4 ± 0,3	2007/1147	<1	2007/1924	<1

Table 366 Volume activities in surface waters at RR RAW, 2007

OBJEMOVÁ AKTIVITA V POVRCHOVÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
Čifáre /rybník/	**1.**	**2008/0156**	<5,93	226 ± 85	<11,8	<20,0
	2.	**2008/0877**	<6,10	219 ± 42	<14,0	<20,9
	3.	**2008/1227**	<5,99	239 ± 44	29,9 ± 13,8	<22,2
	4.	**2008/1860**	<6,12	230 ± 44	<13,8	<21,8

OBJEMOVÁ AKTIVITA ^{90}Sr V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
Čifáre /rybník/	2008/157	11 ± 2	2008/878	14 ± 3	2008/1228	8 ± 2	2008/1861	14 ± 3

OBJEMOVÁ AKTIVITA ^{3}H V POVRCHOVÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	II. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	III. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm^3]
Čifáre /rybník/	2008/158	3,0 ± 0,3	2008/879	3,0 ± 0,3	2008/1229	1,9 ± 0,2	2008/1862	<1

Table 367 Volume activities in surface waters at RR RAW, 2008

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid.číslo protokolu	^{134}Cs [mBq/dm^3]	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
MON - 1A *	1.	2005/0319	<5,60	<5,36	227 ± 23	57,4 ± 6,1	<19,4
	2.	2005/0834	<5,67	<5,53	196 ± 22	<12,4	<19,7
	3.	2005/1399	<5,13	<5,22	193 ± 20	<11,5	<15,9
	4.	2005/1810	<5,17	<5,15	158 ± 19	<11,6	<18,3
MON - 2B *	1.	2005/0322	<5,60	<5,36	227 ± 23	57,4 ± 6,1	<19,4
	2.	2005/0837	<5,67	<5,53	196 ± 22	<12,4	<19,7
	3.	2005/1402	<5,13	<5,22	193 ± 20	<11,5	<15,9
	4.	2005/1813	<5,17	<5,15	158 ± 19	<11,6	<18,3
SRK - 3 *	1.	2005/0325	**	**	**	**	**
	2.	2005/0840	<5,67	<5,53	196 ± 22	<12,4	<19,7
	3.	2005/1405	<5,13	<5,22	193 ± 20	<11,5	<15,9
	4.	2005/1816	<5,17	<5,15	158 ± 19	<11,6	<18,3
SRK - 2A *	1.	2005/0289	<5,60	<5,36	227 ± 23	57,4 ± 6,1	<19,4
	2.	2005/0843	<5,67	<5,53	196 ± 22	<12,4	<19,7
	3.	2005/1408	<5,13	<5,22	193 ± 20	<11,5	<15,9
	4.	2005/1819	<5,17	<5,15	158 ± 19	<11,6	<18,3
MON - 3A *	1.	2005/0292	<5,60	<5,36	227 ± 23	57,4 ± 6,1	<19,4
	2.	2005/0846	<5,67	<5,53	196 ± 22	<12,4	<19,7
	3.	2005/1411	<5,13	<5,22	193 ± 20	<11,5	<15,9
	4.	2005/1822	<5,17	<5,15	158 ± 19	<11,6	<18,3
MON - 3B *	1.	2005/0295	<5,60	<5,36	227 ± 23	57,4 ± 6,1	<19,4
	2.	2005/0849	<5,67	<5,53	196 ± 22	<12,4	<19,7
	3.	2005/1414	<5,13	<5,22	193 ± 20	<11,5	<15,9
	4.	2005/1825	<5,17	<5,15	158 ± 19	<11,6	<18,3

Poznámka: * - v tabuľke sú uvedené priemerné aktivity všetkých vzoriek, zmiešaných v rovnakom objemovom pomere
* * - porucha odberového zariadenia

Table 368 Volume activities in underground waters, 2005

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
MON - 1A *	1.	2006/0272	<4,80	214 ± 22	<10,7	<16,5
	2.	2006/0826	<3,85	258 ± 19	21,6 ± 4,3	<14,2
	3.	2006/1294	<3,80	225 ± 20	15,9 ± 4,0	<13,6
	4.	2006/1944	<3,97	220 ± 18	14,7 ± 3,1	<14,0
MON - 2B *	1.	2006/0166	<4,80	214 ± 22	<10,7	<16,5
	2.	2006/0829	<3,85	258 ± 19	21,6 ± 4,3	<14,2
	3.	2006/1297	<3,80	225 ± 20	15,9 ± 4,0	<13,6
	4.	2006/1947	<3,97	220 ± 18	14,7 ± 3,1	<14,0
SRK - 3 *	1.	2006/0169	<4,80	214 ± 22	<10,7	<16,5
	2.	2006/0832	<3,85	258 ± 19	21,6 ± 4,3	<14,2
	3.	2006/1300	<3,80	225 ± 20	15,9 ± 4,0	<13,6
	4.	2006/1950	<3,97	220 ± 18	14,7 ± 3,1	<14,0
SRK - 2A *	1.	2006/0172	<4,80	214 ± 22	<10,7	<16,5
	2.	2006/0835	<3,85	258 ± 19	21,6 ± 4,3	<14,2
	3.	2006/1303	<3,80	225 ± 20	15,9 ± 4,0	<13,6
	4.	2006/1953	<3,97	220 ± 18	14,7 ± 3,1	<14,0
MON - 3A *	1.	2006/0175	<4,80	214 ± 22	<10,7	<16,5
	2.	2006/0838	<3,85	258 ± 19	21,6 ± 4,3	<14,2
	3.	2006/1306	<3,80	225 ± 20	15,9 ± 4,0	<13,6
	4.	2006/1956	<3,97	220 ± 18	14,7 ± 3,1	<14,0
MON - 3B *	1.	2006/0178	<4,80	214 ± 22	<10,7	<16,5
	2.	2006/0841	<3,85	258 ± 19	21,6 ± 4,3	<14,2
	3.	2006/1309	<3,80	225 ± 20	15,9 ± 4,0	<13,6
	4.	2006/1959	<3,97	220 ± 18	14,7 ± 3,1	<14,0

Poznámka: * - v tabuľke sú uvedené priemerné aktivity všetkých vzoriek, zmiešaných v rovnakom objemovom pomere

Table 369 Volume activities in underground waters, 2006

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH
(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
MON - 1A *	**1.**	**2007/0304**	<4,51	283 ± 33	<8,45	<14,5
	2.	**2007/0741**	1,64 ± 0,40	199 ± 14	13,7 ± 3,3	<11,5
	3.	**2007/1317**	2,73 ± 0,87	183 ± 27	<8,10	<13,2
	4.	**2007/1874**	1,81 ± 0,92	224 ± 29	<8,27	<13,4
MON - 2B *	**1.**	**2007/0307**	<4,51	283 ± 33	<8,45	<14,5
	2.	**2007/0744**	1,64 ± 0,40	199 ± 14	13,7 ± 3,3	<11,5
	3.	**2007/1320**	2,73 ± 0,87	183 ± 27	<8,10	<13,2
	4.	**2007/1877**	1,81 ± 0,92	224 ± 29	<8,27	<13,4
SRK - 3 *	**1.**	**2007/0310**	<4,51	283 ± 33	<8,45	<14,5
	2.	**2007/0747**	1,64 ± 0,40	199 ± 14	13,7 ± 3,3	<11,5
	3.	**2007/1323**	2,73 ± 0,87	183 ± 27	<8,10	<13,2
	4.	**2007/1880**	1,81 ± 0,92	224 ± 29	<8,27	<13,4
SRK - 2A *	**1.**	**2007/0313**	<4,51	283 ± 33	<8,45	<14,5
	2.	**2007/0750**	1,64 ± 0,40	199 ± 14	13,7 ± 3,3	<11,5
	3.	**2007/1326**	2,73 ± 0,87	183 ± 27	<8,10	<13,2
	4.	**2007/1883**	1,81 ± 0,92	224 ± 29	<8,27	<13,4
MON - 3A *	**1.**	**2007/0316**	<4,51	283 ± 33	<8,45	<14,5
	2.	**2007/0753**	1,64 ± 0,40	199 ± 14	13,7 ± 3,3	<11,5
	3.	**2007/1329**	2,73 ± 0,87	183 ± 27	<8,10	<13,2
	4.	**2007/1886**	1,81 ± 0,92	224 ± 29	<8,27	<13,4
MON - 3B *	**1.**	**2007/0319**	<4,51	283 ± 33	<8,45	<14,5
	2.	**2007/0756**	1,64 ± 0,40	199 ± 14	13,7 ± 3,3	<11,5
	3.	**2007/1332**	2,73 ± 0,87	183 ± 27	<8,10	<13,2
	4.	**2007/1889**	1,81 ± 0,92	224 ± 29	<8,27	<13,4

Poznámka: * - v tabuľke sú uvedené priemerné aktivity všetkých vzoriek, zmiešaných v rovnakom objemovom pomere

Table 370 Volume activities in underground waters, 2007

OBJEMOVÁ AKTIVITA V PODZEMNÝCH VODÁCH

(gamaspektrometria)

Rádionuklid / Lokalita\Štvrťrok		Evid. číslo protokolu	^{137}Cs [mBq/dm^3]	^{40}K [mBq/dm^3]	U - rad [mBq/dm^3]	Th - rad [mBq/dm^3]
MON - 1A	1.	2008/0343	5,75 ± 4,08	502 ± 98	<14,9	<21,5
	2.	2008/0881	<6,59	335 ± 59	33,6 ± 13,7	<23,6
	3.	2008/1372	<5,98	404 ± 56	<16,5	<22,8
	4.	2008/1910	<7,73	326 ± 62	<18,5	<27,9
MON - 2B	1.	2008/0346	4,58 ± 2,53	563 ± 102	<12,6	<19,3
	2.	2008/0884	<6,91	705 ± 87	23,4 ± 13,6	<21,3
	3.	2008/1375	<6,15	490 ± 62	<14,4	<20,8
	4.	2008/1913	<7,88	710 ± 90	<17,7	<26,3
SRK - 3	1.	2008/0349	<5,97	104 ± 81	<11,9	<20,5
	2.	2008/0887	<6,03	211 ± 43	<14,0	<18,5
	3.	2008/1378	<5,88	117 ± 37	<13,7	<21,2
	4.	2008/1916	<6,54	192 ± 45	<14,5	<22,7
SRK - 2A	1.	2008/0352	3,93 ± 2,73	<84,6	<11,8	<19,6
	2.	2008/0890	<6,54	56,2 ± 27,5	<15,8	<23,0
	3.	2008/1381	<5,85	279 ± 47	<16,1	<19,7
	4.	2008/1919	<7,25	263 ± 51	<16,2	<23,8
MON - 3A	1.	2008/0355	4,54 ± 3,22	<83,4	25,9 ± 12,6	<20,1
	2.	2008/0893	<6,16	46,9 ± 23,2	<14,4	<22,3
	3.	2008/1384	<5,64	34,1 ± 19,0	<13,9	<21,1
	4.	2008/1922	<7,35	<66,3	<16,8	<25,5
MON - 3B	1.	2008/0358	<6,96	153 ± 100	<14,3	<23,2
	2.	2008/0896	2,22 ± 2,40	<88,2	<13,2	<20,7
	3.	2008/1387	<5,72	114 ± 34	<16,9	<20,4
	4.	2008/1925	<7,06	117 ± 39	<17,0	<26,1

Table 371 Volume activities in underground waters, 2008

OBJEMOVÁ AKTIVITA ^{90} Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
MON - 1A	2005/320	11,0 ± 2,0	2005/835	6,0 ± 1,0	2005/1400	12,0 ± 1,0	2005/1811	11,0 ± 1,0
MON - 2B	2005/323	16,0 ± 2,0	2005/838	5,0 ± 1,0	2005/1403	10,0 ± 1,0	2005/1814	13,0 ± 2,0
SRK - 3	*	* *	2005/841	12,0 ± 1,0	2005/1406	10,0 ± 1,0	2005/1817	28,0 ± 3,0
SRK - 2A	2005/290	5,0 ± 1,0	2005/844	<4	2005/1409	5,0 ± 1,0	2005/1820	6,0 ± 1,0
MON - 3A	2005/293	<4	2005/847	7,0 ± 1,0	2005/1412	11,0 ± 1,0	2005/1823	9,0 ± 1,0
MON - 3B	2005/296	12,0 ± 2,0	2005/850	<4	2005/1415	5,0 ± 1,0	2005/1826	9,0 ± 1,0

* Porucha odberového zariadenia

OBJEMOVÁ AKTIVITA ^{3} H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	II. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	III. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm^3]
MON - 1A	2005/321	1,0 ± 0,1	2005/836	1,0 ± 0,1	2005/1401	1,0 ± 0,1	2005/1812	1,0 ± 0,1
MON - 2B	2005/324	1,0 ± 0,1	2005/839	1,0 ± 0,1	2005/1404	1,0 ± 0,1	2005/1815	1,0 ± 0,1
SRK - 3	*	* *	2005/842	1,0 ± 0,1	2005/1407	1,0 ± 0,1	2005/1818	1,0 ± 0,1
SRK - 2A	2005/291	1,0 ± 0,1	2005/845	1,0 ± 0,1	2005/1410	1,0 ± 0,1	2005/1821	1,0 ± 0,1
MON - 3A	2005/294	1,0 ± 0,1	2005/848	2,0 ± 0,3	2005/1413	1,0 ± 0,1	2005/1824	1,0 ± 0,1
MON - 3B	2005/297	1,0 ± 0,1	2005/851	1,0 ± 0,1	2005/1416	1,0 ± 0,1	2005/1827	1,0 ± 0,1

* Porucha odberového zariadenia

Table 372 ^{90}Sr and ^{3}H volume activity in underground waters – RR RAW, 2005

OBJEMOVÁ AKTIVITA ^{90}Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
MON - 1A	2006/273	11,0 ± 1,0	2006/827	6,0 ± 1,0	2006/1295	9,0 ± 1,0	2006/1945	11,0 ± 1,0
MON - 2B	2006/167	11,0 ± 1,0	2006/830	6,0 ± 1,0	2006/1298	9,0 ± 1,0	2006/1948	11,0 ± 1,0
SRK - 3	2006/170	11,0 ± 1,0	2006/833	6,0 ± 1,0	2006/1301	9,0 ± 1,0	2006/1951	11,0 ± 1,0
SRK - 2A	2006/173	11,0 ± 1,0	2006/836	6,0 ± 1,0	2006/1304	9,0 ± 1,0	2006/1954	11,0 ± 1,0
MON - 3A	2006/176	11,0 ± 1,0	2006/839	6,0 ± 1,0	2006/1307	9,0 ± 1,0	2006/1957	11,0 ± 1,0
MON - 3B	2006/179	11,0 ± 1,0	2006/842	6,0 ± 1,0	2006/1310	9,0 ± 1,0	2006/1960	11,0 ± 1,0

OBJEMOVÁ AKTIVITA ^{3}H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	II. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	III. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm^3]
MON - 1A	2006/274	2,3 ± 0,3	2006/828	3,2 ± 0,4	2006/1296	1,0 ± 0,1	2006/1946	5,2 ± 0,7
MON - 2B	2006/168	1,0 ± 0,1	2006/831	3,2 ± 0,4	2006/1299	1,0 ± 0,1	2006/1949	2,5 ± 0,3
SRK - 3	2006/171	1,0 ± 0,1	2006/834	1,0 ± 0,1	2006/1302	1,0 ± 0,1	2006/1952	6,4 ± 0,9
SRK - 2A	2006/174	1,0 ± 0,1	2006/837	1,0 ± 0,1	2006/1305	1,0 ± 0,1	2006/1955	5,0 ± 0,7
MON - 3A	2006/177	1,0 ± 0,1	2006/840	1,0 ± 0,1	2006/1308	1,0 ± 0,1	2006/1958	6,0 ± 0,8
MON - 3B	2006/180	1,0 ± 0,1	2006/843	1,0 ± 0,1	2006/1311	1,0 ± 0,1	2006/1961	5,1 ± 0,7

Table 373 ^{90}Sr and ^{3}H volume activity in underground waters – RR RAW, 2006

OBJEMOVÁ AKTIVITA ^{90}Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	II. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	III. štvrťrok [mBq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm^3]
MON - 1A	2007/304	8,0 ± 1,0	2007/742	<6	2007/1318	8,0 ± 1,0	2007/1875	9,0 ± 1,0
MON - 2B	2007/307	8,0 ± 1,0	2007/745	<6	2007/1321	8,0 ± 1,0	2007/1878	9,0 ± 1,0
SRK - 3	2007/310	8,0 ± 1,0	2007/748	<6	2007/1324	8,0 ± 1,0	2007/1881	9,0 ± 1,0
SRK - 2A	2007/313	8,0 ± 1,0	2007/751	<6	2007/1327	8,0 ± 1,0	2007/1884	9,0 ± 1,0
MON - 3A	2007/316	8,0 ± 1,0	2007/754	<6	2007/1330	8,0 ± 1,0	2007/1887	9,0 ± 1,0
MON - 3B	2007/319	8,0 ± 1,0	2007/757	<6	2007/1333	8,0 ± 1,0	2007/1890	9,0 ± 1,0

OBJEMOVÁ AKTIVITA ^{3}H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	II. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	III. štvrťrok [Bq/dm^3]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm^3]
MON - 1A	2007/305	5,1 ± 0,7	2007/743	2,3 ± 0,3	2007/1319	<1	2007/1876	3,0 ± 0,4
MON - 2B	2007/308	6,2 ± 0,8	2007/746	1,9 ± 0,3	2007/1322	<1	2007/1879	2,8 ± 0,4
SRK - 3	2007/311	2,1 ± 0,3	2007/749	3,4 ± 0,5	2007/1325	<1	2007/1882	<1
SRK - 2A	2007/314	<1	2007/752	3,2 ± 0,4	2007/1328	<1	2007/1885	1,5 ± 0,2
MON - 3A	2007/317	<1	2007/755	1,6 ± 0,2	2007/1331	<1	2007/1888	<1
MON - 3B	2007/320	2,8 ± 0,4	2007/758	3,6 ± 0,5	2007/1334	<1	2007/1891	<1

Table 374 Volume activities in underground waters, 2007

OBJEMOVÁ AKTIVITA ^{90}Sr V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [mBq/dm³]	Evid. číslo protokolu	II. štvrťrok [mBq/dm³]	Evid. číslo protokolu	III. štvrťrok [mBq/dm³]	Evid. číslo protokolu	IV. štvrťrok [mBq/dm³]
MON - 1A	2008/344	6,0 ± 1,0	2008/882	7,0 ± 2,0	2008/1373	11,0 ± 2,0	2008/1911	7,0 ± 2,0
MON - 2B	2008/347	6,0 ± 1,0	2008/885	7,0 ± 2,0	2008/1376	11,0 ± 2,0	2008/1914	7,0 ± 2,0
SRK - 3	2008/350	6,0 ± 1,0	2008/888	7,0 ± 2,0	2008/1379	11,0 ± 2,0	2008/1917	7,0 ± 2,0
SRK - 2A	2008/353	6,0 ± 1,0	2008/891	7,0 ± 2,0	2008/1382	11,0 ± 2,0	2008/1920	7,0 ± 2,0
MON - 3A	2008/356	6,0 ± 1,0	2008/894	7,0 ± 2,0	2008/1385	11,0 ± 2,0	2008/1923	7,0 ± 2,0
MON - 3B	2008/359	6,0 ± 1,0	2008/897	7,0 ± 2,0	2008/1388	11,0 ± 2,0	2008/1926	7,0 ± 2,0

OBJEMOVÁ AKTIVITA ^{3}H V PODZEMNÝCH VODÁCH

Lokalita	Evid. číslo protokolu	I. štvrťrok [Bq/dm³]	Evid. číslo protokolu	II. štvrťrok [Bq/dm³]	Evid. číslo protokolu	III. štvrťrok [Bq/dm³]	Evid. číslo protokolu	IV. štvrťrok [Bq/dm³]
MON - 1A	2008/345	2,7 ± 0,3	2008/883	2,6 ± 0,3	2008/1374	<1	2008/1912	3,0 ± 0,3
MON - 2B	2008/348	<1	2008/886	3,7 ± 0,4	2008/1377	<1	2008/1915	1,0 ± 0,1
SRK - 3	2008/351	<1	2008/889	7,0 ± 0,8	2008/1380	1,9 ± 0,2	2008/1918	<1
SRK - 2A	2008/354	<1	2008/892	5,1 ± 0,6	2008/1383	<1	2008/1921	<1
MON - 3A	2008/357	<1	2008/895	6,3 ± 0,7	2008/1386	<1	2008/1924	<1
MON - 3B	2008/360	<1	2008/898	4,1 ± 0,4	2008/1389	<1	2008/1927	<1

Table 375 Volume activities in underground waters, 2008

HMOTNOSTNÁ AKTIVITA SEDIMENTOV
RÚ RaO
(gamaspektrometria)

Rádionuklid / Lokalita/Štvrťrok		Evidenč.číslo protokolu	^{134}Cs [Bq/kg]	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
Čifare-rybnik	**1.**	**2005/0371**	<0,746	23,7 ± 1,1	605 ± 28	31,2 ± 2,1	37,8 ± 4,2
	2.	**2005/0730**	<0,736	23,4 ± 1,1	592 ± 28	32,0 ± 2,1	38,2 ± 3,7
	3.	**2005/1179**	<0,771	25,9 ± 1,2	597 ± 28	34,9 ± 2,3	39,5 ± 4,2
	4.	**2005/1980**	<0,934	29,5 ± 1,4	502 ± 24	28,2 ± 2,0	33,7 ± 4,0
RÚ-RaO-stružka	**1.**	**2005/0372**	<0,753	13,3 ± 0,7	509 ± 24	39,2 ± 2,6	43,0 ± 4,4
	2.	**2005/0723**	<0,766	13,5 ± 0,6	498 ± 24	41,0 ± 2,7	42,1 ± 4,3
	3.	**2005/1175**	<0,798	17,6 ± 0,8	529 ± 25	37,1 ± 2,5	42,9 ± 4,6
	4.	**2005/1966**	<1,27	14,8 ± 0,9	490 ± 24	34,3 ± 2,4	37,9 ± 4,9

HMOTNOSTNÁ AKTIVITA SEDIMENTOV
rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	**90Sr** [Bq/kg]
RÚ RaO - stružka	**2005/1175**	**1 ± 0,1**
ČIFÁRE - rybník	**2005/1179**	**3,6 ± 0,5**

Table 376 Specific activity of sediments - RR RAW, 2005

HMOTNOSTNÁ AKTIVITA SEDIMENTOV

RÚ RaO

(gamaspektrometria)

Rádionuklid / Lokalita		Evid.číslo protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
Čifare /rybník/	**1.**	**2006/0410**	29,6 ± 1,4	573 ± 27	29,1 ± 1,9	37,2 ± 3,9
	2.	**2006/0666**	24,9 ± 1,2	569 ± 27	32,0 ± 2,1	38,4 ± 4,0
	3.	**2006/1130**	28,3 ± 1,3	548 ± 26	33,2 ± 2,2	36,9 ± 3,9
	4.	**2006/1689**	21,4 ± 1,0	629 ± 30	39,2 ± 2,6	44,9 ± 4,7

HMOTNOSTNÁ AKTIVITA SEDIMENTOV

rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	90Sr [Bq/kg]
Čifáre /rybník/	**2006/1130**	**0,4 ± 0,1**

Table 377 Specific activity of sediments - RR RAW, 2006

HMOTNOSTNÁ AKTIVITA SEDIMENTOV

RÚ RaO

(gamaspektrometria)

Rádionuklid / Lokalita		Evid.číslo protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
Čifare /rybník/	**1.**	**2007/0341**	21,5 ± 1,2	562 ± 32	33,3 ± 2,7	39,7 ± 4,8
	2.	**2007/0719**	20,0 ± 1,0	619 ± 29	37,6 ± 2,5	44,5 ± 4,6
	3.	**2007/1086**	21,0 ± 1,0	617 ± 29	34,8 ± 2,3	40,9 ± 4,3
	4.	**2007/1929**	25,8 ± 1,2	607 ± 29	40,6 ± 2,7	43,9 ± 4,6

HMOTNOSTNÁ AKTIVITA SEDIMENTOV

rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	90Sr [Bq/kg]
Čifáre (rybník)	**2007/1086**	**1,1 ± 0,1**

Table 378 Specific activity of sediments - RR RAW, 2007

HMOTNOSTNÁ AKTIVITA SEDIMENTOV

RÚ RaO

(gamaspektrometria)

Rádionuklid / Lokalita		Evid.číslo protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
Čifare /rybník/	**1.**	**2008/0364**	24,9 ± 1,9	562 ± 44	36,2 ± 3,9	40,8 ± 6,8
	2.	**2008/0797**	25,9 ± 2,1	600 ± 47	35,1 ± 3,9	41,1 ± 7,4
	3.	**2008/1200**	26,6 ± 2,0	601 ± 47	33,1 ± 3,7	41,2 ± 7,6
	4.	**2008/1867**	26,7 ± 2,1	615 ± 48	35,7 ± 4,0	41,9 ± 9,3

HMOTNOSTNÁ AKTIVITA SEDIMENTOV

rádiochémia

Lokalita	Ra-nuklid / Evid.č.prot.	90Sr [Bq/kg]
Čifáre (rybník)	**2008/1200**	**1,8 ± 0,3**

Table 379 Specific activity of sediments - RR RAW, 2008

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monit. bod. č.	Š. r.	Ra-nuklid / Evid.č.prot.	^{134}Cs [Bq/kg]	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1.	1.	2005/0360	<0,670	0,958 ± 0,169	467 ± 22	23,0 ± 1,6	29,0 ± 3,2
	2.	2005/0690	<0,698	5,93 ± 0,31	473 ± 22	25,9 ± 1,7	32,0 ± 3,3
	3.	2005/1395	<0,694	6,46 ± 0,37	471 ± 22	25,9 ± 1,8	32,1 ± 3,6
	4.	2005/1971	<0,734	7,01 ± 0,36	428 ± 20	28,9 ± 1,9	34,0 ± 3,9
2.	1.	2005/0361	<0,656	0,346 ± 0,148	488 ± 23	20,2 ± 1,4	26,7 ± 3,1
	2.	2005/0691	<0,720	0,379 ± 0,074	582 ± 27	22,1 ± 1,5	31,0 ± 3,3
	3.	2005/1396	<0,596	0,267 ± 0,061	513 ± 24	19,0 ± 1,3	28,5 ± 3,2
	4.	2005/1972	<0,693	0,328 ± 0,071	484 ± 23	19,7 ± 1,4	26,7 ± 3,2
3.	1.	2005/0362	<0,662	0,474 ± 0,137	470 ± 22	22,8 ± 1,5	27,7 ± 3,0
	2.	2005/0692	<0,676	0,523 ± 0,121	484 ± 23	23,3 ± 1,6	28,5 ± 3,1
	3.	2005/1397	<0,666	0,635 ± 0,131	490 ± 23	22,6 ± 1,6	30,9 ± 3,4
	4.	2005/1973	<0,562	0,587 ± 0,151	453 ± 21	22,1 ± 1,5	27,9 ± 3,0
4.	1.	2005/0363	<0,714	0,640 ± 0,153	497 ± 23	27,0 ± 1,8	34,3 ± 3,6
	2.	2005/0693	<0,728	0,865 ± 0,097	495 ± 23	29,0 ± 1,9	34,9 ± 3,7
	3.	2005/1398	<0,720	0,710 ± 0,090	510 ± 24	26,9 ± 1,8	36,1 ± 3,9
	4.	2005/1974	<0,719	0,959 ± 0,102	442 ± 21	24,1 ± 1,6	32,0 ± 3,6

Poznámka: *hĺbka odberovej vrstvy - 0-5 cm*

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita:monitorovacie body RÚ RaO -rádiochémia

Monit. bod č.	Ra-nuklid / Evid.č.prot.	90Sr [Bq/kg]
Č.1	2005/1395	1,9 ± 0,2
Č.2	2005/1396	1,4 ± 0,2
Č.3	2005/1397	2 ± 0,2
Č.4	2005/1398	1,7 ± 0,2

Table 380 Soil specific activity - RR RAW, 2005

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monitorovací bod	P. r.	Rádionuklid / Evid.č.protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1	1.	2006/0526	9,07 ± 0,46	479 ± 22	27,9 ± 1,8	34,8 ± 3,6
	2.	2006/1558	2,74 ± 0,17	474 ± 22	24,3 ± 1,6	30,7 ± 3,4
2	1.	2006/0527	0,804 ± 0,096	553 ± 26	22,8 ± 1,6	32,2 ± 3,5
	2.	2006/1559	0,517 ± 0,160	526 ± 25	22,5 ± 1,5	28,8 ± 3,4
3	1.	2006/0528	0,602 ± 0,089	483 ± 23	25,1 ± 1,7	32,3 ± 3,6
	2.	2006/1560	0,482 ± 0,072	496 ± 23	25,3 ± 1,7	32,7 ± 3,5
4	1.	2006/0529	0,609 ± 0,090	500 ± 24	29,9 ± 2,0	37,7 ± 4,1
	2.	2006/1561	0,772 ± 0,094	505 ± 24	29,5 ± 2,0	37,2 ± 3,9

Poznámka: hĺbka odberovej vrstvy - 0-5 cm

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita:monitorovacie body RÚ RaO -rádiochémia

Monit. bod č.	Ra-nuklid / Evid.č.prot.	^{90}Sr [Bq/kg]
Č.1	2006/526	1,8 ± 0,2
Č.2	2006/527	0,6 ± 0,2
Č.3	2006/528	0,9 ± 0,1
Č.4	2006/529	0,9 ± 0,1

Table 381 Soil specific activity - RR RAW, 2006

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monitorovací bod	P. r.	Rádionuklid / Evid.č.protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1	1.	**2007/0637**	5,36 ± 0,34	469 ± 22	24,9 ± 1,7	31,9 ± 3,6
	2.	**2007/1895**	6,09 ± 0,31	461 ± 22	25,9 ± 1,7	31,8 ± 3,4
2	1.	**2007/0638**	0,635 ± 0,159	515 ± 24	20,6 ± 1,4	28,0 ± 3,1
	2.	**2007/1896**	<0,548	519 ± 24	20,0 ± 1,4	27,2 ± 3,1
3	1.	**2007/0639**	0,509 ± 0,079	450 ± 21	20,9 ± 1,5	28,1 ± 3,3
	2.	**2007/1897**	0,565 ± 0,083	451 ± 21	22,9 ± 1,5	29,3 ± 3,3
4	1.	**2007/0640**	0,825 ± 0,096	492 ± 23	27,5 ± 1,9	35,3 ± 3,8
	2.	**2007/1898**	0,891 ± 0,099	498 ± 23	30,0 ± 2,0	36,7 ± 3,8

Poznámka: hĺbka odberovej vrstvy - 0-5 cm

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita:monitorovacie body RÚ RaO -rádiochémia

Monit. bod č.	Ra-nuklid / Evid.č.prot.	^{90}Sr [Bq/kg]
Č.1	**2007/637**	**1,1 ± 0,1**
Č.2	**2007/638**	**0,9 ± 0,1**
Č.3	**2007/639**	**0,7 ± 0,1**
Č.4	**2007/640**	**0,6 ± 0,1**

Table 382 Soil specific activity - RR RAW, 2007

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monitorovací bod	P. r.	Rádionuklid / Evid.č.protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1	1.	**2008/0636**	9,38 ± 0,78	473 ± 38	28,1 ± 3,1	34,2 ± 6,5
	2.	**2008/1886**	4,58 ± 0,44	456 ± 36	25,6 ± 3,0	30,4 ± 6,4
2	1.	**2008/0637**	0,621 ± 0,166	506 ± 40	22,4 ± 2,6	29,4 ± 5,8
	2.	**2008/1887**	0,516 ± 0,153	501 ± 40	21,5 ± 2,4	27,7 ± 5,6
3	1.	**2008/0638**	0,810 ± 0,189	460 ± 37	22,0 ± 2,6	30,2 ± 6,0
	2.	**2008/1888**	0,751 ± 0,182	475 ± 38	24,4 ± 2,8	30,7 ± 5,8
4	1.	**2008/0639**	1,50 ± 0,23	492 ± 39	26,9 ± 3,0	35,7 ± 6,8
	2.	**2008/1889**	1,04 ± 0,21	499 ± 40	30,0 ± 3,3	36,9 ± 7,3

Poznámka: hĺbka odberovej vrstvy - 0-5 cm

HMOTNOSTNÁ AKTIVITA PÔDY

Lokalita:monitorovacie body RÚ RaO -rádiochémia

Monit. bod č.	Ra-nuklid / Evid.č.prot.	^{90}Sr [Bq/kg]
Č.1	**2008/636**	**1,0 ± 0,2**
Č.2	**2008/637**	**<0,5**
Č.3	**2008/638**	**<0,5**
Č.4	**2008/639**	**1,1 ± 0,2**

Table 383 Soil specific activity - RR RAW, 2008

HMOTNOSTNÁ AKTIVITA TRÁVY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monit. bod č.	P. r.	Rádionuklid / Evid.č.pr.	^{134}Cs [Bq/kg]	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	^{7}Be [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1.	1.	2005/0686	<0,665	1,14 ± 0,19	707 ± 50	80,5 ± 7,7	2,83 ± 0,55	<2,40
	2.	2005/1806	<0,650	<0,677	248 ± 18	98,2 ± 7,9	1,34 ± 0,44	<2,10
2.	1.	2005/0687	<1,22	<1,25	1010 ± 70	109 ± 12	<2,34	<4,48
	2.	2005/1807	<0,873	<0,891	536 ± 38	124 ± 10	1,93 ± 0,76	<3,11
3.	1.	2005/0688	<0,990	<1,03	1110 ± 80	138 ± 12	<1,92	<3,78
	2.	2005/1808	<0,780	<0,780	185 ± 14	97,8 ± 8,6	2,16 ± 0,61	<2,67
4.	1.	2005/0689	<0,813	<0,845	751 ± 53	130 ± 12	<1,58	<3,06
	2.	2005/1809	<0,764	<0,753	139 ± 11	100 ± 9	1,56 ± 0,68	<2,72

Table 384 Grass specific activity - RR RAW, 2005

HMOTNOSTNÁ AKTIVITA TRÁVY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monitor. bod	P. r.	Rádionuklid / Ev.č.protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	^{7}Be [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1	1.	2006/0659	0,354 ± 0,185	1010 ± 70	113 ± 10	<1,60	<3,63
	2.	2006/1562	0,285 ± 0,159	873 ± 61	86,9 ± 7,4	1,62 ± 0,60	<3,40
2	1.	2006/0660	<0,945	1130 ± 80	114 ± 10	<1,62	<3,25
	2.	2006/1563	<0,984	1100 ± 80	90,4 ± 8,1	3,18 ± 0,72	<3,70
3	1.	2006/0661	<0,966	1300 ± 90	127 ± 11	<1,39	<3,57
	2.	2006/1564	0,312 ± 0,186	1020 ± 70	126 ± 11	3,04 ± 0,69	<3,51
4	1.	2006/0662	<0,758	723 ± 51	64,4 ± 6,1	<1,29	<2,73
	2.	2006/1565	<0,872	543 ± 39	110 ± 9	1,97 ± 0,67	<3,17

Table 385 Grass specific activity - RR RAW, 2006

HMOTNOSTNÁ AKTIVITA TRÁVY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monitor. bod	P. r.	Rádionuklid / Ev.č.protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	^{7}Be [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1	1.	2007/0936	<0,961	777 ± 55	102 ± 9	<1,72	<3,49
	2.	2007/1502	<0,891	747 ± 53	119 ± 10	<1,45	<3,31
2	1.	2007/0937	<1,05	935 ± 66	133 ± 11	4,36 ± 0,94	4,55 ± 1,24
	2.	2007/1503	<0,923	764 ± 54	197 ± 15	<1,81	<3,37
3	1.	2007/0641	<1,03	1020 ± 70	119 ± 12	<1,69	<3,80
	2.	2007/1504	<0,963	877 ± 62	218 ± 17	1,32 ± 0,81	<3,44
4	1.	2007/0642	<0,917	682 ± 48	107 ± 10	<1,33	<3,37
	2.	2007/1505	<0,819	474 ± 34	145 ± 12	<1,63	<2,85

Table 386 Grass specific activity - RR RAW, 2007

HMOTNOSTNÁ AKTIVITA TRÁVY

Lokalita: monitorovacie body RÚ RaO
(gamaspektrometria)

Monitor. bod	P. r.	Rádionuklid / Ev.č.protokolu	^{137}Cs [Bq/kg]	^{40}K [Bq/kg]	^{7}Be [Bq/kg]	U - rad [Bq/kg]	Th - rad [Bq/kg]
1	1.	2008/0599	<0,735	674 ± 89	187 ± 28	<1,53	<2,75
	2.	2008/1587	<0,857	610 ± 81	170 ± 25	2,26 ± 1,67	<3,19
2	1.	2008/0600	<0,787	874 ± 115	165 ± 27	<1,68	<2,72
	2.	2008/1588	<0,983	788 ± 104	306 ± 43	6,02 ± 1,94	<3,33
3	1.	2008/0601	<0,831	962 ± 127	213 ± 32	<1,58	<3,08
	2.	2008/1589	<0,875	721 ± 96	302 ± 42	3,81 ± 1,53	<3,12
4	1.	2008/0602	<0,830	977 ± 129	181 ± 29	<1,59	<3,07
	2.	2008/1590	<0,775	388 ± 52	210 ± 30	1,95 ± 1,26	<2,84

Table 387 Grass specific activity - RR RAW, 2008

July 2009

SLOVENSKÉ ELEKTRÁRNE, A.S.
NUCLEAR POWER PLANT MOCHOVCE
VVER 4×440 MW III CONSTRUCTION

Thematic Boxes

Submitted to:
Slovenské Elektrárne, a.s.

ANNEX 5.0

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Golder Associates

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5.1 CONSIDERATIONS ABOUT MO34 CLASSIFICATION

Mochovce 3-4 NPP is an “evolutionary design” (as defined by IAEA-TECDOC 936), like all the so-called Generation III reactors, since it is firmly based on proven and well-consolidated technology of currently-operating NPPs and, as appropriate, introduces significant safety and performance upgrades, implementing lessons learned from operating experience in order to ensure compliance with the latest international safety requirements and practices while putting a strong emphasis on maintaining proven design to minimize technological risks.

Generally Generation I plants are those developed at the dawn of the nuclear era, at the end of the ‘50s and at the beginning of the ‘60s. They had limited power output (100-300 MWe), simplified systems, no High Pressure Injection systems, no standardization, etc.

Generation II plants are those developed at the end of the ’60s through the end of the ‘70s. They featured a much higher power output (800-1100 MWe) and a degree of standardization. The US requirements for ECCS (10CFR50 App. K) were implemented. The safety was still totally based on deterministic analysis, PSA was not considered a design tool, no evaluation and no explicit consideration of severe accidents were involved. The large majority of the operating plants comply with this general picture.

After the Three Mile Island (TMI) accident in March 1979, the Safety Authorities required a number of backfitting to existing Generation II plants and an extensive revision of safety requirements were introduced for the plants to be built. The importance of the containment system to cope with even beyond design basis accident was underlined, as shown by the TMI scenario. The analysis of severe accident scenarios and the use of PSA for new plants became more and more normal practice. A PSA has been required to all plants as a verification of the safety margins to severe accidents. The Chernobyl accident in 1986, while not affecting directly the bases of LWR’s safety, further increased the attention to severe accidents, while new experiments and new computer codes allowed a more detailed and reliable assessment of severe accident prevention and mitigation scenarios.

All these considerations led at the end of the ‘80s and during the ‘90s to the development first of a set of utility requirements for a new generation of reactors (URD in the USA with participation of several other utilities and later EUR in Europe) and in parallel to the development of a set of new designs both of evolutionary and of passive natures (AP600, SBWR, EP1000, AP1000, VVER1000/92, EPR). This series of rectors are generally called Generation III plants and are currently available in the market for construction.

To complete the picture there are also the so-called Generation III+ plants or Near Term Deployment plants, which are in the pipeline of engineering and testing (no one is available yet) and will be an optimization of the existing ones and finally the Generation IV plants that will be available in the market from 2025 on.

VVER 440/213 is a reactor model that is in operation in a number of countries and in Slovakia too with very good performances and safety records. They have been backfitted according to the evolution of the technology, they have been assessed in depth by several groups of experts, including a massive work by

IAEA and OECD/NEA and a number of experiments and calculations have been carried out to prove the assumptions. All this work led to the conclusion that these plants are acceptable not only from the performance point of view, but also from the safety point of view. The European Union has not asked to any accessing country to shutdown this series of reactors.

In the case of MO34, while all the improvements implemented in plants of the same type will be obviously incorporated, the possibility exists of making further improvements during design completion and construction.

Therefore MO34 will become a kind of new generation of VVER 440/213, since it will feature for example:

- improved prevention of core melt accidents (e.g. dedicated full depressurization of the primary coolant system);
- capability to keep the corium, in case of core melt, inside the reactor vessel by external cooling, therefore greatly reducing the challenge to the containment;
- complete hydrogen management with autocatalytic recombiners and igniters, including consideration of hydrogen generated in a core melt accident;
- additional dedicated and totally independent containment spray system;
- improved redundancy and separation of safety system;
- use of PSA as a design tool;
- state of the art Instrumentation and Controls;
- improved containment leaktightness;
- compliance with IAEA requirements for new plants and WENRA;
- large compliance with EUR requirements;
- dose limits in case of accidents compatible with other new plants.

Therefore, MO34 will be finally not very different from many points of view from the modern Generation III plants, while it will capitalize the extensive operative experiences of the operation of many similar plants.

These considerations have been shared and agreed with an independent Safety Board setup by ENEL, whose six members are all well known and esteemed European experts in nuclear safety, who have played (and in some cases are playing) key roles of responsibility in Utilities, Safety Authorities, Academies of Science, International Organizations, Research Organizations and Universities.

After more than one year of activities, the Board has issued the positive statement that "*the Plant complies with the general principles of most recent international guidance, recommendations and requirements issued by international organizations. Moreover, the design has incorporated many of the principles and requirements included in the EUR's (European Utility Requirements), which are the requirements agreed by European Utilities for the advanced Nuclear Power Plants*".

5.2 OPERATION OF MULTIPLE UNITS

VVER-440 NPPs are designed usually as four unit plants. Each two units (1&2 and 3&4) are built as "twin units". In the case of Mochovce, all the four units are of the 213 type.

Units belonging to the "twin units" have certain common systems (fully or partially) and buildings, such as:

- demineralized water system;
- service water system;
- cooling water system;
- reserve 0.4 kV electrical bus (the units are reserve for each other);
- vent stack;
- diesel generator building;
- plant control room;
- reactor hall.

Systems common for the whole plant include:

- low pressure air supply system;
- make-up water preparation system;
- plant information centre;
- turbine hall (housing 8 turbines).

The above mentioned features determine the operational conditions of the plant. They influence also the organizational structure of the shift personnel. There are some organizational units that are common for two units or for the whole plant. Both advantages and disadvantages of this arrangement have been recognized.

Advantages

The advantages of multiple unit arrangement are both economical and safety related. The use of common systems, common organizational units, common maintenance and technical support are profitable from the economic point of view. From the operational safety point of view, the higher equipment/systems availability provided by the use of certain equipment of the other unit as a backup reserve seems to be an important advantage. For some accident management, multiple arrangement is very profitable. For instance, in the case of loss of off-site power, the probability of core damage in a multiple unit is much lower than for a one unit plant.

Likely disadvantages and their solution

Some disadvantages of multiple units arrangement may be safety related. Existing interconnections may permit an event that has occurred in one plant to be propagated to another unit (i.e. fire propagation).

Within the upgrading safety programme of EMO12 and MO34 some measures have been taken for eliminating or reducing these disadvantages. System reliability and safety studies have been undertaken to find appropriate solutions for all potential disadvantages of multiple unit arrangement. These activities concentrated on the following directions:

- Identification and elimination of the most hazardous interconnections, separation of the units;
- Reliability improvement in existing common systems;
- Installation of new common systems to increase the reliability;
- Overall plant safety improvement.

Examples of solutions that have been implemented are:

- Interconnection of the units at the 6 kV level;
- New technology for switch over from 400 kV line to 110 kV and installation of brand new electrical diagnostic system (DSE);
- For Units 3 and 4, installation of a common additional diesel generator unit (the standard configuration foresees 3 diesel generators for each Unit) that provides further electrical power supply for classified equipment required to mitigate consequences of severe accidents;
- Improvement of fire resistance in the area of the turbine hall roof support construction.

5.3 RADIATION PROTECTION AGAINST IONIZING RADIATION

Ionizing radiation

The term ***radiation*** is used to describe electromagnetic waves, such as light, radio waves and X-rays, and the particles emitted by radioactive materials as they disintegrate or decay to reach a non-radioactive state. These particles and the more energetic electromagnetic waves produce electrically charged particles, called ***ions***, in the materials they strike. This ***ionization*** can result in chemical changes; in living tissue, such changes can lead to injury to the organism.

Ionizing radiations are:

- ***α radiation*** (the nuclei of atoms of the element helium):

these particles are easily stopped and do not penetrate the skin; radioactive materials that emit alpha radiation can only be hazardous if swallowed or inhaled into the body, or if they enter the body through a break in the skin;

- ***β radiation*** (electrons):

these particles have greater penetrating powers than alpha particles but are stopped by relatively thin layers of water, glass or metal; radioactive materials that emit beta radiation can also be hazardous if taken into the body;

- ***γ radiation and X-rays*** (electromagnetic radiations):

these electromagnetic waves can penetrate relatively large thicknesses of matter before they are absorbed, but can be screened by a sufficient thickness of lead or concrete;

- ***neutrons*** (neutral particles present in all atomic nuclei except hydrogen):

these particles are also very penetrating but can be screened by thick layers of concrete or water.

Natural background radiation and human–made radiation sources

Natural background radiation comes from four primary sources: cosmic radiation, solar radiation, external terrestrial sources, and radon.

Human-made radiation sources are mainly represented by medical practice (diagnostic x –rays, use of radioisotopes, etc.); nuclear reactors for power generation; fallout from nuclear weapons testing; consumer products.

Radioactive decay

An important feature of all radioactive materials is that their activity decreases with time.

Radioactive decay is the process in which an unstable atomic nucleus loses energy by emitting radiation in the form of particles or electromagnetic waves. This decay, or loss of energy, results in an atom of one type, called the parent nuclide transforming to an atom of a different type, called the daughter nuclide.

Each material is characterised by a half-life, which is the time taken for half the radioactivity to decay. In two half-lives this is reduced to a quarter of its original level, and in ten half-lives to about one thousandth.

Half-lives of radioactive materials vary from fractions of a second to millions of years. In general, the most radioactive materials - those that emit intense penetrating radiation and require heavy shielding - decay to negligible levels relatively rapidly. Long-lived radioactive materials emit very little radiation, generally with low penetrating power; the hazard from such materials is principally associated with their being taken into the body.

Quantities of radioactivity are measured in ***becquerels*** (Bq). One becquerel of radioactivity corresponds to a rate (on average) 1 radioactive decay per second within the material of interest.

Dose quantities

The measure unit of **absorbed dose** is the ***gray*** (Gy), which corresponds to the deposition, in the matter, of 1 joule of energy per kilogram of material.

The units used to measure **equivalent dose** of radiation to individuals are the ***sievert*** (Sv), the ***millisievert*** (mSv) and the ***microsievert*** (μSv).

The sievert is a measure of the biological effect of radiation in humans exposed to ionizing radiation; it takes into account the way in which a particular type of radiation distributes energy in tissue so that we can allow for its relative effectiveness to cause biological harm. For gamma rays, X rays and beta particles, this radiation weighting factor is set to at 1, so the adsorbed dose and equivalent dose are numerically equal. For alpha particles, the factor is set at 20, so that the equivalent dose is deemed to be 20 time the adsorbed dose. Values of the radiation weighting factor for neutrons of various energies range from 5 to 20.

Instead, the **effective dose** is the **equivalent dose** weighted for the different harm to different tissue (by the tissue weighting factor). In fact, the risk of the various parts of human body varies from organ to organ. So, in case of partial irradiation of human body to different type of radiation the term **equivalent effective dose** (Sv) is used to quantify the overall equivalent impact on organs and body tissues.

One millisievert is one-thousandth of a sievert and one microsievert is one-millionth of a sievert. For example, doses of tens of sieverts to small regions of the body are used in radiotherapy to destroy cancerous growths while, in radioprotection, the international dose limit is fixed in 20 mSv/y for professionally exposed workers and 1 mSv/y for public.

It is sometimes useful to have a measure of the total radiation dose to groups of people or a whole population. The quantity used to express this total is the **collective effective dose**.

It is obtained by adding, for all exposed people, the effective dose that each person in that group or population has received from the radiation source of interest. For example, the effective dose from all sources of radiation is, on average, 2.4 mSv in a year. Since the world population is about 6,000 million, the annual collective effective dose to the whole population is the products of these two numbers, about 17,000,000 *man sievert,* symbol manSv.

It is common for effective dose to be abbreviated to *dose* and collective effective dose.

Biological effects

When ionization occurs in living tissue the resulting chemical changes can affect the behaviour of cells. The critical targets are the DNA molecules. These structures, present in every cell of the body, carry the information required for the development and division of cells and for the growth, proper function and reproduction of the organism. The damage to the DNA is often reparable, but in some cases can result in cell death or transformation.

Dead cells are normally absorbed or rejected by the organism. However, if a sufficient number of cells are killed, the functioning of the organism will be affected and it may die. Cell transformations (or mutations) do not necessarily lead to any deleterious effects. Indeed, many of such cellular changes occur normally during the lifetime of any organism. Very rarely, they result in a cancer or, in the case of the reproductive cells, in hereditary damage in later generations. Thus radiation can affect both the individual receiving the dose (somatic effects) and subsequent generations (hereditary effects).

Radiation Safety and ALARA

For all human actions that add to radiation exposure, or practices, ICRP recommends a system of radiological protection based on three central requirements. Each of these involves social considerations - explicitly in the first two and implicitly in the third - so there is considerable need for the use of judgement. They are the **Justification** of a practice, the **Optimization** of protection and the application of individual **Dose limit**.

ALARA is an acronym for “As Low As Reasonably Achievable”. This is a radiation safety principle for minimizing radiation doses and releases of radioactive materials by employing all reasonable methods. This policy is based on the principle that any amount of radiation exposure, no matter how small, can increase the chance of negative biological effects such as cancer, though perhaps by a negligible amount. It is also based on the principle that the probability of the occurrence of negative effects of radiation exposure increases with cumulative lifetime dose. At the same time, radiology and other practices that involve use of radiations bring benefits to population, so reducing radiation exposure can reduce the efficacy of a medical practice.

ALARA is not only a sound safety principle, but is a regulatory requirement for all radiation safety programs.

5.4 PRINCIPAL RADIOACTIVE DISCHARGE SOURCES

Operation of the NPP is typically cyclical. The reactor is designed to be run continuously for a certain period and then shut down annually, for one or two months, for routine maintenance, shuffling of fuel and partial refuelling.

Reactor Operation

Under normal operation, any leakage from, or partial failure of, the fuel cladding will lead to small amounts of fission products being released into the primary circuit. Tritium, produced in the fuel by fission, can be released through the cladding by diffusion and through any pin holes or defects. The amounts released depend on the design and quality of the fuel pins.

Small amounts of radioactive material may also be formed within the primary coolant as a result of neutron activation of fuel tubes, primary circuit and structural material surfaces.

Corrosion and erosion processes tend to release activation products from such materials into the primary coolant circuit. Tritium, generated from activation of boric acid in the primary coolant, is a particularly significant activation product. In addition, activation processes in the air surrounding the reactor pressure vessel produce small quantities of gaseous radioactive species including tritiated water vapour and noble gases.

A number of separate radioactive discharges from the reactor can be identified, concerned principally with chemical and volume control of the primary circuit coolant. Dissolved fission and activation products are removed from the coolant by an ion exchange process, which produces contaminated resins. The periodic removal and replacement of such resins generates both solid and liquid wastes. Periodically, some coolant is also discharged from the primary circuit in order to remove tritium, so that the activity concentration is maintained below a defined maximum operating limit. This discharge from the primary circuit also gives rise to a liquid waste stream.

Gases that grow up in the primary circuit during operation must be removed. This results in a gaseous waste stream. Atmospheric releases may also derive from the ventilation of fugitive emissions of primary circuit coolant through minor leakage. Such releases typically comprise tritiated water vapour, noble gases, aerosols and other vapours.

Estimates of the quantities of radioactivity present in the primary circuit coolant and the various waste streams have been made as part of the design basis of the reactor, using conservative assumptions. These estimates, together with consideration of the potential health impacts of any radioactive release, form a general basis for establishing operational limits in respect of emissions and waste management requirements. Information on discharges arising from normal operation, based on operating experience of other VVER-440 type reactors, illustrates that reactor operation can readily meet such discharge limits.

Indeed, in practice, plant performance against operational limits is routinely monitored by the regulatory authorities.

Refuelling and maintenance

At annual shut down, the cooling systems are depressurised, the primary circuit pressure vessel head removed, and one third of the fuel assemblies removed and transferred to a storage pond adjacent to the pressure vessel. The remaining two thirds are then rearranged to maintain optimum power densities and new fuel is inserted in the core. Typically, therefore, after the initial start-up period, each fuel assembly will remain in the reactor for three years.

In addition to the spent fuel, refuelling operations may give rise to active liquid effluents and atmospheric discharges that are of a similar nature to those derived from the primary circuit coolant during normal operation.

Repair and maintenance activities undertaken during shut-down also give rise to various contaminated solid wastes, caused by contact with activation products or by contact with contamination from the reactor primary circuit. Certain components, activated by neutron irradiation, may also be replaced, giving rise to solid wastes.

Classification of the sources of emissions

Activity sources within a nuclear reactor are generally classified as one of the following:

- fission products;
- corrosion products;
- activation products and actinides.

Fission products

Fission products are formed from nuclear fissions of atoms within the Uranium dioxide fuel. They comprise nearly 200 radioisotopes of some 40 different chemical elements (atomic numbers 30÷66) with diverse chemical and physical properties. Some are gases (e.g. the noble gases Krypton and Xenon), others are quite volatile at reactor temperature (such as Caesium and Iodine), and some are refractory metals (such as the Lanthanides). Cesium-137 is one of the most well-known fission products.

A considerable proportion of the fission product inventory is too short-lived to be of any environmental significance; these radionuclides decay rapidly before they are able to reach the environment in any significant quantity.

A series of barriers prevent release of fission products into the primary coolant. These include the fuel matrix itself, which serves to contain the majority of non-volatile fission products under normal operation. The volatile fission products tend to migrate through the fuel matrix and accumulate at the grain boundaries and its gaps within the fuel pin. The fuel cladding is designed to contain the volatile fission products within the fuel pin and to prevent contact between fuel and primary coolant.

Only gaseous fission product and the most volatile elements escape from the fuel matrix in any significant quantities and accumulate in the fuel pin gaps. The fuel cladding normally contains these radionuclides; however, some pins may develop small cladding defects as a result of mechanical or thermal stresses, corrosion or other causes. This can result in escape of some of the more volatile fission products into the primary coolant. Gross failure of cladding is also possible, but activity monitoring of the primary coolant ensures that these failed pins are detected and can be removed from the reactor.

Activation and corrosion products

The neutron flux in the reactor core results in activation of stable isotopes in various materials, including those found in the fuel cladding, structural components, coolant water and dissolved ions, dissolved air, and air in gaps in the reactor shaft. The active isotopes may be created by simple neutron capture or by secondary processes, such as neutron capture followed by α-decay. Some activation products are very short-lived and are not significant for environmental impact assessment or waste management; however, they may have implications for shielding in the reactor hall as a result of their penetrating γ rays.

Activation of materials used for structural components and fuel cladding, and the subsequent corrosion or erosion of these materials, can lead to the presence of radionuclides in the coolant in either soluble or particulate form. However, the chemical properties of the primary coolant are controlled to minimise corrosion. This entails routine monitoring of a wide range of parameters, including pH, conductivity, transparency, boric acid concentration, Potassium and Sodium concentrations, dissolved gases, Fluoride and Chloride concentrations and oil content.

The activation products in the coolant can be soluble or insoluble, and they are transported by water to all parts of the primary system. This presents problems with regard to accessibility and safe maintenance of various components because of radiation fields. Among those activated corrosion products, the γ-emitting activities (Co-60, Co-58, Zn-65, Mn-65 and Fe-59) are more important in creating the radiation field problems. The longer-lived species (Fe-55, Ni-63 and Co-60) are of more concern with the problems in the radioactive waste handling and disposal.

Activation of Boron dissolved in the primary coolant leads to the formation of Tritium. Although with a low radiotoxicity, Tritium is potentially significant from a radiological point of view because of its chemical behaviour as Hydrogen, which means that it readily forms water molecules where it is chemically indistinguishable and therefore extremely difficult to separate from 'normal water'. Tritium, in the form of tritiated water, is highly mobile in the environment and in living tissue. Its half-life is approximately 12 years; it will therefore always be present in the coolant in quantities determined by the power history of the reactor and the coolant replenishment cycle. This is the most significant source of Tritium; other sources, such as its formation as a ternary fission product or by activation of Boron carbide used in the control rods, require failure in the cladding of the fuel rod or control rod respectively in order to let Tritium reaching the primary circuit.

Instead of undergoing nuclear fission, Uranium in the reactor fuel may absorb neutrons to form actinides such as Plutonium; these can reach the coolant by slowly leaching from exposed fuel if a breach in the cladding occurs.

The most radiologically important radionuclide arising from neutron activation of air in the pressure vessel shaft is Ar-41, produced by activation of Ar-40. This is discharged via the hermetic zone ventilation system through Iodine and aerosol filters to the stack. Decay tanks at the gas cleaning station are used to allow the Ar-41 (half-life 1.8 hours) to decay before final discharge. N-16 is produced by nuclear reactions of the Oxygen in the primary coolant water. Although it has a short half-life (seven seconds) it is transported around the reactor coolant circuit to the heat exchangers. It is unlikely to represent a health hazard unless released under accident conditions. However it does produce very high energy gamma rays which are very penetrating and which require adequate shielding.

5.5 PRINCIPLES OF MICROMETEOROLOGY AND DISPERSION MODEL

Micrometerology

Meteorology is fundamental for the dispersion of pollutants as it is the primary factor determining the diluting effect of the atmosphere. Contaminants discharged into the air are transported over long distances by large-scale air-flows and dispersed by small-scale air-flows or turbulence, which mix contaminants with clean air.

The main parameters that characterizes local climate (micrometeorology) and affects air quality are represented by temperature, relative humidity, wind speed and direction, pressure, precipitation and solar radiation. The meteorological data set is derived from observation of the main parameters at the next surface station and from data that has to be inferred from other measurements as the atmospheric stability and the mixing height.

Atmospheric stability is a measure of the propensity for vertical motion and hence is an important indicator of the likely magnitude of pollutant dispersion.

Mixing Height or Mixing Depth is used to quantify the vertical height of mixing in the atmosphere. It is the height at which vertical mixing takes place. Forecasting of mixing height is done with the aid of the vertical temperature profile. A radiosonde is sent aloft and temperatures at various altitudes are radioed back. The altitude at which the dry adiabatic line intersects the radiosonde measurements is taken as the maximum mixing depth (MMD). The dry adiabatic line is defined as a decrease of about 1 centigrade over height of 100 m. The MMD is a function of Stability. In Unstable air the MMD is higher and in Stable air the MMD is lower.

Atmospheric stability and mixing height of the boundary layer are also required as extremely important issue in reference to air quality. We can tell how pollutant emissions are likely to disperse and what the likely ground level concentration patterns will be if we know how stable (or unstable) the atmosphere is at a given time. The stability of the atmosphere often dictates the behaviour of a plume in terms of the height it will rise and to what degree it will mix into the environment.

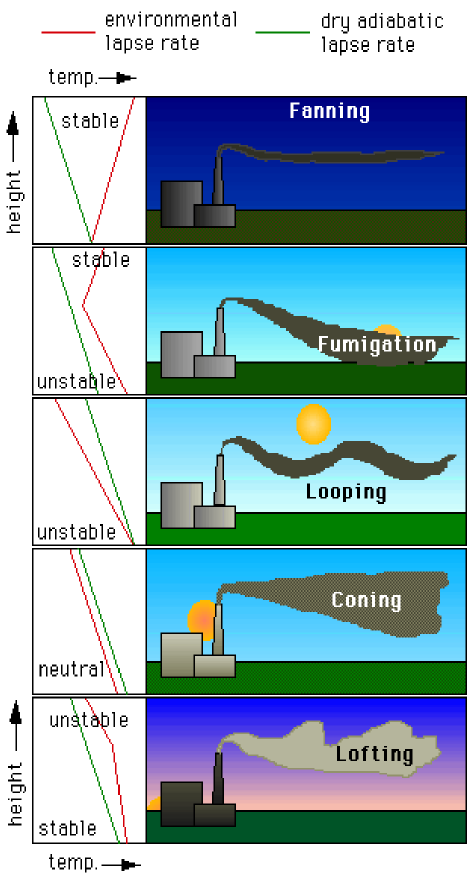
The oldest and, for a great many years, the most commonly used method of categorizing the amount of atmospheric turbulence present was the method developed by Pasquill in 1961, and later modified by Gifford.

Pasquill categorized the atmospheric turbulence into six stability classes named A, B, C, D, E and F with class A being the most unstable or most turbulent class, and class F the most stable or least turbulent class:

Unstable conditions promote the rapid dispersion of atmospheric contaminants and result in lower air concentrations compared with stable conditions.

P-G STABILITY CLASS	CONDITION	TIME of DAY
A	extremely unstable	day
B	moderately unstable	day
C	slightly unstable	day
D	neutral	day or night
E	stable	night
F	very stable	night

A plume released into an unstable atmosphere will display a looping pattern. Looping occurs when updrafts from warming air at the surface carry a segment of the plume upward while compensating downdrafts force the adjacent section downward. Coning occurs when a plume is released in the middle of a neutral layer. In addition to early evening, as the graphic illustrates, coning is common on over cast days and at night with the presence of strong winds. A stable atmosphere, commonly marked by an inversion on clear nights, yields a fanning pattern. A plume released into a stable atmosphere will not rise or mix unless it encounters turbulence. A fanning plume will often extend long distances downwind from the source.



Looping, coning, and fanning are characteristic of the more persistent conditions of stability, and for this reason, are observed for longer durations over a 24 - hour day. Fumigation and lofting, however, frequently characterize the transition periods between day and night and seldom last for more than a couple of hours. Fumigation occurs in the morning hours as the night-time inversion gradually disappears due to surface heating. As the surface heats, the air just above it warms. An unstable layer builds from the surface upward but remains capped by the inversion above. A plume released beneath the inversion is trapped near the surface until the inversion eventually disappears and is replaced by an unstable layer. Conversely, lofting occurs in the evening as soon as surface heating ceases and radiational cooling begins.

The behaviour of pollutants in the air is not only affected by the stability of the atmosphere. They are also affected by the direction the wind is coming from and the intensity at which it blows. Drafts caused by thermal and mechanical effects will blow the polluted air in that direction. All of these factors work together, and it is this motion that can be either stifled or accentuated by the stability of the air.

Atmospheric dispersion model

There is no complete theory that describes the relationship between ambient concentrations of air pollutants and the causative meteorological factors and processes. The dispersion by the wind is a very complex process due to the presence of different sized eddies in atmospheric flow.

Atmospheric dispersion modelling is the mathematical simulation of how air pollutants disperse in the ambient atmosphere. It is performed with computer programs that solve the mathematical equations and algorithms which simulate the pollutant dispersion. The dispersion models are used to estimate or to predict the downwind concentration of air pollutants emitted from sources such as industrial plants.

The dispersion models require the input of data which includes:

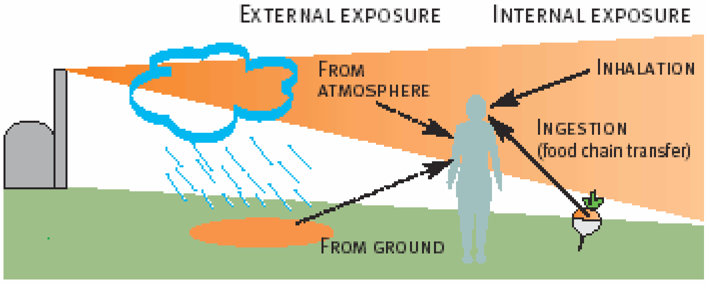
- Meteorological conditions such as wind speed and direction, the amount of atmospheric turbulence (as characterised by what is called the "stability class"), the ambient air temperature and the height to the bottom of any inversion aloft that may be present.
- Emissions parameters such as source location and height, source vent stack diameter and exit velocity, exit temperature and mass flow rate.
- Terrain elevations at the source location and at the receptor location.
- The location, height and width of any obstructions (such as buildings or other structures) in the path of the emitted gaseous plume.

The process of air pollution modelling contains 4 stages (data input, dispersion calculations, deriving concentrations and analysis). The accuracy and uncertainty of each stage must be known and evaluated to ensure a reliable assessment of significance of any potential adverse effects.

Currently, the most commonly used dispersion models are steady-state Gaussian plume models. These are based on mathematical approximation of plume behaviour and are the easiest models to use. They incorporate a simplistic description of the dispersion process and some fundamental assumptions are made that may not accurately reflect reality. However, even with these limitations, this type of model can provide reasonable results when used appropriately.

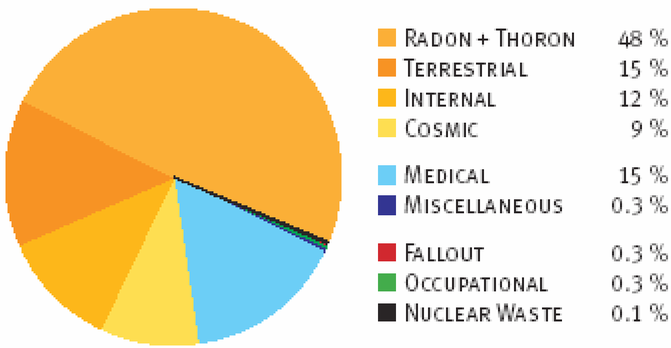
5.6 RADIOECOLOGY

Radioecology is a scientific discipline which studies how radioactive substances interact with nature; how different mechanisms affect the substances' migration and uptake in food chain and ecosystems. Investigations in radioecology might include aspects of field sampling, designed field and laboratory experiments and the development of predictive simulation models. This multi- and interdisciplinary science combines techniques from some of the more basic, traditional fields, such as physics, chemistry, mathematics, biology, and ecology, with applied concepts in radiation protection. Radioecological studies form the basis for estimating doses and assessing the consequences of radioactive pollution for human health and the environment.



The interest in radioecology increased after the Chernobyl accident in 1986 when large parts of Europe were contaminated with radioactive fallout. Areas, which received most deposition, were areas with heavy rainfall the period when the radioactive plume passed by. The measurement techniques (link) used to detect the radioactive substances are highly sensitive and today, almost 20 years later, it is still possible to detect the fallout. Other sources to artificial radioactivity in the environment are global fallout from nuclear weapons testing in the atmosphere in the 1950's and 60's, routine discharges from nuclear installations like the reprocessing facilities and possible leakage of radioactivity from sunken nuclear-powered submarines. It is necessary to underline that the average exposure to artificial radiation (excluding medical practice) is less than one percent of the total amount.

AVERAGE RADIATION EXPOSURE OF THE EC-POPULATION (NATURAL AND ARTIFICIAL)



Radionuclide tracers enabled a whole new field of research on the critical pathways of movement of pollutants in the environment and their potential for food chain discrimination or bioaccumulation in successively higher trophic levels. Sophisticated mathematical equations were developed which permitted calculation of the time dynamic (transient behaviour) of wholebody concentrations and equilibrium whole-body burdens from both acute and chronic ingestion.

Food chains inherently neither concentrate nor dilute pollutants, but this phenomenon continues to be misunderstood in the public's perception of the behaviour of hazardous materials in the environment. Food chain models have had important application in developing regulatory standards for environmental exposures (ingestion) and in developing risk analysis for hazardous releases.

5.7 CODE RDEMO©

For the estimation of the radiological consequences from discharged radioactive substances (to the atmosphere by ventilation stacks and to the hydrosphere – surface water, i.e. to river Hron) during normal and abnormal operation, the computing programme system RDEMO© was used.

The RDEMO© is one of group of four codes. RDETE, RDEDU, RDEBO, RDEMO. The first two are in use in Czech Republic (Temelin and Dukovany respectively).

The validation was performed on the basis of comparative analyses for reference tasks developed by Expert Commission No. 6 of SÚJB ČR in Prague for computing dispersion of radioactive materials. The comparative analyses are obligatory for programmes used in the ČR for this area. Conclusions are valid for all computing programmes RDxxx, because all the systems (RDEBO, RDEMO, RDEDU and EDETE) come out from uniform methodology and computing modules use the same algorithms and programme tools.

Moreover, the code RDEMO© has been validated also by comparison with the code NRCDose on November 2007. Both codes were used with the same input data for Mochovce NPP and surrounding area. Results of the comparison were in close agreement. Validation was performed by an independent organization and the validation protocol is given in Annex V.

Health Safety Slovak Authority gave permission to SE a.s. for using the code RDEMO© in its permission No. OOZPŽ/6274/2006 from 2nd November 2006.

Program set RDEMO© includes programs for preparation of input data files, calculation programs and programs for graphic and printed outputs with individual programs following from each other (outputs from one program form inputs for the following program).

Program enables calculation of annual individual effective and equivalent doses or 50(70)-year doses of collective effective and equivalent doses for six age categories (0 – 1, 1 – 2, 2 – 7, 7 – 12, 12 – 17, more than 17 years) for six body organs (gonads, bone marrow, lungs, thyroid gland, alimentary tract and skin) and for the whole body, for ten radiation routes:

- external exposure from the atmosphere from the plume and deposit,
- external exposure from the hydrosphere from bathing, sailing and from staying on sediments and on irrigated soils,
- internal exposure from inhalation,
- internal exposure from ingestion of food contaminated by atmospheric fallout (food chains: meat (beef, pork and poultry), milk, cereals, vegetables (green-stuff, root crop and potato), fruit and other crops (eggs, sugar, beer, oil crops),
- internal exposure from the hydrosphere - ingestion of drinking water, fish and food contaminated by irrigation.

Program also counts 50(70)-year bonds of collective effective doses for all zones – regional doses.

Program determines the critical population group (critical zone), critical radiation route and critical radio nuclides for individual radiation routes and total for atmosphere and hydrosphere including contributions by individual radio nuclides.

The area with 60km radius from Mochovce NPP is divided into 192 zones (0 – 1, 1 – 2, 2 – 3, 3 – 5, 5 – 7, 7 – 10, 10 – 15, 15 – 20, 20 – 30, 30 – 40, 40 – 50, 50 – 60km; direction N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW).

Programme RDEMO© is notably designed for evaluation of normal operation of NPP impact on the environment, but its use is also suitable for accident assessment of releases to the hydrosphere and assessment of radiological consequences in the intermediate and late phase of the accident.

NRCDose is a nuclear industry standard for calculation of inhabitant doses from routine radioactive releases from NPP operation.

NRCDose is a Microsoft Windows™ PC-based software which provides an interface for the industry standard LADTAP II, GASPAR II, and XOQDOQ programs. It is essentially a Windows™ version of NRC's 10CFR50, Appendix I Implementation codes. These codes implement NRC's current requirements for ALARA for radioactive effluents from nuclear power plants.

LADTAP II, GASPAR II, and XOQDOQ were originally written for mainframe computers, using the FORTRAN programming language. While still utilizing the proven FORTRAN computational modules, NRCDose allows the user to enter and retrieve data through a series of windows dialogs, making the use of the program much more user-friendly and efficient than its original design. This graphical interface also allows the user to create sets of data that can be named and retrieved at a later time for review or modification.

- LADTAP - Liquid Pathway Dose Modeling:
  - Regulatory Guide 1.109;
  - Fish and Invertebrate Ingestion;
  - Drinking Water;
  - Irrigated Crops;
  - Shoreline and Boating;
  - Recreational and Population Doses;
  - ALARA Cost-Benefit Evaluation;
- GASPAR - Gaseous Pathway Dose Modeling:Regulatory Guide 1.109;
  - Noble Gas Direct Exposure;
  - Inhalation Pathway;
  - Infant Milk Ingestion;
  - Deposition and Food Ingestion;
  - Individual and Population Doses;

  - ALARA Cost-Benefit Evaluation;
- XOQDOQ - Atmospheric Dispersion Modeling:
  - Regulatory Guide 1.111;
  - *X/Q*, Annual Average Dispersion;
  - *D/Q*, Particulate and Radioiodine Deposition;
  - Intermittant releases - containment purge, decay tank releases;
  - Output formatted for direct input to GASPAR;

5.8 SAFETY ASSESSMENT RELATED TO ACCIDENTAL CONDITIONS

The safety evaluation of Mochovce NPP was performed on the basis of a structured approach, which is fully in line with both the IAEA fundamental principles and Western requirements and practices.

IAEA (Safety of Nuclear Power Plants: Design, Safety Standards Series No. NS-R-1, Vienna, 2000) states that "*A safety analysis of the plant design shall be conducted in which methods of both deterministic and probabilistic analysis shall be applied. On the basis of this analysis, the design basis for items important to safety shall be established and confirmed. It shall also be demonstrated that the plant as designed is capable of meeting any prescribed limits for radioactive releases and acceptable limits for potential radiation doses for each category of plant states, and that defence in depth has been effected.*"

The safety philosophy which is considered in the design and in the safety evaluation of the plant is aimed primarily at the prevention of accidents but also gives attention to the mitigation of the consequences of accidents that could give rise to major releases. The aim is to reduce both the probability of the events and their associated off-site consequences in order to avoid the need of extensive countermeasures and to offer the authorities the possibility of simplifying the offsite emergency planning.

For this purpose, the "defence-in-depth" concept is generally referred to, thus representing the basic framework for most of nuclear installation safety. To compensate for potential human and mechanical failures, the defence-in-depth concept is centred on several levels of protection, foreseeing successive barriers preventing the release of radioactive material to the environment. The concept includes protection of the barriers by averting damage to the installation and to the barriers themselves. It includes further measures to protect the public and the environment from harm in case these barriers are not fully effective. Defence in depth helps establish that the three basic safety functions (controlling the power, cooling the fuel and confining the radioactive material) are preserved, and that radioactive materials do not reach people or the environment.

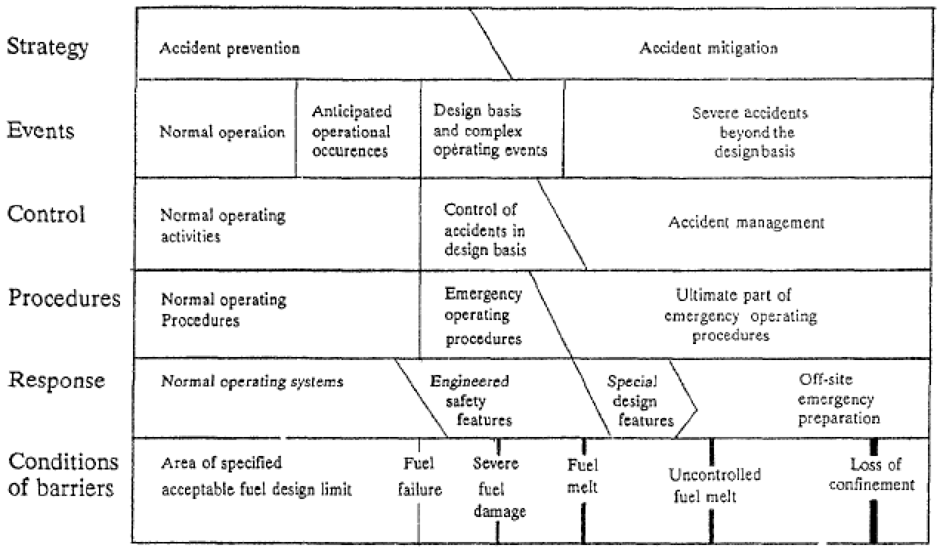


FIG. 1. Overwiew of defence in depth.

The assessment of the level of nuclear safety reached in a nuclear plant, and of the extent to which the defence-in-depth concept is implemented in the plant design, can be carried out both by deterministic and probabilistic analyses. The two approaches, nowadays generally combined, are briefly illustrated in the following.

Deterministic approach

In order to provide a robust demonstration of the fault tolerance of the plant and the effectiveness of its safety systems, in line with international practice, a deterministic analysis of the capabilities of the plant to cope with a representative, predetermined set of fault conditions is required. Suitable assessment tools are required (e.g., tests, calculations by validated computer codes or engineering analysis), and the overall approach is conservative, i.e., foresees the inclusion of suitable safety margins to take into account possible unfavourable combinations of failures which worsen the scenarios initially considered. The abnormal/accidental scenarios considered are classified in terms of their estimated frequency of occurrence, and acceptance criteria are ultimately expressed in terms of corresponding fission product release limits. Clearly, the design of the plant has to be such that the higher the frequency associated with an accident, the lower its radiological consequences.

However, the safety analysis generally incorporates both deterministic and probabilistic approaches. These approaches have been shown to complement each other and both are currently used in the decision making process on the safety and ability of the plant to be licensed.

Probabilistic approach

The probabilistic approach (typically referred to as Probabilistic Safety Assessment, or PSA) differs from deterministic safety analysis in that it provides a methodological approach to identifying accident sequences that can follow from a broad range of initiating events, and it includes the systematic and realistic determination of accident frequencies and consequences. A major advantage of PSA is that it allows for the quantification of uncertainties in safety assessments together with the quantification of expert opinion and judgement. Finally, PSA has been shown to provide important safety insights in addition to those provided by deterministic analysis. It is generally recognised that the primary objective of PSA studies is to evaluate the robustness of the actual safety status of a plant, and to identify priorities in safety upgrading measures.

In international practice, three levels of PSA have evolved:

- **Level 1:** The assessment of plant failures leading to the determination of core damage frequency.
- **Level 2:** The assessment of containment response leading, together with Level 1 results, to the determination of containment large early release frequencies.
- **Level 3:** The assessment of off-site consequences leading, together with the results of Level 2 analysis, to estimates of public risks.

The PSA determines all significant contributors to risk from the plant and evaluates the extent to which the design of the overall system configuration is well balanced, there are no risk outliers and the design meets basic probabilistic targets. For instance, considering the Level 1 PSA, the probabilistic target refers to the frequency of occurrence of core damage, as indicator of the effectiveness of the safety measures defined in the plant design for core damage prevention. In general, for a plant it is requested that all the combinations of equipment failures, human errors, human-induced events and natural events which, according to deterministic analyses, lead to core damage, have a sufficiently-low frequency of occurrence. It is recommended by IAEA that the sum of the frequencies of occurrence of all the sequences leading to core damage (in all plant states) be less than once in 10^4 years for operating plants (like EMO12) and once in 10^5 years for new plants (as MO34).

It is important to remark that the deterministic and the probabilistic approaches have both been considered in the design of EMO12: on the basis of a large amount of deterministic analyses, a Level 1 PSA has been prepared, with results in full compliance with the IAEA recommendations mentioned above. The same approach has been followed for MO34, for which a preliminary version of the Safety Analysis Report (PRESAR) and of the Level 1 PSA have been developed.

5.9 CODE RTARC©

The computing programme RTARC© (Real Time Accident Release Consequence) is used for analyses of radiological consequences of accident releases to the atmosphere. The code is designed notably for the estimation of the radiological situation during the early phase of an accident, i.e. for the period from the time when the potential for off-site exposure of the public is recognized to the time when significant amounts of radioactive material are released, but for later times too.

The code allows for inclusion in calculations on-line measurements from teledosimetric system (TDS) and measurements of mobile groups on source term reconstruction, but it can also be used in the event of a non-functional TDS. The data from TDS is then replaced with manually entered data on the meteorological situation. It comprises a package of programs and input databases.

RTARC© principal tasks include:

- forecast of concentrations, dose rates, and effective and equivalent doses;
- update and representation of the radiation situation course in graphic or tabular form;
- identification and representation or hazard zones calling for taking actions;
- identification and representation of hazard zones on taking protective actions;
- calculation and representation of trajectories or radioactive plume trace in changing meteorological conditions.

The programme is a standard component of tools for management and assessment of radiological accidents in the operational NPPs in SR and Czech Republic. The code calculations include atmospheric transport and diffusion, dose assessment, evaluation and display of the affected zones, evaluation of specific activity and deposition as well as dose rate in the air in selected area. The code RTARC© include prognosis of concentrations, dose rate, effective doses and equivalent doses for thyroid and/or for bone marrow for two age groups: adults and children to one year.

The databases and input data needed for calculations are: data charactering radionuclides (dose factors, half-time constants...), source terms characterizing release of radioactive materials (RM) to the atmosphere for selected accident, meteorological data and data about the countermeasures. The independent simulation of the urgent protective measures is involved – sheltering and iodine prophylaxis.

For internal exposure committed dose conversion factors for adults and infants are considered. Calculations of dispersion of RM in the atmosphere in the RTARC© programme are based to the Gaussian plume diffusion model:

$$X(x,y,z) = Q_R\,(2\pi\,\sigma_y\,\sigma_z\,u_i)^{-1}\exp(-y^2/2\,\sigma_y^2)\,S(h_i,x,z)$$

$$\text{kde}\quad S(h_i,x,z) = \exp[-(z+h_i)^2/2\,\sigma_z^2] + \exp[-(z-h_i)^2/2\,\sigma_z^2]$$

The physical processes which are to be considered in the prediction of doses to local groups from effluents released to the atmosphere are:

- dispersion by turbulent diffusion and the mean wind speed; vertical and horizontal standard deviations σy(x) a σz(x) correspond with the parameterization of Hosker;
- dry deposition onto the ground due to effects at the air ground interface;
- wet deposition due to washout and rainout as rain interacts with the plume;
- radioactive decay as the effluent decays;
- building wake effects due to the flow in the lee of large structures;
- for assessment of trajectory the ascending cloud is used model of Briggs;
- only heat elevation is assumed.

Dose calculation is solving by discrete of time variables q(t) by means of normalized function $f_Q(\Delta t)$, what meet the condition:

$$\sum_{l=1}^{n} f_Q(\Delta t_i) = 1$$

where n is number of time intervals. Subsequently source characterized by function q(t) is possible to considered that a source is composed from set of successive followings releases with constant rate Q_{oi} and time of duration Δt_i, where

$$Q_{0i} = \frac{f_Q(\Delta t_i)\,Q}{\Delta t_i}$$

and dose in the point (x,y) at the time t, calculated from the start of release is a sum

$$D(x, y, t) = \sum_{i=1}^{n} D(x, y, t_i)$$

where

$$t_i = t - \sum_{j=1}^{i-1} \Delta t_j$$

The computational analyses by the RTARC© programme are performed for 6 stability categories (categorization by Pasquill-Uhlig method to 6 categories A-F) of the atmosphere with typical wind speeds:

Atmosphere stability category	A	B	C	D	E	F
Typical wind speed [m s^{-1}]	1	2	5	5	3	2
Occurrence probability [%] (in 1997-2004)	2.5	12.9	26.2	40.1	8.4	9.9

The calculations of individual doses (effective and equivalent for thyroid – criterion parameters) by RTARC© programme are performed up to the distance of 40 km, exposure times: 2 hours, 1 day, 2 days, 7 and 15 days and 1 year for adults (the most numerous age group).

In the programme RTARC© those ways of exposure are considered which are the most important in the early phase of the accident, namely:

- external exposure by the passing radioactivity plume and by radioactivity deposited on the ground;
- internal exposure by inhalation which includes inhalation of radionuclides from the passing cloud and inhalation of radionuclides re-suspended from the ground.

The conservative approach at the dose calculations is done by assumption, that:

- height of release is 10, 25, respectively 43 m (not by stack, i.e. in height 125 m);
- sensible heat to 1E+7 cal/s;
- for design basis accidents the man is staying or moving 24 hours of the day in the axis of passing radioactive cloud (the sheltering is not assumed);
- for severe accidents normal living is assumed (by means of shielding factors: for cloud 0.14, for deposit 0.16 and reduction for inhalation 0.5);
- the stability class (the worst dispersion conditions) is not changed and the weather is stable in the whole year;
- comparison of the most greatest calculated doses (for the worst stability class of the atmosphere) with the criterion values;
- detail results are shown for the distance 2 km, this is the smallest distance of exclusion area border where is not permanent resettlement.

5.10 MACROSEISMIC SCALE AND MAGNITUDE SCALE

The Medvedev-Sponheuer-Karnik scale, also known as the MSK or MSK-64, is a macroseismic intensity scale used to evaluate the severity of ground shaking on the basis of observed effects in an area of the earthquake occurrence.

The scale was first proposed by Sergei Medvedev (USSR), Wilhelm Sponheuer (East Germany), and Vit Karnik (Czechoslovakia) in 1964. It was based on the experiences being available in the early 1960s from the application of the Modified Mercalli scale and the 1953 version of the Medvedev scale, known also as the GEOFIAN scale.

With minor modifications in the mid-1970s and early 1980s, the MSK scale became widely used in Europe and the USSR. In early 1990s, the European Seismological Commission (ESC) used many of the principles formulated in the MSK in the development of the European Macroseismic Scale, which is now a de-facto standard for evaluation of seismic intensity in European countries. In 1996 the XXV General Assembly of the ESC in Reykjavik passed a resolution recommending the adoption of the new scale by the member countries of the European Seismological Commission.

Unlike the earthquake magnitude scales, which express the seismic energy released by an earthquake, EMS 98 (*European Macroseismic Scale 1998*, European Seismological Commission, Luxembourg 1998) intensity denotes how strongly an earthquake affects a specific place.

MSK-64 is still being used in India, Israel, Russia, and throughout the Commonwealth of Independent States.

"*Modern macroseismic intensity scales have been developed and formally defined at the end of the XIX century as an empirical tool for measuring the strength of an earthquake, and deriving information on several physical characteristic of a seismic events, such as source parameters, attenuation, and site effects. Most important intensity scales used worldwide, such as the MCS, MM and MSK scales, are 12 degrees scales. Intensity scales are based on the effects of the earthquake. The effects on humans are the most important indicators of intensity up to the V degree. The assessment of intensity in the range between the VI and XII degree is based mostly on effects on man-made structures (damage) and on the environment (ground effects or environmental earthquake effects, EEE). This is true for all the early intensity scales "[21].*

The local magnitude ML scale (Richter magnitude scale) assigns a single number to quantify the amount of seismic energy released by an earthquake. It is a base-10 logarithmic scale obtained by calculating the logarithm of the combined horizontal amplitude of the largest displacement from zero on a seismometer output. Measurements have no limits and can be either positive or negative.

Earthquakes with magnitude of about 2.0 or less are usually called micro-earthquakes; they are not commonly felt by people and are generally recorded only on local seismographs. Events with magnitudes of about 4.5 or greater - there are several thousand such shocks annually - are strong enough to be recorded by sensitive seismographs all over the world. Great earthquakes, such as the 1964 Good Friday earthquake in Alaska, have magnitudes of 8.0 or higher. On the average, one earthquake of such size occurs somewhere in the world each year. The Richter Scale has no upper limit. Recently, another scale called the moment magnitude scale has been devised for more precise study of great earthquakes.

The Richter Scale is not used to express damage. An earthquake in a densely populated area which results in many deaths and considerable damage may have the same magnitude as a shock in a remote area that does nothing more than frighten wildlife. Large-magnitude earthquakes that occur beneath the oceans may not even be felt by humans.

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Annexes to the Report on the assessment of the cumulative effects of the activity „Completion of Units 3. and 4. of NPP Mochovce“ on the environment

This document contains annexes to the report and is an integral part of the report itself.

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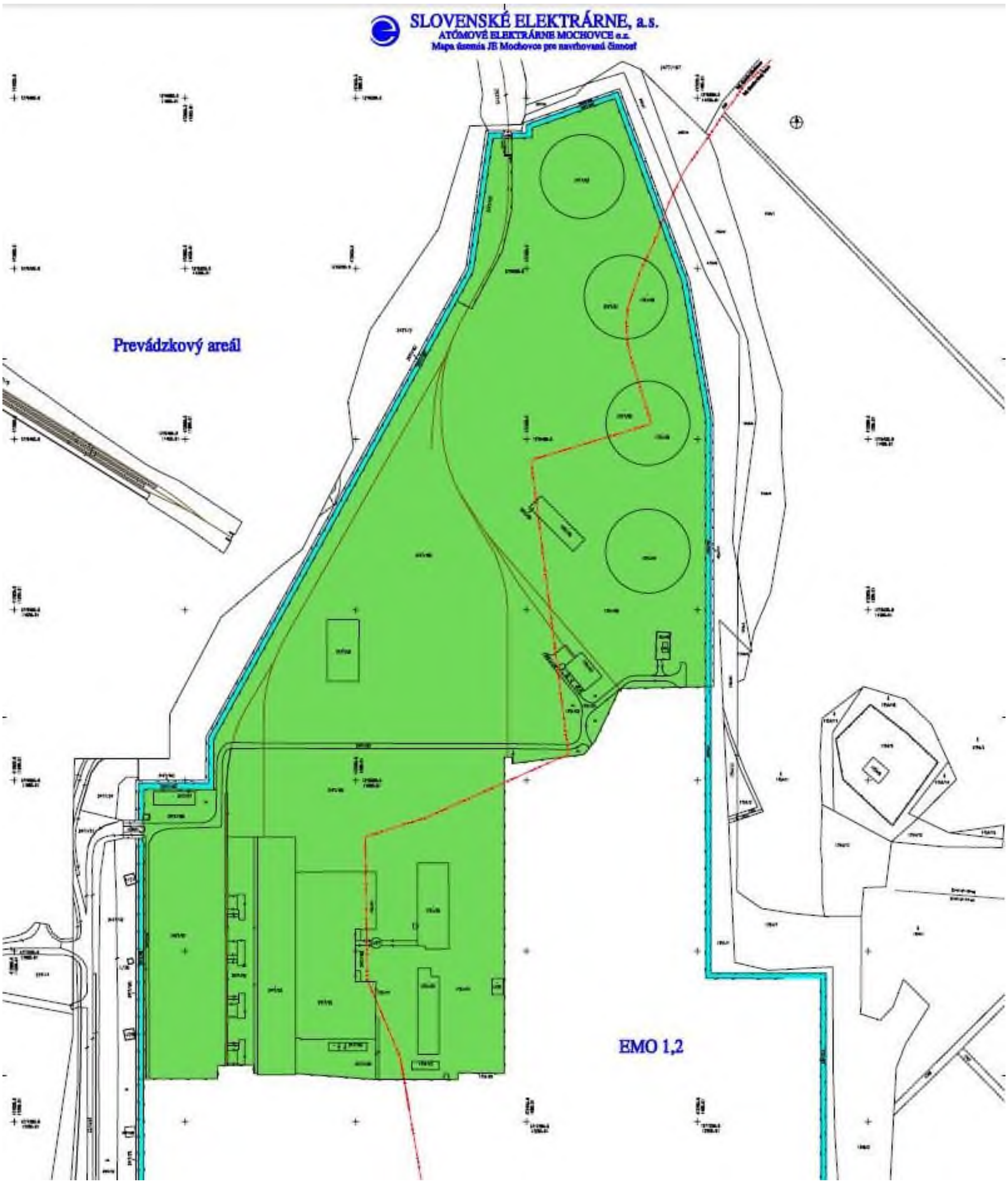
List of annexes

ANNEX No. 1: Location of the activity „Completion of Units 3. and 4. of NPP Mochovce“


SLOVENSKÉ ELEKTRÁRNE, a.s.
ATÓMOVÉ ELEKTRÁRNE MOCHOVCE o.z.
Prevádzkový areál
EMO 1,2

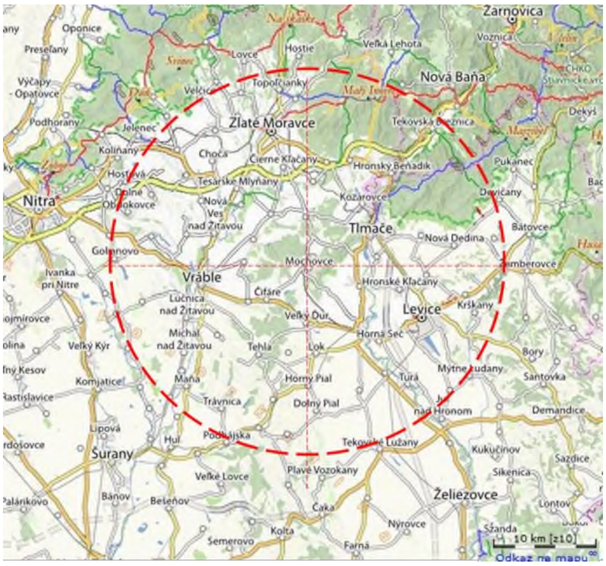
ANNEX No. 2: Basic technical parameters of the nuclear power unit VVER 440 type V-213

Basic technical parameters of the nuclear power unit VVER 440/V-2013

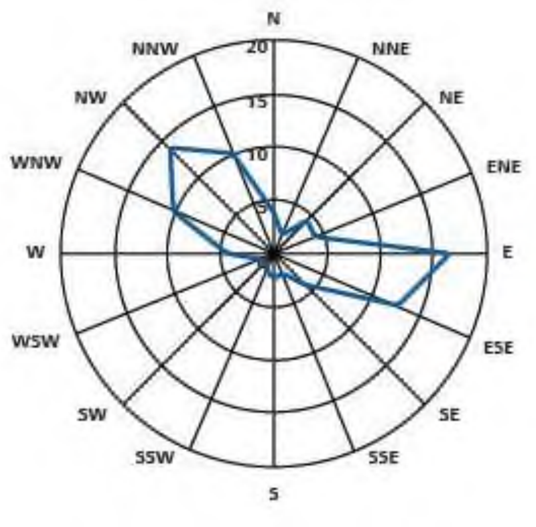
Generally	
Reactor type: VVER 440/V213 Thermal output: 1375 kW	Rated power: 440 MW Power consumption: 35NW (8% of power)
Thermal efficiency: 29,5%	
Reactor Pressure Vessel	**Steam Generator**
Internal diameter: 3542 mm Wall thickness: 140 + 9 mm Height: 11805 mm Weight without inner parts: 215150 kg Material: alloy steel Cr-Mo-V	6 per Unit Type: PGV-213 Quantity of steam produced: 450 t/h Steam pressure: 4,64 Mpa Steam temperature at the outlet: 267 ^{o}C Feed water temperature: 158 - 223 ^{o}C
Reactor Active Core	**Turbogenerator**
Number of fuel assemblies: 312 Number of emergency-control assembliest: 37 Total weight of fuel (UO2) in active core: 42 t Fuel enrichment (first active zone): 3,6; 2,4 a 1,6% Fuel enrichment of radial profile type (for next campaigns): 4,87% with gadolinium content	2 Turbogenerators per 1 Unit Type: 220 MW Components: 1 high pressure, 2 low pressure Number of revolutions per min.: 3000 Terminal voltage of the generator: 15,75 kV
Primary circuit	**Condenser**
Number of cooling loops: 6 Refrigerant flow: 42600 m3/h Nominal pressure: 12,26 Mpa Coolant temperature at the outlet of the reactor: 297,3 ^{o}C Coolant temperature at the inlet of the reactor: 267,9 ^{o}C Total volume: 250 m3	Coolant flow rate: 35000 m3/h Maximum temperature of cooling water: 33 ^{o}C

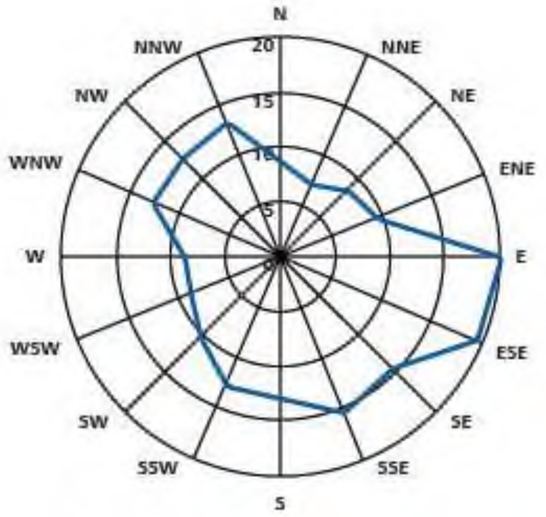
ANNEX No. 3: Geographic location of NPP Mochovce within the Nitra region

Indicative geographical representation of the defined territory (marked as MO34+20 km in the report) and the rose of wind directions and velocity



Frequency of wind directions (%) – direction arrow and average wind velocity (ms^{-1}) – velocity rose in Mochovce from 1997 to 2004





ANNEX No. 4: Territory MO34+20 km – list of districts, towns and villages, population and increases in the years 2011, 2012, 2013 and 2014

Population area MO34+20								
District Nitra (NR)		Year						
No.	**Town/Village**	**2011**	**2012**	**Increase**	**2013**	**Increase**	**2014**	**Increase**
1	Babindol	692	699	7	706	7	727	21
2	Čeľadice	918	934	16	933	-1	930	-3
3	Čifáre	597	626	29	615	-11	616	1
4	Dolné Obdokovce	1190	1194	4	1210	16	1193	-17
5	Golianovo	1422	1446	24	1502	56	1568	66
6	Klasov	1233	1268	35	1306	38	1318	12
7	Kolíňany	1577	1589	12	1583	-6	1606	23
8	Lúčnica n/Žitavou	892	889	-3	901	12	917	16
9	Malé Chyndice	381	381	0	385	4	391	6
10	Melek	451	451	-2	452	1	453	1
11	Nová Ves n/Žitavou	1333	1325	-8	1322	-3	1340	18
12	Paňa	352	356	4	366	10	370	4
13	Malý Lapáš	563	622	59	622	0	714	92
14	Tajná	273	268	-5	278	10	283	5
15	Telince	381	394	13	395	1	396	1
16	Veľké Chyndice	306	317	11	317	2	317	0
17	Veľký Cetín	1609	1590	-19	1608	18	1591	-17
18	Veľký Lapáš	1127	1117	-10	1146	29	1212	66
19	Vinodol	1925	1947	22	1953	6	1983	30
20	Vráble	8983	8941	-42	8843	-98	8804	-39
21	Žitavce	373	377	4	380	3	373	-7
	Σ	**26578**	**26731**	**151**	**26823**	**94**	**27102**	**279**
District Zlaté Moravce (ZM)		**2011**	**2012**	**Increase**	**2013**	**Increase**	**2014**	**Increase**
22	Beladice	1583	1597	14	1597	0	1603	6
23	Čaradice	511	516	5	514	-2	515	1
24	Červený Hrádok	420	417	-3	405	-12	407	2
25	Čierne Kľačany	1087	1079	-8	1090	11	1104	14

26	Hosťovce	762	771	9	754	-17	757	3
27	Choča	506	497	-9	495	-2	501	3
28	Nemčiňany	695	699	4	688	-11	692	4
29	Machulince	1040	1062	22	1115	53	1126	11
30	Malé Vozokany	291	290	-1	281	-9	272	-9
31	Martin n/Žitavou	517	508	-9	520	12	527	7
32	Neverice	672	675	3	680	5	680	0
33	Nevidzany	595	590	-5	593	3	593	0
34	Obyce	1507	1505	-2	1517	12	1521	4
35	Slepčany	830	833	3	830	-3	822	-8
36	Sľažany	1693	1698	5	1708	10	1719	11
37	Tekovské Nemce	1060	1080	20	1070	-10	1071	1
38	Tesárske Mlyňany	1683	1743	60	1791	48	1787	-4
39	Topoľčianky	2766	2751	-15	2721	-30	2705	-16
40	Velčice	822	818	-4	819	1	829	10
41	Veľké Vozokany	492	487	-5	486	-1	479	-7
42	Vieska n/Žitavou	467	465	-2	462	-3	466	4
43	Zlaté Moravce	12286	12150	-136	12007	-143	11855	-152
44	Volkovce	994	1011	17	1016	5	1020	4
45	Žitavany	1873	1892	19	1921	29	1930	9
	Σ	**35152**	**35134**	**-18**	**35080**	**-54**	**34981**	**-102**
	District Levice (LV)	**2011**	**2012**	**Increase**	**2013**	**Increase**	**2014**	**Increase**
46	Bajka	332	330	-2	326	-4	321	-5
47	Beša	643	651	8	644	-7	650	6
48	Malé Kozmálovce	389	381	-8	381	0	366	-15
49	Čajkov	1018	998	-20	1000	2	978	-22
50	Devičany	396	396	0	394	-2	388	-6
51	Dolná Seč	428	440	12	456	16	454	-2
52	Dolný Pial	958	952	-6	949	-3	951	2
53	Drženice	385	391	6	382	-9	380	-2
54	Horná Seč	522	530	8	532	2	537	5
55	Horný Pial	281	275	-6	271	-4	277	6
56	Hronské Kľačany	1462	1438	-24	1452	14	1451	-1
57	Hronské Kosihy	665	668	3	670	2	679	9
58	Iňa	206	203	-3	199	-4	204	5
59	Jesenské Údolie	45	44	-1	50	6	51	1
60	Jur nad Hronom	916	927	11	932	5	954	22
61	Kozárovce	1998	2001	3	2006	5	2012	6
62	Krškany	776	782	6	767	-15	749	-18
63	Levice	34649	34500	-149	34226	-274	33977	-249
64	Lok	1012	994	-18	981	-13	958	-23
65	Lula	179	180	1	182	2	177	-5
66	Mýtne Ludany	994	985	-9	974	-11	987	13
67	Nová Dedina	1549	1541	-8	1536	-5	1524	-12
68	Ondrejovce	466	445	-21	456	11	467	11
69	Podlužany	758	775	17	774	-1	773	-1

70	Rybník	1413	1409	-4	1421	12	1439	18
71	Starý Hrádok	192	188	-4	180	-8	187	7
72	Starý Tekov	1434	1422	-12	1430	8	1414	-16
73	Šárovce	1658	1642	-16	1635	-7	1638	3
74	Tehla	531	524	-7	524	0	516	-8
75	Tekovský Hrádok	343	346	3	348	2	355	7
76	Tlmače	3813	3785	-28	3738	-47	3712	-26
77	Turá	229	222	-7	224	2	227	3
78	Veľké Kozmálovce	700	710	10	709	-1	705	-4
79	Veľký Ďúr	1239	1244	5	1266	22	1281	15
80	Vyšné n/Hronom	183	190	7	182	-8	183	1
81	Žemliare	164	164	0	163	-1	161	-2
82	Kalná nad Hronom	2043	2034	-9	2033	-1	2071	38
83	Nový Tekov	824	830	6	836	6	854	18
84	Plavé Vozokany	865	852	-13	816	-36	810	-6
85	Tekovské Lužany	2913	2881	-32	2864	-17	2860	-4
	Σ	**69571**	**69270**	**-301**	**68909**	**-361**	**68678**	**-231**
District Nové Zámky (NZ)		**2011**	**2012**	**Increase**	**2013**	**Increase**	**2014**	**Increase**
86	Bardoňovo	774	761	-13	747	-14	750	3
87	Černík	1019	1017	-2	998	-19	1016	18
88	Dedinka	765	757	-8	744	-13	735	-9
89	Michal n/Žitavou	671	667	-4	667	0	665	-2
90	Trávnica	1121	1107	-14	1113	6	1091	-22
91	Podhájska	1065	1056	-9	1043	-13	1032	-11
92	Pozba	503	487	-16	477	-10	464	-13
93	Maňa	2103	2084	-19	2077	-7	2078	1
94	Kmeťovo	910	895	-15	878	-17	873	-5
95	Vlkas	336	339	3	334	-5	334	0
	Σ	**9267**	**9170**	**-97**	**9078**	**-92**	**9038**	**-40**
District Žarnovica (ZC)		**2011**	**2012**	**Increase**	**2013**	**Increase**	**2014**	**Increase**
96	Hronský Beňadik	1217	1203	-14	1181	-22	1176	-5
97	Nová Baňa	7556	7542	-14	7567	25	7529	-38
98	Orovnica	547	553	6	565	12	567	2
99	Tekovská Breznica	1250	1235	-15	1236	1	1247	11
	Σ	**10570**	**10533**	**-37**	**10549**	**16**	**10519**	**-30**

ANNEX No. 5: The number of residents in the area of MO34+20 km and the ration of inhabitants of the territory MO34+20 km living in Nitra and Banská Bystrica region in 2011

Population of MO34+20 km in 2011	**Amount**	**%**	**Rate**
Altogether	151138	100	
Living in Nitra region	140568	93	13,3
Living in Banská Bystrica region	10570	7	1

ANNEX No. 6: Conversion ratio of input data for converting method A and B

Method of converting A				
Year	**2011**	**2012**	**2013**	**2014**
Rate	$\frac{151138}{690311}$	$\frac{150838}{689564}$	$\frac{150439}{688400}$	$\frac{150138}{686662}$

Method of converting B				
Year	**2011**	**2012**	**2013**	**2014**
Rate	$\frac{109748}{499878}$	$\frac{109084}{497820}$	$\frac{108337}{494697}$	$\frac{107724}{491127}$

ANNEX No. 7: Population of the are of MO34+20 in working age / number of unemployed

MO34+20: Number of working-age population / unemployed								
	Year							
District NR	**2011**		**2012**		**2013**		**2014**	
Babindol	504	51	515	55	516	47	539	30
Čeľadice	619	44	624	55	621	38	625	36
Čifáre	422	62	438	72	430	63	437	43
Dolné Obdokovce	856	77	849	78	852	73	838	82
Golianovo	1004	62	1027	82	1058	72	1102	72
Klasov	939	91	969	111	989	90	997	94
Kolíňany	1121	75	1127	88	1127	76	1138	66
Lúčnica n/Žitavou	588	45	578	61	586	51	593	66
Malé Chyndice	221	27	225	30	229	28	229	36
Melek	303	38	311	47	316	50	327	47
Nová Ves n/Žitavou	923	85	910	95	908	94	921	96
Paňa	232	16	231	20	239	20	242	14
Veľký Lapáš	822	65	808	84	820	81	868	77
Tajná	176	18	172	17	183	22	190	23
Telince	252	27	257	38	257	41	254	35
Veľké Chyndice	221	18	225	28	229	29	229	27
Veľký Cetín	1143	101	1147	128	1147	108	1127	93
Veľký Lapáš	822	65	808	84	820	81	868	77
Vinodol	1360	137	1378	157	1383	128	1397	123
Vráble	6778	559	6721	645	6627	616	6548	548
Žitavce	252	24	262	29	262	25	255	28
Σ	**19558**	**1687**	**19582**	**2004**	**19599**	**1833**	**19724**	**1713**
District ZM	**2011**		**2012**		**2013**		**2014**	
Beladice	1116	103	1123	141	1114	115	1112	98
Čaradice	349	42	353	56	355	50	351	50
Červený Hrádok	286	29	287	26	286	22	292	19
Čierne Kľačany	785	62	769	57	768	48	778	48

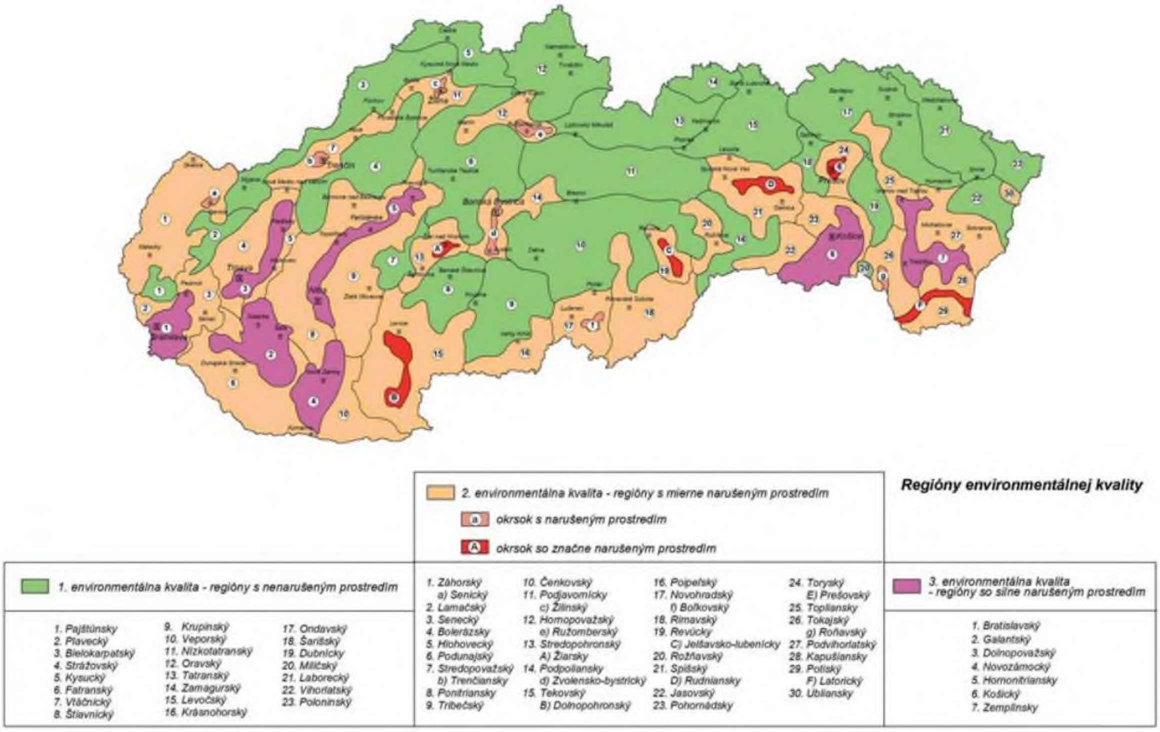
Hosťovce	568	57	567	67	554	55	553	37
Choča	368	49	362	44	356	50	355	53
Nemčičany	470	43	470	46	457	35	462	43
Machulince	769	60	783	63	815	54	813	49
Malé Vozokany	212	19	210	29	206	18	202	15
Martin n/Žitavou	394	32	387	47	389	41	393	34
Neverice	479	29	476	39	473	39	472	38
Nevidzany	416	26	421	35	420	38	423	35
Obyce	1088	77	1087	102	1090	95	1088	80
Slepčany	604	39	607	50	603	46	593	33
Sľažany	1155	109	1150	96	1165	109	1190	88
Tekovské Nemce	769	57	772	74	768	70	772	61
Tesárske Mlyňany	1232	83	1291	113	1326	93	1325	96
Topoľčianky	1965	148	1946	204	1909	154	1885	134
Velčice	574	47	579	48	574	45	577	39
Veľké Vozokany	339	21	334	23	338	24	337	19
Vieska n/Žitavou	342	29	338	21	341	23	344	19
Zlaté Moravce	9028	786	8861	833	8683	749	8484	680
Volkovce	698	55	700	68	659	59	688	55
Žitavany	1331	105	1338	121	1358	122	1352	125
Σ	**25337**	**2107**	**25211**	**2403**	**25007**	**2154**	**24841**	**1948**
District LV	**2011**		**2012**		**2013**		**2014**	
Bajka	231	54	231	46	233	37	237	40
Beša	454	62	455	54	448	38	449	40
Malé Kozmálovce	266	44	264	30	273	29	265	33
Čajkov	719	62	704	64	702	58	687	55
Devičany	280	37	278	35	276	17	268	24
Dolná Seč	285	23	295	35	307	32	304	27
Dolný Pial	686	62	688	64	678	49	676	52
Drženice	255	27	262	26	256	21	251	23
Horná Seč	379	36	385	26	381	24	386	24
Horný Pial	198	32	198	28	201	25	204	24
Hronské Kľačany	1055	86	1034	85	1031	62	1023	46
Hronské Kosihy	433	50	437	52	436	42	438	36
Iňa	143	17	141	12	143	8	145	13
Jesenské Údolie	30	2	30	3	35	2	34	4
Jur n/Hronom	663	78	673	79	684	68	696	59
Kozárovce	1335	95	1336	89	1340	83	1334	69
Krškany	589	47	588	41	575	36	554	34
Levice	26065	2226	25795	2122	25461	1873	25098	1708
Lok	703	144	694	125	681	135	675	108
Lula	123	13	122	18	123	14	123	12
Mýtne Ludany	676	107	670	126	664	122	682	109
Nová Dedina	1144	82	1129	93	1120	92	1107	77
Ondrejovce	299	68	292	66	303	60	315	50

Podlužany	545	42	546	33	546	33	537	26
Rybník	1002	77	1004	91	1012	91	1014	76
Starý Hrádok	137	23	136	24	132	20	133	20
Starý Tekov	1011	73	993	61	994	64	982	51
Šarovce	1179	341	1171	364	1168	311	1153	325
Tehla	391	53	383	60	390	44	390	58
Tekovský Hrádok	224	31	226	36	229	33	233	30
Tlmače	2805	239	2751	278	2678	287	2623	251
Turá	161	50	155	47	157	49	159	40
Veľké Kozmálovce	461	29	456	34	457	43	461	40
Veľký Ďur	873	83	881	92	903	91	915	83
Vyšné n/Hronom	129	14	131	15	126	15	128	8
Žemliare	102	6	99	14	100	14	102	14
Kalná n/Hronom	1506	159	1501	156	1503	96	1516	91
Nový Tekov	593	105	594	92	592	63	602	46
Plavé Vozokany	595	61	584	70	553	48	545	53
Tekovské Lužany	2059	384	2028	379	2002	343	1976	325
Σ	**50784**	**5224**	**50340**	**5165**	**49893**	**4572**	**49420**	**4204**
District NZ	**2011**		**2012**		**2013**		**2014**	
Bardoňovo	567	35	556	40	546	26	550	26
Černík	714	58	711	76	697	48	710	45
Dedinka	510	52	518	50	514	58	506	67
Michal n/Žitavou	458	34	442	42	446	33	447	29
Trávnica	749	64	716	75	719	59	709	68
Podhájska	726	59	722	59	697	39	692	32
Pozba	345	31	340	36	331	32	316	32
Maňa	1485	82	1483	93	1486	79	1486	86
Kmeťovo	655	47	649	76	631	53	629	48
Vlkas	215	11	218	21	212	16	218	9
Σ	**6424**	**473**	**6355**	**568**	**6279**	**443**	**6263**	**442**
District ZC	**2011**		**2012**		**2013**		**2014**	
Hronský Beňadik	862	113	859	110	837	102	820	97
Nová Baňa	5511	620	5470	692	5454	605	5380	520
Orovnica	386	66	397	78	407	70	410	60
Tekovská Breznica	886	104	870	111	861	100	866	103
Σ	**7645**	**903**	**7596**	**991**	**7559**	**877**	**7476**	**780**

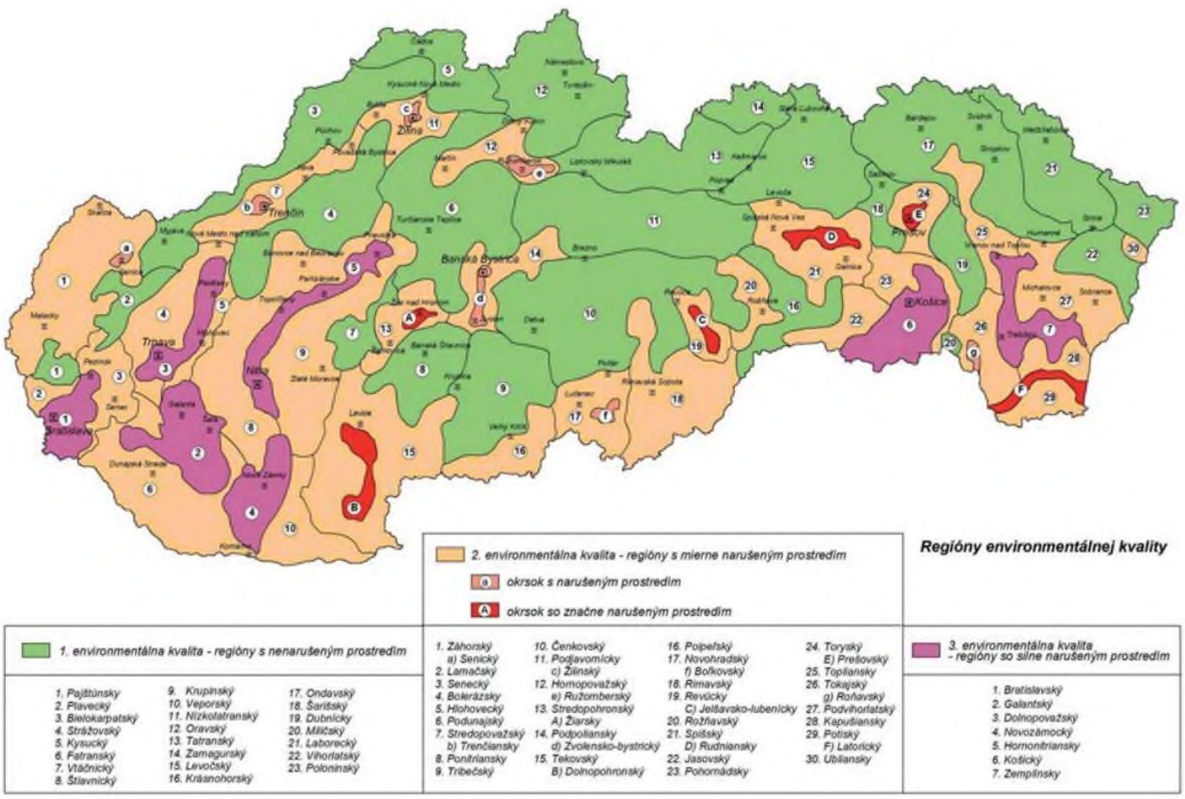
MO34+20 km Σ	**109748**	**10394**	**109084**	**11131**	**108337**	**9879**	**107724**	**9087**

ANNEX No. 8: Maps of the environmental quality regions of SR in a specific period of time

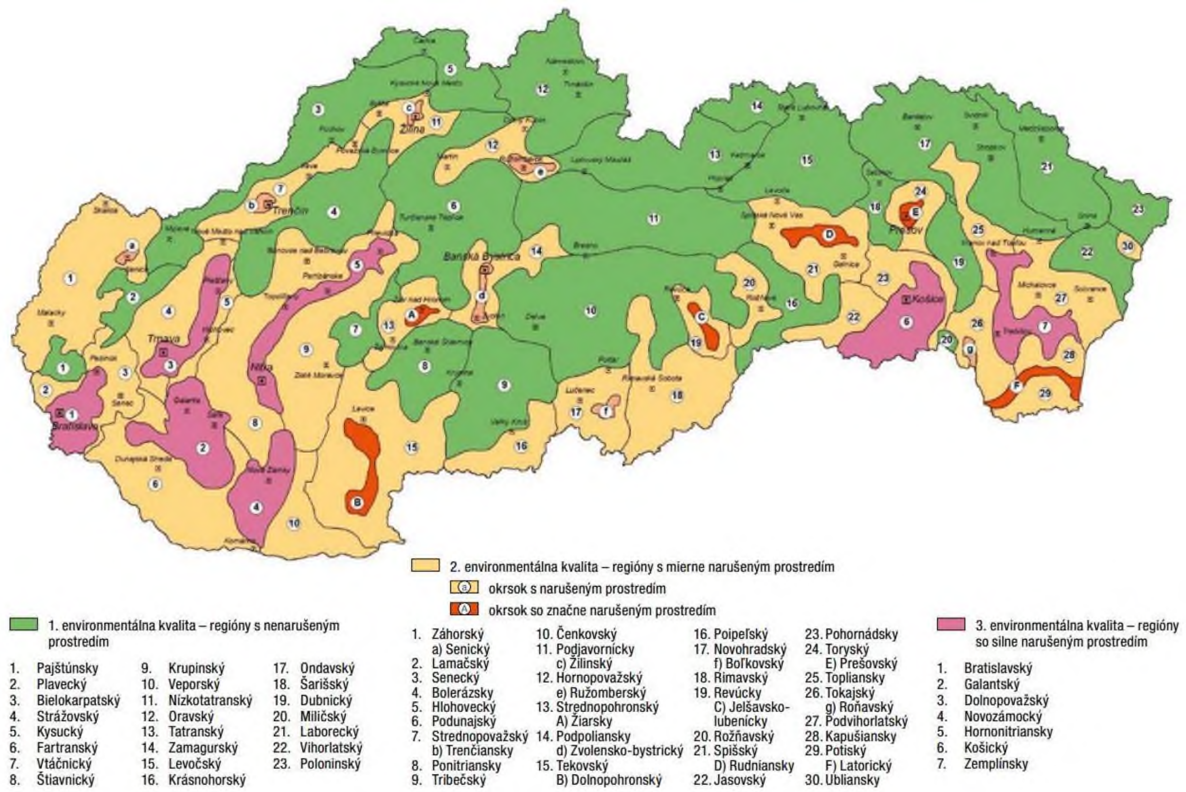
Year 2011:



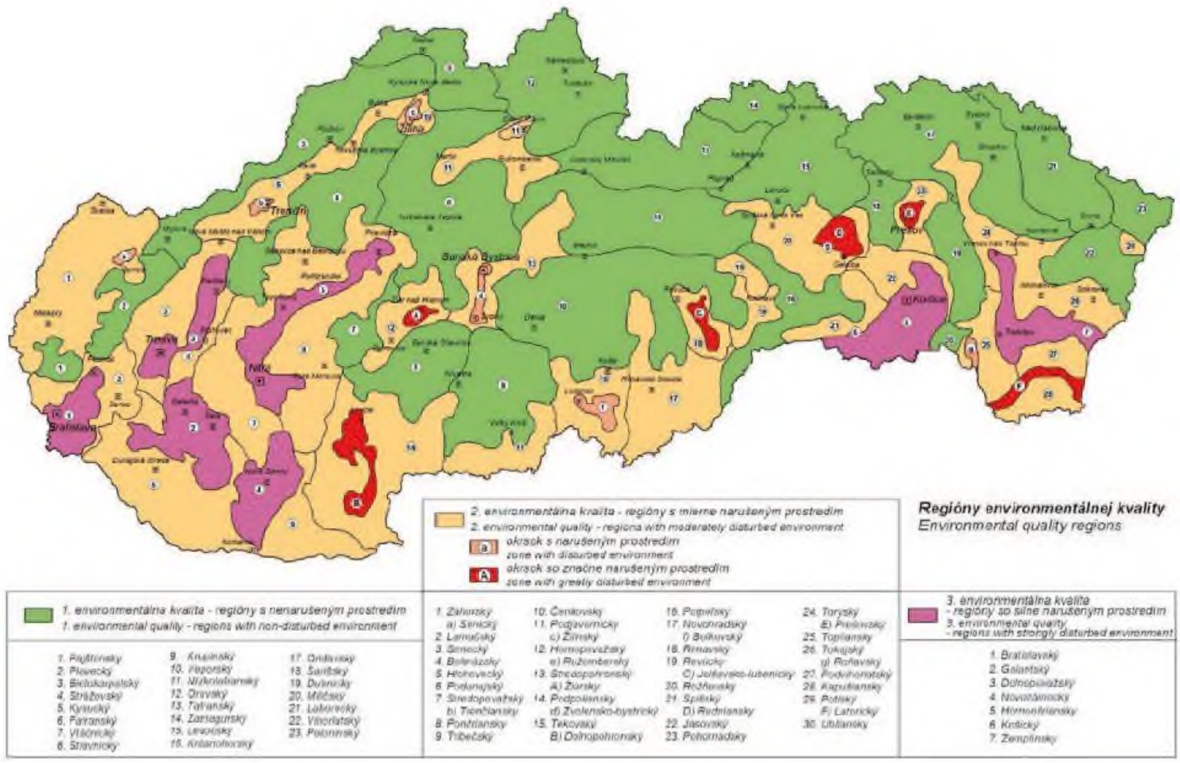
Year 2012:



Year 2013:



Year 2014:



Imput data from the Report on the state of environment in SR published by the Ministry of Environment.

ANNEX No. 9: Health

Number of births	2011		2012		2013		2014	
	Total	Live births	Total	Live births	Total	Live births	Total	Live births
Nitra region	6684	6667	6017	6004	5832	5822	6068	6043
Territory MO34+20 km Method of converting A	1370	1367	1232	1230	1194	1192	1243	1238

Sickness insurance (self-employed)	Year			
	2011	**2012**	**2013**	**2014**
Nitra region	289393	284833	309773	322874
Territory MO34+20 km Method of converting B	63536	62414	67839	70819

Sickness absences and accidents (number of reported incidents)		Year			
		2011	**2012**	**2013**	**2014**
Nitra region	Sickness absences (cases)	95091	87197	86997	83395
	Working accidents (cases)	1301	1153	1086	1037
Territory MO34+20 km Method of converting B	Sickness absences	20877	19107	19052	18292
	Working accidents	296	253	238	227

Causes of death	2011		2012		2013		2014	
	NSK	MO34+20	NSK	MO34+20	NSK	MO34+20	NSK	MO34+20
Overall mortality	7574	1658	7687	1682	7543	1649	7642	1671
Diseases of the circulatory system	3941	863	4056	887	3814	834	3767	824
Tumors	1784	391	1827	400	1979	432	2104	460
External causes	451	99	422	92	430	94	448	98
Diseases of the respiratory system	468	102	495	108	480	105	398	86
Diseases of the digestive system	454	99	435	95	383	84	360	79
Other	476	104	452	100	457	100	565	124
Method of converting A								

ANNEX No. 10: Safety

Calculation of the length of roads MO34+20 [km] in proportion to the area [km^2]				
Territory MO34+20	1257			
Territory of Nitra region	6334			
Year	**2011**	**2012**	**2013**	**2014**
Length of roads of Nitra region	2602,217	2602,217	2591,585	2591,542
Length of roads MO34+20	516,42	516,42	514,31	514,3

Procedure:

Step 1 – Homogenous density of the roads in Nitra region is assumed. From the publications „Nitra region is figures“ the obsesrved length of roads in the area of MO34+20 km is as follows:

$$length\ of\ road\ in\ Nitra\ region \times \frac{Territory\ MO34{+}20\ km}{Territory\ of\ Nitra\ region}.$$

Step 2 – Number of traffic accidents identified in the Nitra region from the publication „Yearbook of Transport, Post and Telecommunications“ and the number of accidents determined in the territory of MO34+20 km from the data for Nitra region are as follows:

$$number\ of\ traffic\ accidents\ in\ the\ Nitra\ region \times \frac{length\ of\ roads\ in\ MO34 + 20\ km}{length\ of\ roads\ in\ Nitra\ region}$$

Nitra region: Number of traffic accidents acc. to consequences				
Indicator / year	**2011**	**2012**	**2013**	**2014**
Traffic accidents together	1714	1678	1638	1532
Consequence: fatal accidents	32	37	20	39
serious injury	94	103	104	96
light injury	546	560	530	524
physical damage	1639	1582	1558	1456

MO34+20: Number of traffic accidents acc. to consequences				
Indicator / year	**2011**	**2012**	**2013**	**2014**
Traffic accidents together	340	333	325	304
Consequence: fatal accidents	6,4	7,3	4	7,7
serious injury	19	20	21	19
light injury	108	111	105	104
physical damage	325	314	309	289

ANNEX No. 11: Economic redistribution (burden of citizens) SR

Tax Freedom Day and economic redistribution (financial burden of citizens) in SR in a specific period of time				
Year	**2011**	**2012**	**2013**	**2014**
Date of tax freedom	June 3rd	June 1st	June 3rd	June 2nd
Financial burden of citizens [%]	41,98	41,68	41,71	41,38

ANNEX No. 12: Average net monthly income and expenses for 1 member of the household

NSK: The average net monthly income and expenses [€] per one household member				
Year	**2011**	**2012**	**2013**	**2014**
Average net monthly income per one household member	361,8	352,2	353,7	384,8
Average net monthly expenditures per one household member	318,8	313,8	311	328,3

Data from 2013 and 2014 are simulated

ANNEX No. 13: Indicators of business environment in the territory of MO34+20 km

Legal entities in the area MO34 + 20 km					
District Nitra (NR)		Year			
No.	Town/Village	2011	2012	2013	2014
1	Babindol	11	12	15	15
2	Čeľadice	8	9	17	19
3	Čifáre	8	9	11	12
4	Dolné Obdokovce	12	15	16	19
5	Golianovo	21	23	27	31
6	Klasov	15	18	19	23
7	Kolíňany	30	34	46	47
8	Lúčnica n/Žitavou	19	19	22	24
9	Malé Chyndice	4	4	5	6
10	Melek	7	7	7	8
11	Nová Ves n/Žitavou	23	26	32	33
12	Paňa	5	4	10	12
13	Veľký Lapáš	19	26	27	30
14	Tajná	7	7	9	10
15	Telince	5	5	5	6
16	Veľké Chyndice	4	4	4	4
17	Veľký Cetín	18	18	23	28
18	Veľký Lapáš	19	26	27	30
19	Vinodol	19	23	23	27
20	Vráble	282	305	333	367
21	Žitavce	8	8	10	12
	Σ	544	602	688	763
District Zlaté Moravce (ZM)		2011	2012	2013	2014
22	Beladice	35	35	47	42
23	Čaradice	5	4	5	5
24	Červený Hrádok	7	7	7	9
25	Čierne Kľačany	7	8	14	16
26	Hosťovce	12	10	10	13
27	Choča	3	3	4	5
28	Nemčiňany	6	6	6	9
29	Machulince	14	14	16	15
30	Malé Vozokany	6	7	8	8
31	Martin n/Žitavou	7	8	8	10
32	Neverice	12	13	14	14
33	Nevidzany	11	11	12	12
34	Obyce	18	21	22	27
35	Slepčany	15	17	16	17
36	Sľažany	19	17	19	23
37	Tekovské Nemce	8	8	8	8
38	Tesárske Mlyňany	19	21	23	27
39	Topoľčianky	91	115	123	140
40	Velčice	14	14	18	24
41	Veľké Vozokany	7	7	7	8
42	Vieska n/Žitavou	8	9	10	9
43	Zlaté Moravce	438	462	521	554
44	Volkovce	16	15	18	19
45	Žitavany	26	30	33	33
	Σ	804	862	969	1047
District Levice (LV)		2011	2012	2013	2014
47	Bajka	2	2	2	2
48	Beša	12	10	11	13
49	Malé Kozmálovce	8	8	8	10
50	Čajkov	20	20	23	24
51	Devičany	13	14	15	15
52	Dolná Seč	12	14	20	19
53	Dolný Pial	11	10	10	14
54	Drženice	7	7	7	8
55	Horná Seč	17	22	26	27
56	Horný Pial	5	5	5	6
57	Hronské Kľačany	20	24	27	28
58	Hronské Kosihy	14	13	11	11
59	Iňa	3	4	4	4
60	Jesenské Údolie	2	2	2	2
61	Jur n/Hronom	22	26	27	31
62	Kozárovce	31	36	41	45
63	Krškany	15	16	16	16
64	Levice	1215	1297	1431	1515
65	Lok	12	13	13	14
66	Lula	2	2	2	2
67	Mýtne Ludany	12	13	16	17
68	Nová Dedina	22	26	31	34
69	Ondrejovce	6	6	6	7
70	Podlužany	18	19	20	23
71	Rybník	20	19	25	29
72	Starý Hrádok	5	5	5	5
73	Starý Tekov	18	19	21	23
74	Šárovce	31	32	35	35
75	Tehla	6	5	6	6
76	Tekovský Hrádok	8	12	13	12

Private individuals - enterpreneurs in the area MO34 + 20 km					
District Nitra (NR)		Year			
No.	Town/Village	2011	2012	2013	2014
1	Babindol	48	45	50	41
2	Čeľadice	66	67	68	62
3	Čifáre	28	32	30	31
4	Dolné Obdokovce	104	100	93	86
5	Golianovo	114	114	115	122
6	Klasov	60	52	49	55
7	Kolíňany	115	111	117	116
8	Lúčnica n/Žitavou	65	55	59	55
9	Malé Chyndice	26	23	23	27
10	Melek	20	24	28	31
11	Nová Ves nad Žitavo	71	69	77	69
12	Paňa	24	21	19	16
13	Veľký Lapáš	108	108	104	106
14	Tajná	15	15	15	17
15	Telince	19	17	16	16
16	Veľké Chyndice	21	19	22	18
17	Veľký Cetín	132	134	129	136
18	Veľký Lapáš	108	108	104	106
19	Vinodol	104	97	104	103
20	Vráble	644	643	634	621
21	Žitavce	31	27	27	23
	Σ	1923	1881	1883	1857
District Zlaté Moravce (ZM)		2011	2012	2013	2014
22	Beladice	83	83	87	93
23	Čaradice	23	19	23	23
24	Červený Hrádok	21	19	19	20
25	Čierne Kľačany	90	86	86	90
26	Hosťovce	56	60	50	48
27	Choča	18	15	19	22
28	Nemčiňany	35	41	42	48
29	Machulince	78	70	77	81
30	Malé Vozokany	13	12	9	8
31	Martin n/Žitavou	43	39	40	42
32	Neverice	34	35	40	42
33	Nevidzany	38	38	35	34
34	Obyce	117	110	112	106
35	Slepčany	51	52	48	50
36	Sľažany	118	116	119	117
37	Tekovské Nemce	77	73	72	72
38	Tesárske Mlyňany	134	139	126	123
39	Topoľčianky	210	195	204	200
40	Velčice	68	73	67	69
41	Veľké Vozokany	29	28	28	32
42	Vieska n/Žitavou	33	35	37	36
43	Zlaté Moravce	1043	999	971	974
44	Volkovce	46	43	42	43
45	Žitavany	105	112	109	115
	Σ	2563	2492	2462	2488
District Levice (LV)		2011	2012	2013	2014
47	Bajka	16	15	16	16
48	Beša	29	35	36	34
49	Malé Kozmálovce	34	33	37	38
50	Čajkov	69	63	65	71
51	Devičany	24	21	23	26
52	Dolná Seč	40	36	40	41
53	Dolný Pial	48	47	48	46
54	Drženice	31	28	26	28
55	Horná Seč	45	50	47	49
56	Horný Pial	16	18	18	17
57	Hronské Kľačany	89	94	88	92
58	Hronské Kosihy	34	32	30	32
59	Iňa	12	14	13	13
60	Jesenské Údolie	5	7	6	3
61	Jur n/Hronom	49	49	50	49
62	Kozárovce	122	128	130	130
63	Krškany	56	57	64	62
64	Levice	2953	2944	2947	2909
65	Lok	55	57	53	58
66	Lula	5	6	7	8
67	Mýtne Ludany	54	45	47	52
68	Nová Dedina	142	137	139	139
69	Ondrejovce	11	11	12	20
70	Podlužany	61	56	60	58
71	Rybník	92	91	94	93
72	Starý Hrádok	11	9	9	7
73	Starý Tekov	102	98	95	105
74	Šárovce	95	90	97	97
75	Tehla	30	29	29	28
76	Tekovský Hrádok	21	27	30	34

ANNEX No. 14: Indicators of educational structure

MO34+20: Working age population acc. to the level of education												
	2011			2012			2013			2014		
	Basic	High school	College/University	Basic	High school	College/University	Basic	High school	College/University	Basic	High school	College/University
Nitra region	17900	276800	47300	18100	281600	52400	16700	271000	57400	15700	270400	61400
MO34+20	3932	60799	10389	3966	61705	11482	3657	59348	12570	3444	59310	13468
Method of converting B												

ANNEX No. 15: Behavioral and mental disorders due to use of alcohol and behavioral and mental disorders due to use of drugs and psychotroic substances

Persons diagnosed F-10 and F-10.2 (Mental and behavioral disorders - alcohol)								
	2011		2012		2013		2014	
	NSK	MO34+20	NSK	MO34+20	NSK	MO34+20	NSK	MO34+20
outpatient examination	3833	839	3628	794	2966	648	3004	657
dependence syndrome	2590	567	2625	574	2026	443	2236	489
Method of converting A								

	2011		2012		2013		2014	
	NSK	MO34+20	NSK	MO34+20	NSK	MO34+20	NSK	MO34+20
outpatient examination	1087	238	889	194	832	182	873	191
dependence syndrome	741	162	587	128	574	125	593	130
Method of converting A								

ANNEX No. 16: Crime

Criminal crimes					
		Year			
		2011	2012	2013	2014
Nitra region	Detected crimes	9501	9421	9884	9230
	Violent crimes	798	713	679	668
	Economic crimes	2287	2109	2869	2620
MO34+20 km	Detected crimes	2080	2061	2160	2018
	Violent crimes	175	156	148	146
	Economic crimes	501	461	627	573
Method of converting A					

ANNEX No. 17: Compulsorily notifiable diseases (SR)

Table of compulsorily notifiable diseases in SR

Compulsory notified diseases - number of cases (SR)				
Year	**2011**	**2012**	**2013**	**2014**
Typhoid (A01)	3,00	1,00	0,00	2,00
Salmonellosis (A02)	4132,00	4973,00	4033,00	4379,00
Shigellosis - dysentery (A03)	603,00	480,00	293,00	230,00
Other bacterial intestinal infections (A04)	5910,00	7091,00	7718,00	8819,00
Diarrhea and gastroenteritis (A09)	4026,00	3551,00	2701,00	2408,00
Pertussis (A37)	936,00	950,00	907,00	1123,00
Scarlet fever (A38)	202,00	219,00	272,00	221,00
Meningococcal infection (A39)	26,00	41,00	25,00	29,00
Tick-borne encephalitis (A84.1)	108,00	102,00	162,00	116,00
Other and unspecified encephalitis (A85-A86)	20,00	15,00	36,00	42,00
Sheep pox (B01)	18691,00	18286,00	18386,00	16910,00
Acute hepatitis A (B15)	403,00	125,00	204,00	735,00
Acute hepatitis B (B16)	93,00	73,00	74,00	85,00
Acute hepatitis C (B17.1)	21,00	21,00	14,00	36,00
Unspecified acute viral hepatitis (B17.8; B19)	1,00	2,00	0,00	1,00
Mumps (B26)	2,00	5,00	218,00	1559,00
Bacterial meningitis (G00)	83,00	81,00	94,00	97,00
Scabies (B86)	1210,00	1437,00	1704,00	2106,00
Pulmonary tuberculosis (A15-A16)	337,00	298,00	344,00	277,00
Extrapulmonary tuberculosis (A17-A19)	62,00	47,00	57,00	59,00
Syphilis (A50-A53)	316,00	391,00	300,00	370,00
Gonorrhea (A54)	155,00	274,00	344,00	449,00
Acute HIV infection and AIDS (B20-B24)	46,00	43,00	80,00	83,00
Asymptomatic carriage of HIV (Z21)	3,00	7,00	3,00	3,00
Flu and acute respiratory infections (J10-J11)	2006172,00	1874676,00	2199863,00	1903793,00
According to ICD-10:				
I. Infectious and parasitic diseases (A00 - B99)				
VI. Diseases of the nervous system (G00 - G99)				
X. Diseases of the respiratory system (J00 - J99)				
XXI. Factors influencing health status and contact with health services (Z00 - Z99)				

Procedure for determining the probability of cases in the territory of MO34+20 km

From the reported cases of compulsorily notifiable diseases in SR the possible cases in the region are calculated as follows:

$$number\ of\ reported\ cases\ in\ SR \times \frac{number\ of\ inhabitants\ of\ the\ area\ MO34+20\ km}{population\ of\ SR}$$

Population				
Year	**2011**	**2012**	**2013**	**2014**
MO34+20	141517	141220	140877	140691
SR	5404322	5410836	5415949	5421349

Choroby povinne hlásené - počet prípadov (MO34+20)				
rok	2011	2012	2013	2014
Brušný týfus (A01)	0,08	0,03	0,00	0,05
Salmonelózy (A02)	108,20	129,80	104,90	113,60
Bacilová červienka - dyzentéria (A03)	15,80	12,50	7,60	6,00
Iné bakteriálne črevné infekcie (A04)	154,80	185,00	200,80	228,90
Hnačka a gastroenteritída (A09)	105,40	92,70	70,30	62,50
Čierny kašeľ (A37)	24,50	24,80	23,60	29,10
Šarlach (A38)	5,30	5,70	7,10	5,70
Meningokoková infekcia (A39)	0,70	1,10	0,70	3,00
Kliešťová encefalitída (A84.1)	2,80	2,70	4,20	3,00
Iné a nešpecifikované encefalitídy (A85-A86)	0,50	0,39	0,90	1,09
Ovčie kiahne (B01)	489,40	477,30	478,20	438,80
Akútna hepatitída A (B15)	10,60	3,00	5,30	19,10
Akútna hepatitída B (B16)	2,40	3,30	1,90	2,20
Akútna hepatitída C (B17.1)	0,55	0,55	0,36	0,90
Nešpecifikované akútne vírusové hepatitídy (B17.8; B19)	0,03	0,05	0,00	0,03
Mumps ((B26)	0,05	0,13	5,70	40,50
Bakteriálna meningitída (G00)	2,20	2,10	2,40	2,50
Svrab (B86)	31,70	37,50	44,30	54,70
Tuberkulóza pľúc (A15-A16)	8,80	7,80	8,90	7,20
Tuberkulóza mimopľúcna (A17-A19)	1,60	1,20	1,50	1,50
Syfilis (A50-A53)	8,30	10,20	7,80	9,60
Kvapavka (A54)	4,10	7,20	8,90	11,70
Akútna infekcia HIV a AIDS (B20-B24)	1,20	1,10	2,10	2,15
Bezpríznakové nosičstvo HIV (Z21)	0,08	0,18	0,08	0,08
Chrípka a akútne respiračné ochorenia (J10-J11)	52533,00	48928,00	57222,00	49406,00

Selection of threats through spread of the diseases in areas of MO34+20 km

Compulsory notified diseases - selection of threats through spread of the diseases in areas of MO34+20 km					
Year	2011	2012	2013	2014	2014/2011
Acute hepatitis A	10,60	3,00	5,30	19,10	**1,90**
Mumps (B26]	0,05	0,13	5,70	40,50	**810,00**
Scabies	31,70	37,50	44,30	54,70	**1,73**
Gonorrhea	4,10	7,20	8,90	11,70	**2,85**
Acute HIV infection and AIDS	1,20	1,10	2,10	2,15	**1,79**

ANNEX No. 18: Number of employees of SE-MO34 in specific period of time

Number of SE-MO34 employees in specific period of time			
2011	**2012**	**2013**	**2014**
268	273	298	304

Data from: Personálne údaje_Banku_apríl_2016 (e-mail zaslaný zákazníkom)

ANNEX No. 19: Data on the structure of registered employees in selected economic activities

Average number of employees				
Year	**2011**	**2012**	**2013**	**2014**
Nitra region	149100	149700	151200	156600
MO34+20	32644	32746	33042	34281
Method of converting B				

The structure of employees in selected economic actions				
Year	**2011**	**2012**	**2013**	**2014**
ø Average number	32644	32746	33042	34281
% in activity:				
A	5,5	5,2	4,9	4,8
C	**29,6**	**28,3**	**28,3**	**28,8**
F	4,9	4,9	5,3	5,0
G	12,9	13,3	13,7	13,7
H	7,0	6,8	6,6	6,9
I	0,9	1,2	1,3	1,2
O	8,8	9,3	9,2	8,5
P	9,3	9,6	8,0	8,5
Q	6,6	6,0	6,4	6,4
Other	14,5	15,4	16,3	16,7

A	Agriculture, forestry, fishing
C	Industrial production
F	Construction
G	Wholesales and retail, repairs of vehicles
H	Transport and Storage
I	Accommodation and Food services
O	Public administration, Transport, Social security
P	Education
Q	Health care, social assistance

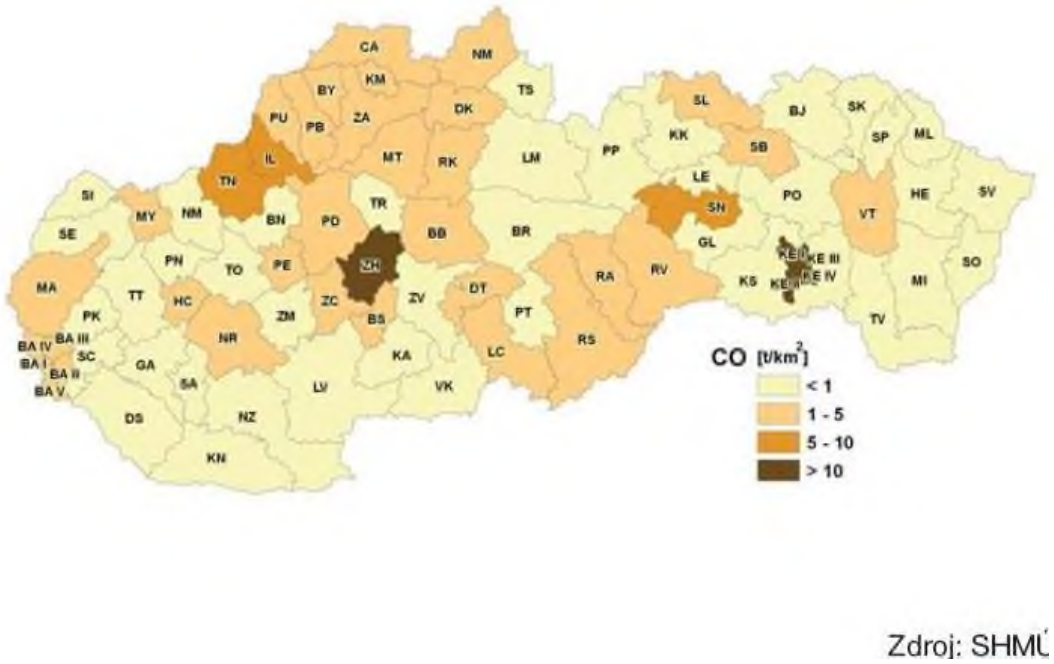
MO34+20: Number of employees in industrial production (C) together in specific period of time				
Year	**2011**	**2012**	**2013**	**2014**
Average number	9663	9267	9351	9873
%	100	95,9	96,8	102

MO34+20: Number of employees in Construction (F) in specific period of time				
Year	**2011**	**2012**	**2013**	**2014**
Average number	1600	1605	1751	1714
%	100	100,3	109,4	107,1

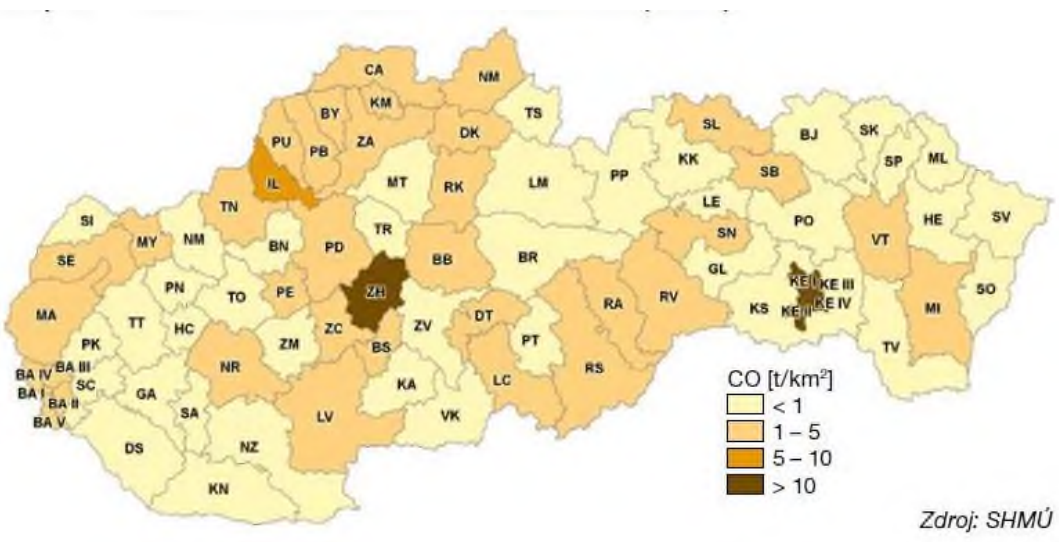
MO34+20: Number of employees in Accommodation and Food services (I) in specific period of time				
Year	**2011**	**2012**	**2013**	**2014**
Average number	294	393	430	411
%	100	133,7	146,3	139,8

ANNEX No. 20: Maps of SR with the data on specific territorial emissions of CO, NO_X, SO_2 and TZL in the period of 2011 – 2013

Relative territorial emissions CO in the year 2011 ($t.km^{-2}$)



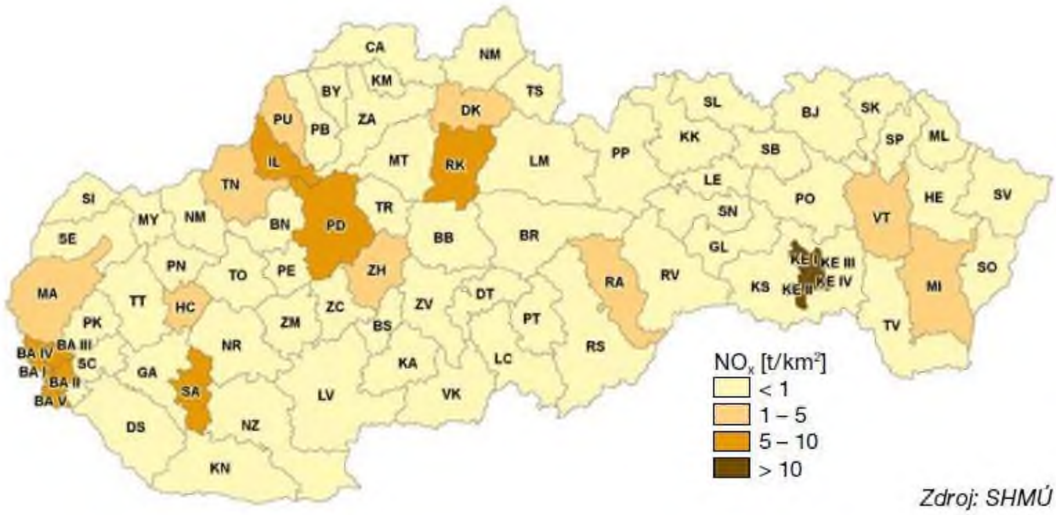
Relative territorial emissions CO in the year 2012 ($t.km^{-2}$)



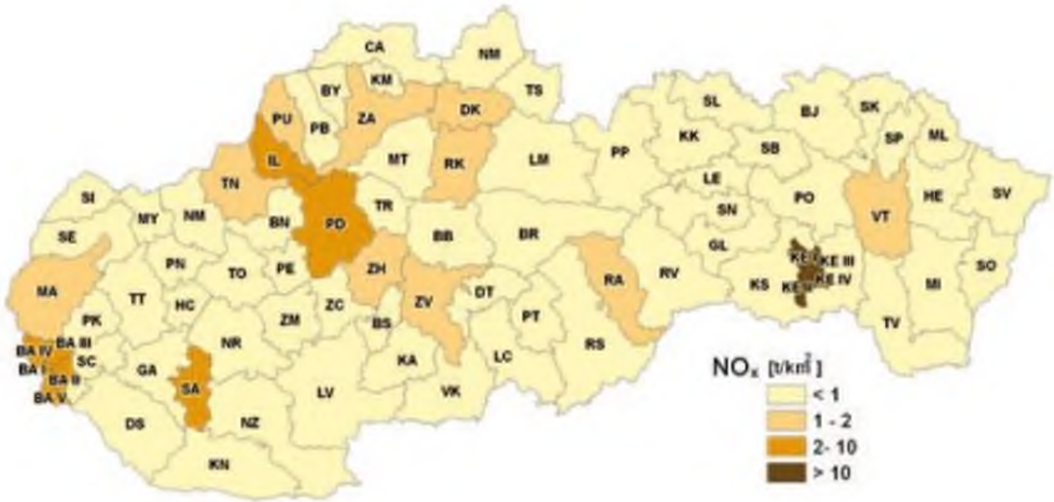
Relative territorial emissions CO in the year 2013 (t.km^{-2})

Relative territorial emissions NO_x in the year 2011 (t.km^{-2})

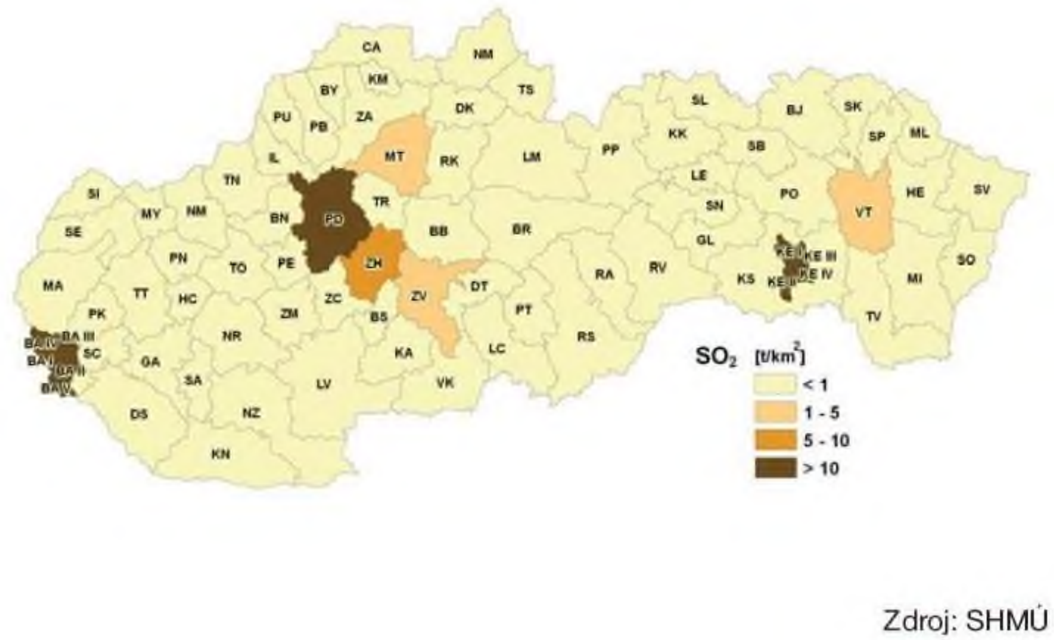
Relative territorial emissions NO_x in the year 2012 ($t.km^{-2}$)



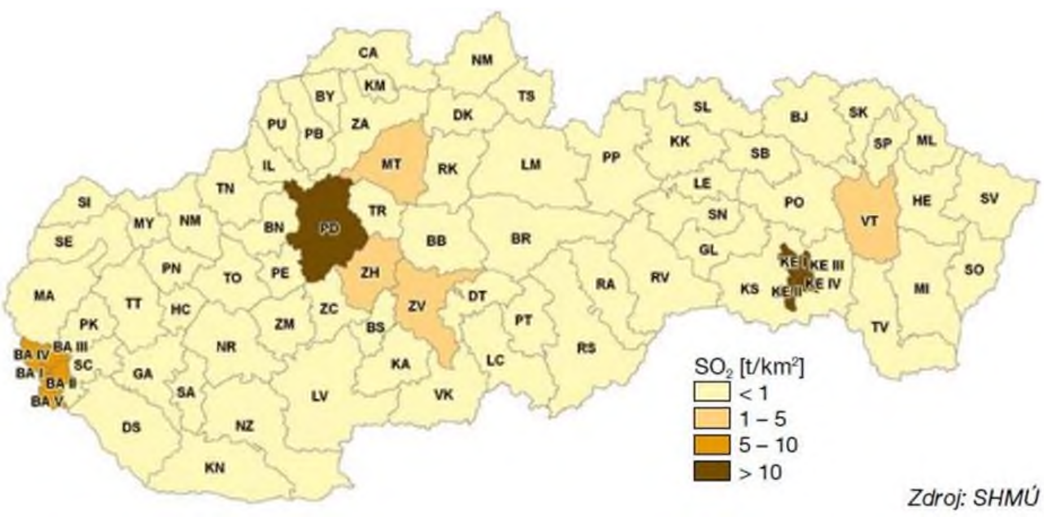
Relative territorial emissions NO_x in the year 2013 ($t.km^{-2}$)



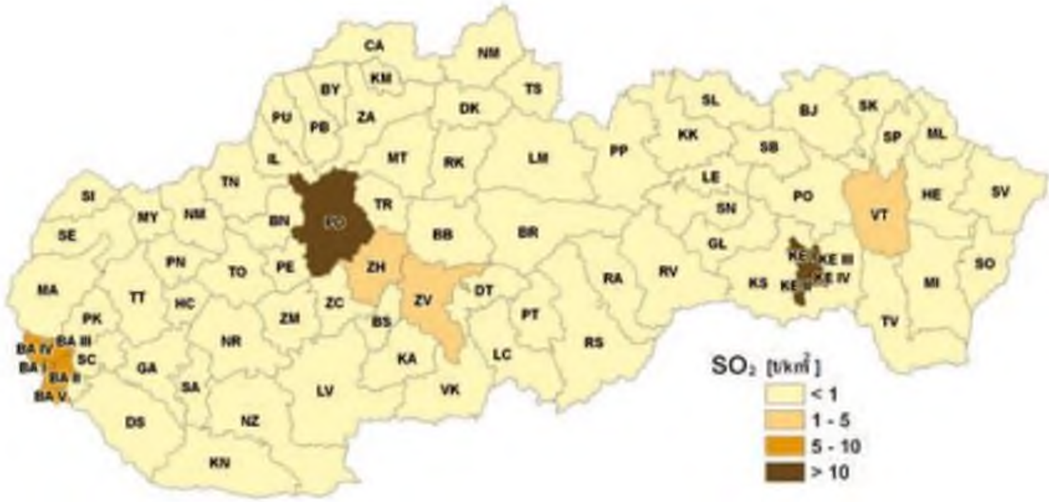
Relative territorial emissions SO_2 in the year 2011 ($t.km^{-2}$)



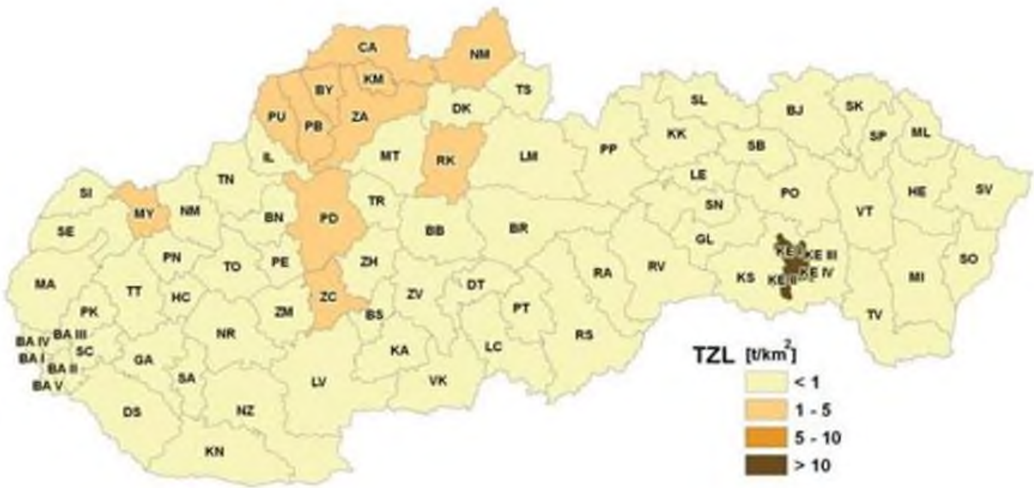
Relative territorial emissions SO_2 in the year 2012 ($t.km^{-2}$)



Relative territorial emissions SO_2 in the year 2013 ($t.km^{-2}$)

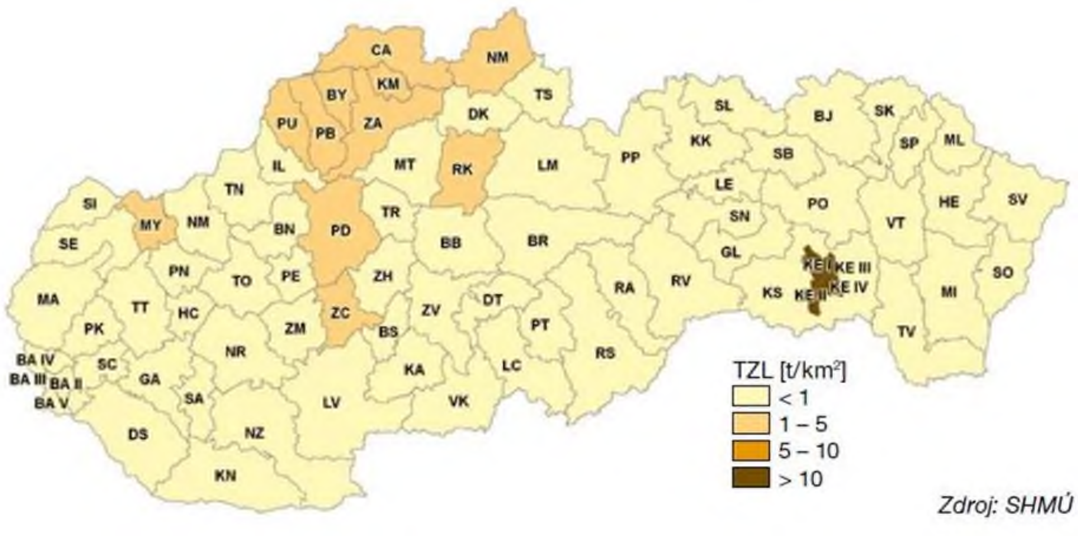


Relative territorial emissions TZL in the year 2011 ($t.km^{-2}$)

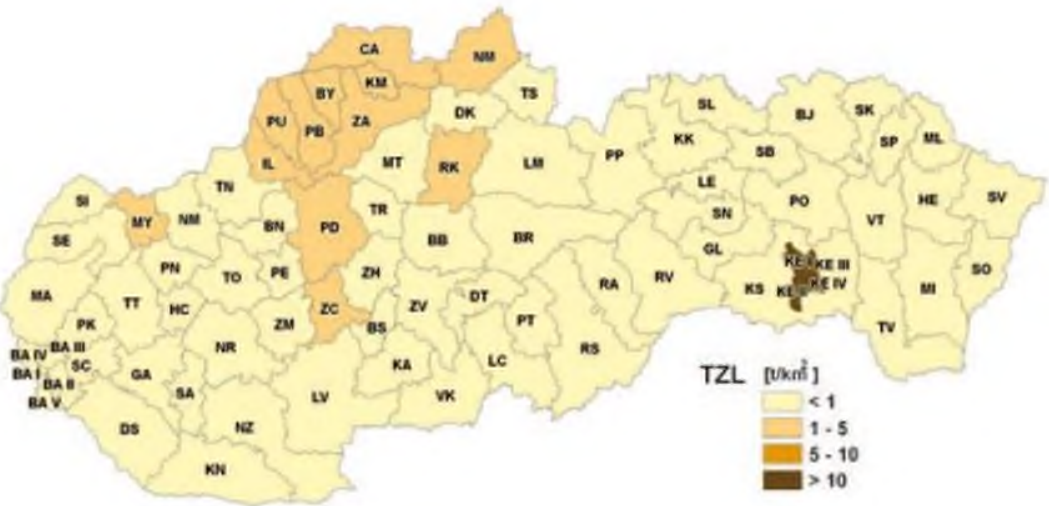


Zdroj: SHMÚ

Relative territorial emissions TZL in the year 2012 ($t.km^{-2}$)



Relative territorial emissions TZL in the year 2013 ($t.km^{-2}$)



Maps taken from the „Report on the state of Environment of the Slovak Republic“ section Air, published by Ministry of Environment of SR, years 2012, 2013 and 2014.

Report on the assessment of cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce“on environment

Contents

An integral part of this report is the document: Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce" on the environment.

List of figures

List of of tables

List of graphs

List of abbreviations

BBSK, NSK	Identification of autonomous regions of Banská Bystrica and Nitra
VAT	Value Added Tax
ECE	Economic Commission of Europe
EIA	Environmental Impact Assessment
EMU	European Economic and Monetary Union
IFC	International Finance Corporation
NPP	Nuclear Power Plant
LV, NR, ZM, NZ, ZC	Identification of districts Levice, Nitra, Zlaté Moravce, Nové Zámky, Žarnovica
ICD-10	International classification of diseases
MO34+20 km	For the purpose of this report, part of the territory of the Slovak Republic, defined NPP Mochovce as the center and a circle with a radius of 20 km (abbreviated MO34+20)
ME A a RD SR	Ministry of environment, agriculture and regional development of the SR
ME SR	Ministry of environment of the SR
NAMN	National air monitoring network
NV SR	Slovak Government Regulation
WFD	European Parliament and Council Directive 2000/60/ES of 23. october 2000 establishing a framework for Community action in the field of water policy (i.e.. Water Framework Directive)
SEA	Slovak Environmental Agency
SE-EMO12	NPP Mochovce, Units 1. and 2.
SE-MO34	NPP Mochovce, Units 3. and 4.
SHMI	Slovak Hydrometeorological Institute
SO SR	Statistical Office of the Slovak Republic
TQM	Total Quality Management
DES	Development of environmental systems
NRA SR	Nuclear Regulatory Authority of the Slovak Republic *Note.: according to § 121 art. 2 e) of the Act No. 50/1976 Coll. On territorial planning and building regulations (Building Act) as amended, The NRA serves as the building office in constructions of nuclear installations and structures related to the nuclear installations located in the area bounded by the borders of the nuclear installation of NRA SR*
VEC	Assessment of environmental and social components (Valued Environmental and Social Component)
Coll.	Collection of acts

Definition of terms

Valued Environmental and Social Component (VEC):
A rated component related to the environment or human and social relations. In this report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce" on the environment the assessed components are factors affecting the environment as set out in the document "Methodology for assessing the cumulative environmental impact of the Completion of Units 3 and 4 of NPP Mochovce" according to standards of good manufacturing practice and the IFC guide elaborated by ENEX trade sro.

Cumulative effects (impacts):
Impacts (effects) resulting from subsequent, sequential or combined effects on the activity or project when added to other existing, planned or anticipated future influences (impacts).

Characteristics:
Capturing the essential, intrinsic properties

Indicator /Indicators:
Rate or value which expresses the basic/essential characteristics

Total Quality Management (TQM):
TQM is a system approach to management, which aims to continuously increase customer value, design and continuously improving organizational processes and systems. Total (affecting all) Quality Management focuses on managing the entire system, not just some subsystems, isolated processes or functional departments.

Introduction

The assessment report on Cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce" to the environment is prepared under the instructions of good manufacturing practice for the private sector in emerging markets with the contractually defined objective: Develop a management and evaluation plan of environmental impacts according to "Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets" for the Italian export agency SACE for completion of the third and fourth units at Mochovce (VVER 4 x 440 MW).
The contract was drawn up Technical Specifications Document no PNM34480549, which defines the scope and requirements for the services to be ensured by the contractor in the process of elaboration of the assessment of environmental impacts.
The subject of the presented report is Part A: Report on the assessment of cumulative environmental impacts in accordance with the instructions of good manufacturing practice for the private sector in emerging markets.
The organization can use the recommendations mentioned in the report to facilitate the formulation and subsequent implementation of the model of excellence - TQM (Total Quality Management), specifically the Principle no 7:

Accountability to the public - the organization and its employees adopt an ethical approach and seek to meet the requirements of regulations and legal requirements over the common (and generally required) level.
Organizations around the world have gradually begun to understand the importance and philosophy of TQM. Models of TQM applications were created in order to determine the extent of the application of TQM principles or to compare the application with other organizations. However, there is no unified model of TQM in the world.
TQM is essentially an attitude, philosophy, but also a process that emphasizes personal responsibility of all employees who strive for continuous improvement, and as such it never ends. TQM is at the same time a system consisting of organizational, administrative and technical procedures, methods, techniques and tools.

It is evident that the organization itself cannot assume the powers and responsibilities of others, especially national and regional institutions, powers and responsibilities in certain specific areas arising from the legal regulations of the Slovak Republic (eg. environmental authorities, public health authorities, safety inspectorates, etc.). It may, however, work very closely with these institutions whether in the form of formulating joint strategies and concepts in relation to the defined territory of MO34 + 20 km or in the form of incentives for these institutions based on the risks or threats identified by the organization.
The recommendations mentioned in the report shall not be binding for the organization in any way. The organization itself decides which area and what form it intends to engage itself.

Historical milestones of impact assessment (EIA) of SE-MO34 on the environment

1994: A study on the impact of operation on the environment prepared on the basis of a detailed review by an independent organization AEA Technology from Great Britain. The study results confirmed that the plant meets all international environmental requirements for nuclear power plants, and that the impact of operation will be minimal.

2007: A study of impact assessment on the environment for Units 3 and 4 of Mochovce was prepared for internal needs of the company by an internationally renowned agency Golder Associates. This study confirmed that the operation of all four units at Mochovce will have no negative impact on the environment. In fact, the project will bring many positive effects, such as securing economic benefits for communities in the immediate surroundings, or the avoidance of greenhouse gas emissions in comparison with conventional power plants.

2008: Slovenské elektrárne asked the Ministry of Environment in May 2008 to indicate whether the proposed activity "Completion of Units 3 and 4 of NPP Mochovce", is subject to the assessment under the Act No. 24/2006 Coll. on the assessment of environmental impacts, as the initial project of Units 3 and 4 of NPP Mochovce had been modified. Ministry of Environment stated that the completion of Units 3 and 4 of NPP Mochovce cannot be regarded as a new activity or a substantial change of the original design. Before granting an operating license for Units 3 and 4 of NPP Mochovce by the Nuclear Regulatory Authority of the Slovak Republic, however, it will be necessary to assess the nuclear facility pursuant to Act No. 24/2006 Coll. on the assessment of environmental impacts.

In order for Slovenské elektrárne to successfully obtain the authorization for the installation and operation of a nuclear facility, the company submitted in December 2008 according to the Act no. 24/2006 Col. a document, an intention for the proposed activity "Nuclear Power Plant Mochovce VVER 4 x 440 MW" to the Ministry of Environment. The intention for the proposed activity represents an assessment of effects of the implementation of the nuclear complex and the commissioning of two units of VVER 4 x 440 MW in order to generate electricity to meet the electricity supplies for individual customers. The intention of the proposed activity was prepared in accordance with the energy policy of the Slovak Republic. This document was a subject for commenting not only in Slovakia. The neighbouring countries also expressed their opinions on whether they will actively participate on the assessment process. At the same time this document was also presented to the general public, the non-governmental environmental organizations and the representatives of the communities in the vicinity of Mochovce. The consultation period lasting 21 days ended in March 2009 when all comments from concerned parties, the public, Austria, the Czech Republic and the governments of Poland and Hungary were gathered in order to define the scope of the evaluation report on the impacts of the proposed activity on the environment.

2009: The process of environmental impact assessment (EIA - Environmental Impact Assessment). The Report on the assessment of environmental impacts of the proposed activity was submitted to the Ministry of Environment in August 2009. At the same time the process of public consultation began, which lasted 30 days, in accordance with the Act. 24/2006 Col. The report was prepared in accordance with § 31 of Act no. 24/2006 Col. and Annexes 11 and 15 of this Act. Subsequently, the impact assessment report of the proposed activity was forwarded to the relevant concerned and authorizing bodies of the government administrations and was published on the website of the Ministry of Environment. The concerned municipalities informed the public of this fact within three days of the receipt of the report or final position.

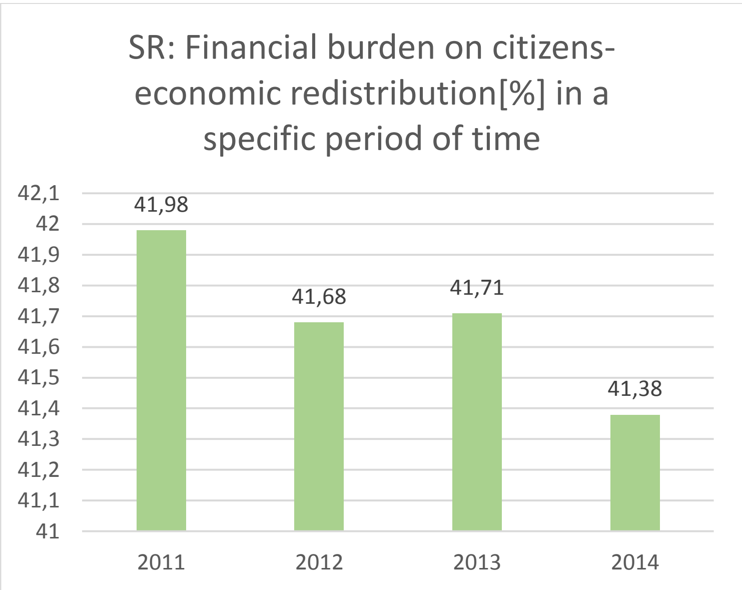
2010: Ministry of Environment has issued a favorable final position.
2013: Building permit. The Slovak Nuclear Regulatory Authority as the competent building authority under the Construction Act stated a deadline for the completion of construction (Units 3 and 4 of NPP Mochovce) in the period ending on 31.12.2016.
2016: Document The method of evaluation of recommendations of MoE conditions mentioned in the final statement no. 395 / 2010-3.4 / hp

International and national factors affecting the territory of MO34 + 20 km and the activities of "Completion of Units 3 and 4 of NPP Mochovce"

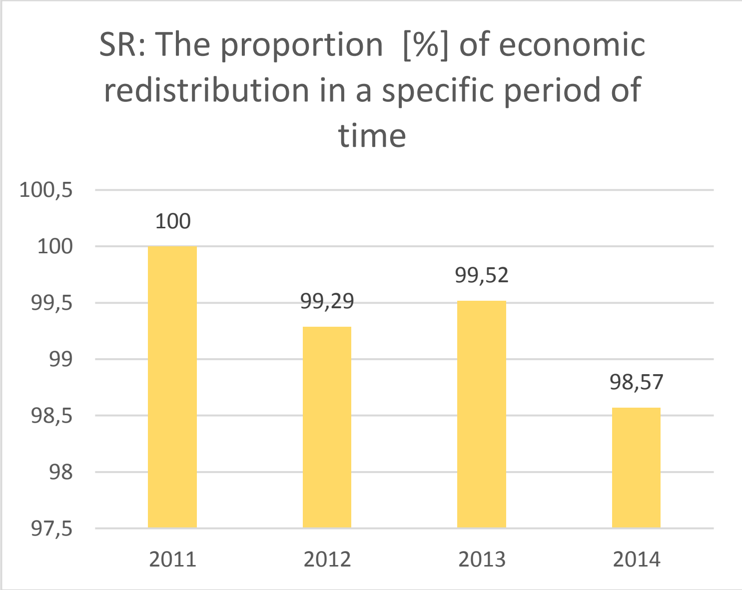
1. **The** Effect of Maastricht (Convergence) criteria

Slovak Republic as a member of the European Economic and Monetary Union (EMU) had to meet the convergence criteria to enter the Union and to introduce the Euro. This process required the adoption of several measures (eg. one of them is the reduction of the government deficit below 3% of gross domestic product - GDP). As a tool to achieve the convergence criteria in the SR the amendment to the Act no 490/2010 Col., which increased the value added tax (VAT) from 19% to 20% and abolished the reduced rate of 6% on the sale of food from the yard was introduced. The indicator characterizing this impact is the temporal expression of the tax burden on the population. It is an imaginary line that divides the year into two periods. In the first period the earning of the taxpayers cover the expenses of the government and other state institutions. The Distribution by a determined imaginary border is called redistribution. It has an impact on the Slovak economy and thus on the completion of Mochovce NPP

The above mentioned distribution expresses an overall level of redistribution in the slovak economy, or even the "burden" of citizens, taxpayers (how much of their annual earnings must be paid in the form of taxes).



Graph 1: Economic redistribution SR in a specific period of time



Graph 2: Proportional number of the economic redistribution SR in a specific period of time

The information about economic redistribution in Slovakia are processed on the basis of Annex no. 12.
However, it should be recognized that the adoption of measures to meet the convergence criteria did not only affect the area of MO34 + 20 km and the activity of "Completion of Units 3 and 4 of NPP Mochovce" but on the whole Slovak Republic, all its economic sectors and all citizens.

2. Impact of the global development / advancement of approach to nuclear safety of nuclear facilities and the impact of accident at the nuclear power plant Fukushima Daiichi Nuclear Power Plant

These impacts affect the project SE-MO34 itself and above all the project documentation for the activity "Completion of Units 3 and 4 of NPP Mochovce":

- It was not possible (according to the requirements of Act no. 541/2004 Coll on the Peaceful Uses of Nuclear Energy as amended or allowed) to carry out the "Completion of Units 3 and 4 of the NPP Mochovce" according to the originally designed documentation;
- Many of the original documents of the project had to be revised according to the latest global knowledge, especially concerning the nuclear safety of nuclear facilities;
- A project of the same focus was carried out in Slovakia about 15 years ago (Construction of Units 1 and 2 of NPP Mochovce). Not only in the area of MO34 + 20 km, but also in Slovakia, it was necessary to fill the need of nuclear experts to perform work of the required character;
- On March 11, 2011 an earthquake and a devastating tsunami caused a series of equipment failures and leaks of radioactive materials in the Fukushima Daiichi Nuclear Power Plant (Japan). This nuclear incident was rated as not the worst nuclear accident in the world, but as very complicated by the experts;

- Units 3 and 4 of NPP Mochovce are the first VVER nuclear power units in the project which incorporates all so called "Post-Fukushima" improvements approved by the Slovak NRA in the final report on the stress tests in the Slovak Republic.

The Impact of global development / advancement approach to nuclear safety of nuclear facilities and the impact of the accident at the nuclear power plant Fukushima Daiichi Nuclear Power Plant, other than the impact of Maastricht (Convergence) criteria will directly touch all nuclear power plants, including the activity of "Completion of Units 3 and 4 of NPP Mochovce".

Identification of environmental and social components for the evaluation of the cumulative effects of the activity "Completion of Units 3 and 4 of NPP Mochovce" on the environment

(1) Additional opportunities for employment;
(2) Other / additional pollutants of the environment (air, water);
(3) Additional cases of diseases, problems with alcohol, drugs and crime;
(4) Loss of territory (ie. Land resources);
(5) Changes or deterioration / degradation of natural and critical environment (habitat);
(6) Flow control of down stream. Reduction, alteration and / or fragmentation of the coastal and aquatic environment;
(7) Additional impact on mortality of wildlife.

1 BASIC INFORMATION ON THE ORGANIZATION

Company name: Slovenské elektrárne, a.s., Plant Unit 3 and 4 of NPP Mochovce
Identification number (ID): 35829052
Address: 935 39 Mochovce
Contact persons:

1. **Mr. John Clark**, project director of SE, a.s. MO34,

Plant: Unit 3 and 4 of NPP Mochovce, 935 39 Mochovce,

2. **Mgr. Jozef Belaň, Manager of permits and licensing,**

Plant: Unit 3 and 4 of NPP Mochovce, 935 39 Mochovce,

2 “BASIC DATA ON THE ACTIVITY "COMPLETION OF UNIT 3 AND 4 OF NPP MOCHOVCE"

Site name: NPP Mochovce VVER 4 x 440MW 3. construction
Purpose: The purpose of the activity "Completion of Units 3 and 4 of NPP Mochovce" is the completion and commissioning of the two units of SE-MO34 using existing authorizations in order to generate electricity. The activity „Copletion....“ is a continuation of the original design of NPP Mochovce so that the NPP Mochovce power plant consists of four nuclear units VVER 440. The efficiency of the MO34 reactors will due to the installation of new components increase to 33.9%. Total electric power of the reactors will be 2x471 MWe.
User: Slovenské elektrárne, a.s., Unit 3. and 4. Of NPP Mochovce, 935 39 Mochovce.

Location: The actual area of NPP Mochovce Units 3 and 4 are located in the vicinity of the power plant operated by SE-EMO12. From the perspective of the whole NPP Mochovce, objects of SE-MO34 are located to the north of the NPP Mochovce.

Code and name of the district	402 - Levice
Code and name of the municipality	502 413 - Mochovce
Cadastre territory number and name	838 152 - Mochovce, Nový Tekov
Parcel number	Parcel numbers and extracts from the ownership list are available at the proposer

Tab. no. 1: Information about the location of activities

General situation: The map of the situation of the activity "Completion of Units 3 and 4 of NPP Mochovce" is displayed in Annex. 1 referred to in the document Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment.

A brief description of technical and technological solution: Unit 3. and 4. of NPP Mochovce will be two individual operational nuclear power units. Each will consist of a nuclear reactor VVER 440 type V-213, a pair of turbo-generator type 220 MWe (main unit components) and other devices. The process of production of electricity in nuclear power plant Mochovce consists of three main cycles (circuits) for transmission of heat (thermal energy):

1. In the first cycle, generally referred to as the *primary circuit*, the heat from the nuclear reactor is used to produce steam during a nuclear fission in the six steam generators.
2. In the second cycle, commonly called the *secondary circuit*, the steam produced in the steam generator is used to drive the steam turbines. The turbine together with the electric generator forms a so-called turbogenerator (their shafts are connected), which produces electricity supplied to the electricity grid (power system).
3. In the third cycle, commonly known as the *cooling water circuit*, the steam loses its remaining thermal energy by means of cooling water in the turbine condensers – the steam condenses and turns into liquid state.

The thermal (heat) effectiveness of each nuclear power unit was according to the original project $\eta_t = 29{,}5$ %. The fact, that the completion of SE-MO34 is being implemented with a time lag over the original time plan, has however some positive aspects, too. Some improvements had to be included into the project SE-MO34 (international rules and conventions on the peaceful use of nuclear energy are binding for the SR), concerning in particular nuclear safety but also efficiency. Without increasing the thermal power of the reactor (1375 MW_t) the electrical rated power will remain $471 MW_e$. It is not possible to list all the improvements in this document (and nor is it the role of this document), therefore only the most important ones will be referred to:

- New types of turbo-generators with a higher efficiency (reducing the heat discharged into the environment)
- As for the material of heat exchange tubes in the turbine condensers, titanium is used (compared to the original material brass),
- A new system of spraying (fragmentation) of the cooling water in the cooling towers,
- A new catcher of water drops from the cooling towers,

These enhancements have been introduced in NPP EMO12, therefore it can be concluded that:

1. Thermal efficiency η_t has increased from the initial value 29,5 % to 31,7 %,
2. The amount of heat released into the environment is reduced by approximately 7 %.

The increase of thermal efficiency will also have following positive effects:

- Life-time extension – time usage of the nuclear fuel,
- Decrease of production of radioactive waste,
- Decrease in radioactive discharges.

Primary circuit
The primary circuit of each nuclear unit consists of the following main components:

- Nuclear reactor,
- Six cooling (circulation) loops,
- Six steam generators,
- Pressurizer.

Cooling (circulation) loop of the primary circuit comprises of:

- hot leg with an isolation valve and steam generators,
- cold leg with a main circulation pump and an isolation valve.

The main circulation pumps secure the circulatation of the coolant (chemically treated water with a certain amount of boric acid H_3BO_3) through the reactor while the coolant draws heat from the active zone of the reactor (the main part of the core is the nuclear fuel).
Steam generators are devices where the primary circuit meets the secondary circuit (separately). They are tubular heat exchangers with a horizontal placement of heat exchange tubes which generate or produce steam.
The pressurizer is used for creating and maintaining the pressure of the coolant in the cooling circuit of the nuclear reactor and allows compensation of coolant volume changes during reactor operation.

Secondary circuit
The steam generated in the steam generator is supplied to the turbine hall through the steam piping. The turbine hall is at NPP Mochovce shared by all four nuclear power units. In the turbine hall, for each unit there are two turbines or turbogenerators (turbogenerator is a rotating machine which consists of a turbine and a generator).
The turbines at NPP Mochovce are of a condensing type and consist of three parts:

1. high-pressure part of the turbine (HP part),
2. two low-pressure parts (LP parts).

The steam produced in the steam generator transmits its energy to the turbine rotor. After passing the last impeller rotor it enters into the main condenser of the turbine, wherein it cools down by means of the circulating water in the cooling circuit so that it turns into water - condensate. The condensate is again transported with pumps into the steam generators and by the heat from the primary circuit again changed into steam.

Cooling water circuit

Only about 30% of the thermal energy obtained in the nuclear reactor is converted into electric energy. The remaining about 70% of the energy has to be withdrawn from the steam which enters into the condenser from the turbine. The condenser is a heat exchanger, which extracts heat from the steam passing through the turbine. The water circulates in the cooling circuit with the help of the so-called cooling pumps.

The cooling pumps suck water from the cooling tanks under the cooling towers, push it into a condenser where the cooling water takes the heat from the steam and heated returns into the cooling towers. The water is cooled in the cooling towers by a natural circulation of air and it is concentrated in the cooling tanks under the towers.

Basic technical parameters of the nuclear power unit VVER 440 type V-213 are attached in the Annex 2 of the document Annexes to the report on the assessment of the cumulative effects of "Completion of Units 3 and 4 of NPP Mochovce” on the environment.
Prepared according to: Reports of the assessment of the proposed activity for assessing the environmental impacts according to Act no. 24/2006 Col. Annex 11, provided by the supplier [1].

3 TERRITORY AND THE TIME PERIOD RELATED TO THE REPORT

3.1 DEFINITION OF TERRITORY – GEOGRAPHIC DATA

The activity "Completion of Units 3 and 4 of NPP Mochovce" is performed in the territory, defined by the current protected area of the NPP Mochovce and in the closest possible vicinity, while the term closest surrounding describes the territory used primarily by external suppliers. They are located in the area of about ± 3 km from the power plant.
According to Decree no. 597/2002 Coll. of the Statistical Office SR by which means the table of statistical regions, districts and statistical nomenclatures of municipalities is issued the territory of NPP Mochovce is classified as follows:

Classification of NPP Mochovce territory acc. to Reg. of SO SR No. 597/2002 Col.		
Region	According to the Nomenclature of Regions	Nitra region
	Numerical code of the region	4
	Region sign	NI
District	According to the Codebook for districts	Levice district
	Code number of district	402
	District sign	LV
Municipality	According to the Nomenclature of Towns	Nový Tekov
	Town number	502596
*	According to the Nomenclature of Villages	Kalná nad Hronom
	Village number	502413

Tab. no. 2: Classification of the territory of NPP Mochovce according to the ordinance No. 597/2002 Coll.

* The cadaster of the original village of Mochovce was after its vacation attached to the cadaster of the village Kalná nad Hronom.

According to Annex no. 17 to the GO no. 499/2008 Col. as amended, the territory of NPP Mochovce is classified as follows:

Classification of NPP Mochovce territory according to the Annex No. 17 to Government Ordinance SR č. 499/2008 Col.		
Village	Cadastral area	Cadastral area code
Kalná nad Hronom	Mochovce	838 152

Tab. no. 3: Classification of the territory of NPP Mochovce by GO No. 499/2008 Coll.

NPP Mochovce is located in the northern part of Hronská pahorkatina near the southern tip of Štiavnické vrchy, almost in the center of Nitra region on the western border of Levice district.

Fig. no. 1: Approximate location of the "Completion of Units 3 and 4 of NPP Mochovce" within the Nitra region

The area that is of interest to the report on the assessment of the cumulative effects of "Completion of Units 3 and 4 of NPP Mochovce" to the environment is defined around NPP Mochovce with a radius of about 20 km (hereinafter referred to as "area of MO34+20 km" or MO34 + 20), while the NPP is the center of that imaginary circle. A territory established like this (MO34 + 20 km) very precisely coincides with the area in which the population of towns and villages due to threats to nuclear power (as a source of danger for the population) are covered by the Civil Protection in accordance with § 14 article 1 leter p) and § 15a article 1 letter a) of the Act of the National Council of the Slovak Republic no. 42/1994 Coll. on civil protection as amended. The indicative graphical representation of the area MO34 + 20 km is shown in the following figure:

Fig. no. 2: Territory of MO34+20 km

The territory of MO34 + 20 km devides in two regions:

1. Nitra region
2. Banská Bystrica region

Nitra region in the territory of MO34+20 km devides into the following districts:

- Nitra (NR),
- Levice (LV),
- Zlaté Moravce (ZM),
- Nové Zámky (NZ).

The region Banská Bystrica in the territory of MO34+20 km is represented by the district of Žarnovica (ZC).

3.2 CITIES AND VILLAGES IN THE AREA OF MO34+20 KM

Cities and villages in the area of MO34+20 km are set for this report according to the information of the Crisis management Department of the district offices.

Nitra district:

Čifáre, Telince, Tajná, Vráble, Nová Ves nad Žitavou, Lúčnica nad Žitavou, Melek, Veľký Cetín, Vinodol, Babindol, Paňa, Golianovo, Klasov, Malý Lapáš, Veľký Lapáš, Čeľadice, Kolíňany, Dolné Obdokovce, Malé Chyndice, Veľké Chyndice, Žitavce.

Levice district:

Nový Tekov, Veľký Ďur, Malé Kozmálovce, Kozárovce, Rybník, Tlmače, Hronské Kosihy, Veľké Kozmálovce, Hronské Kľačany, Starý Tekov, Horná Seč, Kalná n/Hronom, Lok, Tehla, Levice, Čajkov, Devičany, Drženice, Nová Dedina, Podlužany, Krškany, Mýtne Ludany, Starý Hrádok, Jur n/Hronom, Turá, Vyšné n/Hronom, Žemliare, Dolná Seč, Tekovský Hrádok, Bajka, Ondrejovce, Tekovské Lužany, Dolný Pial, Horný Pial, Plavé Vozokany, Beša, Iňa, Jesenské, Lula, Šarovce.

Nové Zámky district:
Bardoňovo, Dedinka, Podhájska, Pozba, Trávnica, Černík, Kmeťovo, Vlkas, Maňa, Michal nad Žitavou.

Zlaté Moravce district:
Nemčiňany, Nevidzany, Slepčany, Červený Hrádok, Malé Vozokany, Vieska nad Žitavou, Veľké Vozokany, Čierne Kľačany, Volkovce (Olichov), Tesárske Mlyňany, Choča, Beladice (Chrášťany), Neverice, Zlaté Moravce (Prílepy), Žitavany, Martin nad Žitavou, Sľažany, Hosťovce, Velčice, Machulince, Obyce, Topoľčianky, Čaradice, Tekovské Nemce.

Žarnovica district:
Hronský Beňadik, Nová Baňa (časť Bukovina), Orovnica, Tekovská Breznica.

Cities and villages in the area of MO34 + 20 km with a population in a specific period of time are included in Annex 5 of the Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment.

3.3 SPECIFICATION OF TIME PERIOD FOR INPUT DATA AND ANALYSIS

The impact of the "Completion of Units 3 and 4 of NPP Mochovce" on the environment is processed in this report in the following time series:

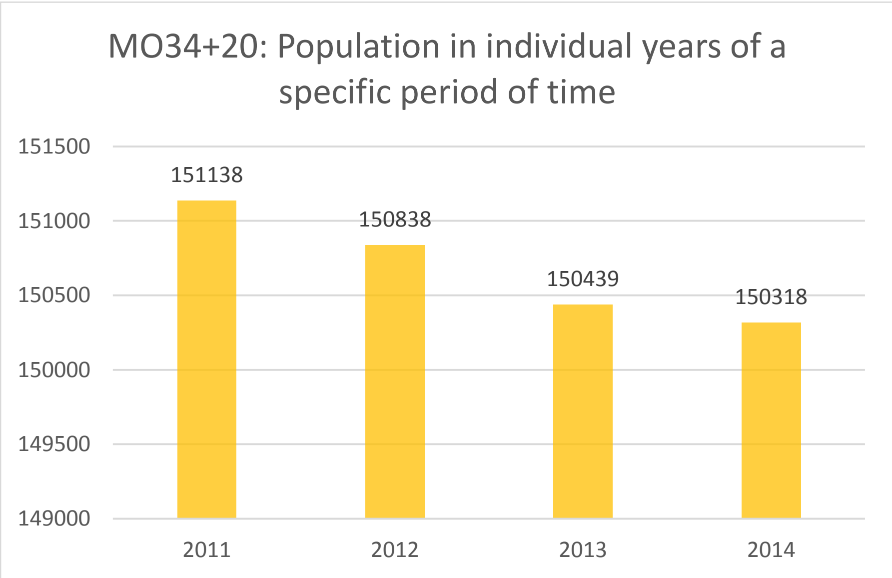
1. As a comparative base (reference level) serve input data and the information about the area of MO34+20 km to 31.12.2011,
2. Data and information about the area MO34+20km are evaluated, analyzed and compared with the reference level to the dates 31.12.2012, 31.12.2013 and 31.12.2014.

3.4 BASIC DEMOGRAPHIC DATA OF THE AREA MO34+20 KM

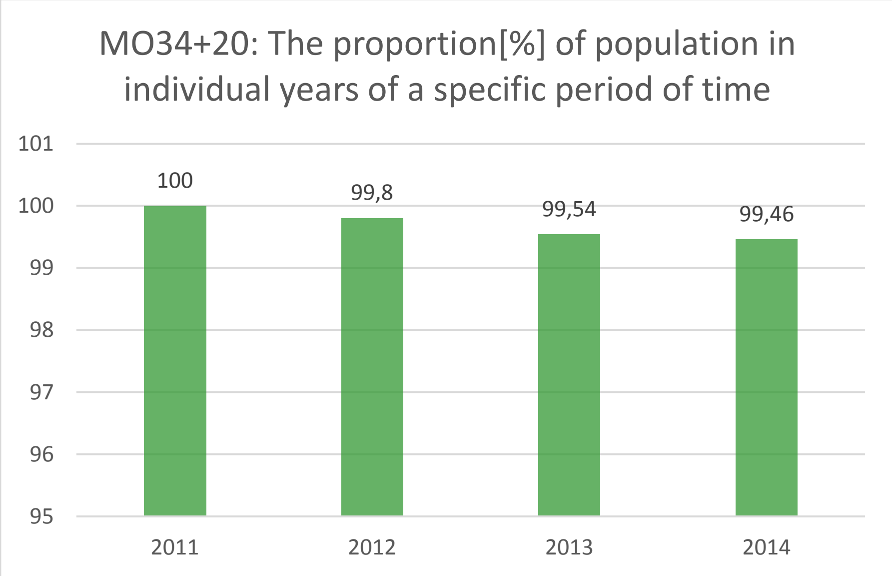
A key component of the environment is a human being. Geographic data only specify the territory of MO34 + 20 km from the geographical point of view. Demography is a branch of statistics, investigating the structure and growth of the population. It is therefore important to dispose of so-called basic set of statistics, listing the towns and villages in the area MO34 + 20 km and the number of its inhabitants. The table in Annex 5 of the Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment includes in addition to the list of cities and municipalities in the area MO34 + 20 km also:

- Division of towns and villages according to which region do they belong to (according to the regional administration of the SR),
- Population of towns and villages to 31.12.2011, 31.12.2012, 31.12.2013 and 2014.
- Population growth in 2012, 2013 and 2014.

Population - basic demographic input data for statistical files are taken from the Statistical office of the Slovak Republic:



Graph 3: The number of inhabitants in individual years in a specific period of time



Graph 4: Proportional number of inhabitants in individual years in a specific period of time

Information about the area of MO34+20km are processed on the basis of the Annex 5. It is visible that of the proportional number of inhabitants of the area MO34 + 20 km reached a value of only 0.54% despite the declining population of the territory in a specific period of time.
Therefore it is not necessary to perform calculations such as “number of events per 1000 inhabitants” etc. when obtaining information about the area from the input data. The ratio of individual characteristics in a specific period of time will not be expressed by a form of indexing, but by percentage (100% value index = 1).

3.5 PRINCIPLES OF OBTAINING INPUT DATA FOR THE EVALUATION AREA MO34 + 20 KM

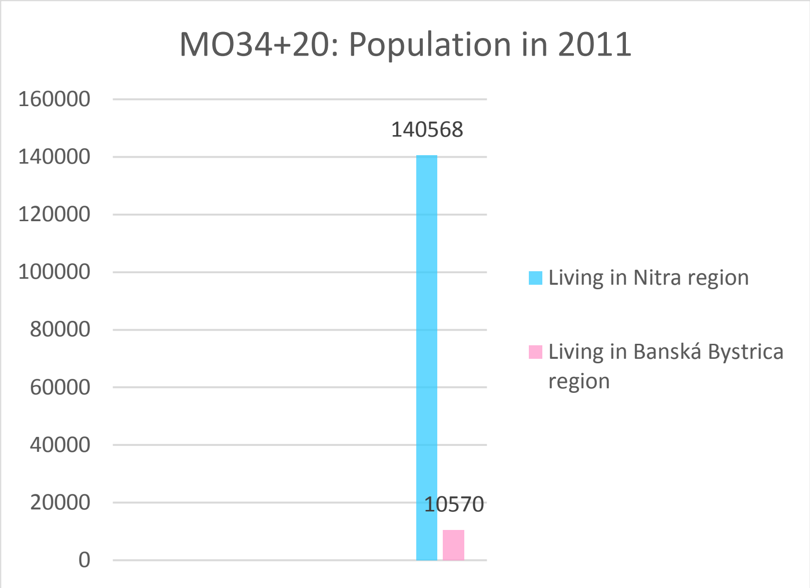
1. General principles

Demographic input data for the specific period of time are primarily obtained from the database of the Statistical Office. Datacube is an interactive application that contains statistic data and indicators of economic and socio-economic development processed in data cubes (multidimensional tables). It is administered by the Slovak Statistical Office.

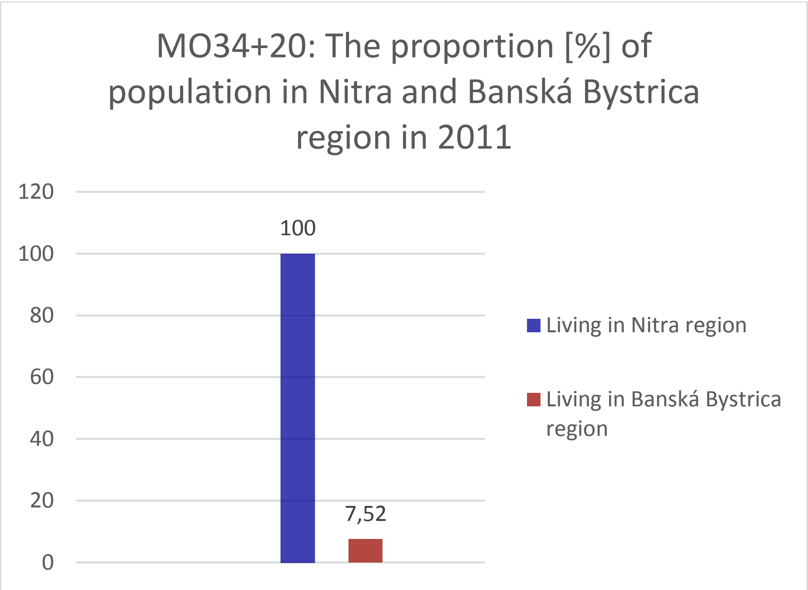
2. The use of other sources of input data

The above mentioned database of the Statistical Office of the SR does not contain input data to the necessary extent to obtain more detailed information mainly of demographic character (or it contains only information to the level of regions, or not the entire specific period). Therefore it is necessary to obtain the input data through mathematical and statistical apparatus from other sources. A mathematical apparatus used in the report is based on proportional terms.

In case a database provides input data on the regional level (Statistical Yearbook, Yearbook of Health and the like), the data provided for Nitra region will be used as input.
Reasoning: In 2011, the proportion of inhabitants of the territory MO34 + 20 km living in Nitra region and residents of the area living in Banská Bystrica Region was 13,3: 1 (see Annex 6 of the document Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment.).



Graph 5: The inhabitants of the territory MO34 + 20 km by reference to the Nitra and Banská Bystrica regions in 2011



Graph 6: Proportion number of inhabitants of the territory MO34 + 20 km by reference to the Ntra and Banská Bystrica regions 2011

Information about the area MO34+20km processed on the basis of the Annex 6.

a) To obtain information on the whole population of the territory MO34+20km the input data of the Nitra region will be collected and the value will be calculated comparatively:

$$\frac{population\ of\ MO34 + 20km}{population\ of\ Nitra\ region}$$

b) To obtain information on the working-age population of the territory MO34+20km the input data of Nitra region will be collected and the value will be calculated comparatively:

$$\frac{population\ of\ MO34 + 20km\ in\ working - age}{population\ of\ Nitra\ region\ in\ working - age}$$

Note: In accordance with the definitions set in the Regional Statistical Yearbook of Slovakia issued by the Slovak Statistical Office, the term working-age population refers to the citizens of the age group between 15-64 years.

The proportion expressed by the method as in 3.5.2.a) is hereafter referred to as “Method of converting A”, the proportion expressed by the method as in 3.5.2.b) is hereafter referred to as “Method of converting B“.
The conversion values of the population according to Method A and B are given in Annex 8 of the document Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment.
The conversion ratio for both methods of conversion is described in Annex 7.
In case other forms of mathematical calculations will be used, other than Method A and B, they will be described in the report.
Another important source of input data od demographic character, besides the abovementioned applications of datacube, are documents "Nitra region in figures" published by the Division of the provision of statistical services of the Statistical Office of the SR and internet

4 BASIC INFORMATION ON THE CURRENT STATE OF THE ENVIRONMENT OF MO34+20KM IN A SPECIFIC PERIOD OF TIME

4.1 ASSESSMENT OF THE CURRENT STATE OF ENVIRONMENTAL QUALITY INCLUDING HEALTH AND SAFETY IN THE SURROUNDING OF THE COMPLETION OF UNITS 3 AND 4 OF AND THE OPERATION OF UNITS 1 AND 2 OF MOCHOVCE

Indicator: classification of the territory of MO34 + 20 km according to the environmental regionalization.
The territory of MO34 + 20 km is a circle with a radius of 20 km and a center at the NPP Mochovce. It involves a realistic assessment of anticipated direct or indirect impacts of activities and it is also relevant for estimating the cumulative effects on the environment in a specific period of time. An overall assessment of the state of the environment in the vicinity of the territory of the "Completion of Units 3 and 4 of NPP Mochovce" and the operated Units of SE-EMO12 is based on the so-called environmental regionalization mentioned in the Report on the state of the Environment of the SR. According to maps of the regions the environmental quality of the area MO34 + 20km is defined in a specific period of time as follows:

Year	Classiffication of NPP MO34+20 km according to the environmental quality	
2011	Environmental quality - region with a mild environmental disturbance	
2012	Environmental quality - region with a mild environmental disturbance	
2013	Environmental quality - region with a mild environmental disturbance	
2014	Environmental quality -	part of the region with a mild environmental disturbance
		part of the region with a strong environmental disturbance

Tab. no. 4: Categorization of MO34 + 20 km by environmental quality

The data from the devironmental reports of the SR for the specific period of time are available on the internet page of the Ministry of Environment of the SR.
Maps of Environmental Quality Regions are annexed under No. 9 in the document Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment.

Characteristics of the area MO34 + 20 km
The territory according to the environmental quality was classified in the years 2011-2013 as an area with a slight disturbance. In 2014 the area of MO34+20 km could be classified as one part with a moderately deteriorated environment from the point of effects on the environmental quality and the second part with heavily disturbed environment.

The Slovak Republic has defined 5 classes of the level of environmental protection:
High level environment (for hygienically suitable areas without negative lifestyle interventions and conditions of a high landscaping and urban suitability)
Satisfactory environment (hygienically suitable area with average landscape and urban suitability)
Moderately deteriorated environment (experienced hygienic indicators of distortions in the conditions of high or medium landscape and urban suitability)
Damaged environment (with the appearance of several indicators of hygienic disruption combined with all levels landscaping and urban suitability)
Severely damaged environment (with significant exceedances of hygienic indicators of disruption)

The area of MO34 + 20 km borders with two regions - areas with moderately and severely damaged environment. Since air or water pollution does not respect the restricted area, it is necessary to comment on it in a broader context. **It should be emphasized that not a single indicator is related to completion of SE-MO34 or to the operation of SE EMO12.**

Low Nitra area
The air pollution in the region comes mainly from the emissions from industrial stationary sources, mainly from boilers and furnaces. Additional emissions of pollutants come from car traffic. The major producers of industrial waste, including hazardous waste in this area are a stone-quarry and a lime kiln, Glassner Žirany, IDEA NOVA Nitra, Nitra FERRENIT and SPP - Ivanka plant in Nitra.

Middle Pohronie area

The pollution of river Hron is caused by waste waters from the industry in Banská Bystrica and Žiar nad Hronom and waste waters from public sewerages. The water quality in the area is classified between I. - V. in each group of indicators. The major sources of water pollution are Biotika Slovenská Ľupča, ZSNP Žiar nad Hronom, Zvolen Bučina and public and municipality sewerages. The major producers of industrial waste in the area are ZSNP Žiar nad Hronom and Biotika Slovenská Ľupča.

4.2 IMAGE OF THE COUNTRY

NPP Mochovce is situated on the border of Poddunajská nížina (Danube plain), the southern slope of Pohronsky Inovec and Štiavnické hills. Originally, a dominant natural scenery was built by the Slovenská brána, formed by the foot of Pohronská upland and southwestern slope of Štiavnica Hills with the river Hron. In the immediate neighborhood reservoir (dam) Veľké Kozmálovce was built serving as the reservoir of surface water for the NPP Mochovce. The nature and the landscape scenery has been affected by the construction of NPP Mochovce during which certain parts of Kozmálovce hill have been changed. This state was already at the time of preparation and construction of SE-EMO12, e.g. before a specified time period.

4.3 STATE OF THE NATURAL ENVIRONMENT INCLUNDING THE PROTECTED AREAS

In the area of MO34+20 km it is possible to find either fully or partially protected areas:

PROTECTED AREA (PA):

Mlyňany Arboretum: Protected area to protect Slovak and exotic species (from the Mediterranean area, East Asia, the Caucasus, Central Asia, North America). The garden was founded by Dr. Štefan Ambroz Migazzi as a private object in 1892 to study the acclimatization problems of plants in our climatic conditions. It also detects the suitability of exotic species for domestic economic purposes. Arboretum collects and presents both global and domestic gene pool of plants. Protection level 4, area of 611 479 m2.

PA Sandorky: The purpose of the PA is to ensure protection of habitats of the European importance: dry grasslands and scrubland on calcareous substrates with a significant occurrence of species of the family Orchidaceae (6210), Sub-Pannonic grasslands (6240), Xero scrubs (40A0), Pioneer scrubs of Alyssa-Sedion Albi on shallow carbonate and base substrates (6110) and plant species of European significance: pasque flower (Pulsatilla grandis) and (Echium russicum). Protection level 3, area of 31 132 m2.

Ponds of Levice: The purpose of PA is to protect the waterfowl and aquatic biota for scientific research. Protection level 3, area of 918 300 m2.

Bison game-preserve in Topoľčianky: The purposeof the PA is to create an environment for the protection of European bison under an international convention. The PA is used as an international scientific-research facility for the study objectives of the European bison biology. Protection level 3, area of 1 401 600 m2.

Bohunice park: an important component of the natural environment of the district Levice. It has microclimatic and hygienic importance and is of great biological, scientific, aesthetic and cultural value. It contributes to increasing the diversity of deforested agricultural land and to stabilize the environment of the Levice district. Protection level 3, area of 36 028 m2.

Klasovo Park: Protection of a historical park in free landscaping treatment at the mansion in Klasovo. One of the oldest acacias (Robinia pseudoacacia L.) in the former Austrian-Hungarian monarchy. Protection level 3, area of 39 900 m2.

Lapáš Park: Protection of the historic park surrounding the mansion in the village Lapáš at the cooperative cellar. The park has been greatly reduced by planting an orchard. The park has a diverse dendrological composition, the 150-year-old linden tree is remarkable. Protection level 3, area of 21 900 m2.

Levický Park: Protection of the historic park in Levice. Protection level 3, area of 17277 m2.

Novoveský Park: Historical Park in Nova Ves nad Žitavou with 2 mansions and overall 99 species of trees, some of which are rare. The park has great biological, architectural and aesthetic value. Protection level 3, area of 65 900 m2.

Park in Topoľčianky: Extremely valuable historical park on the outskirts of the village Topoľčianky, near the castle which passes freely into the forested mountain of Tribeč. One of the largest and oldest parks in Slovakia - some species are from 1800-1810. Overall, there are more than 300 taxa of plants represented. Protection level 4, area of 103 300 m2.

Park in Žitavce: Protection of the historic park in Žitavce around the mansion. The inlet section is designed regularly, the rest is free landscaping. The park grows 13 kinds of exotic species. Protection level 3, area of 44 900 m2.

NATURAL RESERVE (NR)

Natural reserve Krivin: is of great importance for the appearance of a large number of protected, rare and endangered plant and animal species. It is a location of the Pannonian flora and fauna with a small number of Carpathian mountain species. It also has archaeological value. Protection level 5, area of 541 500 m2.

Natural Reserve Bujakov vrch: concentrated occurrence of pasque flower. One of the northernmost sites of the Central region. Protection level 4, area of 1 581 m2.

NR Kusá hora: was declared to ensure the protection of significant fragments of the xeroterm steppes on andesites with some endangered species of Slovakian flora. Protection level 4, area of 61 579 m2.

Natural Reserve Zitavsky luh: The territory is the last residue of the original meandering stream where the every year many protected species of avifauna nest. At the same time it is a favourite location of waterfowl during migration. Protection level 4, area of 746 884 m2.

NATIONAL NATURAL RESERVE (NNR)

National natural reserve Horšianska dolina: Protection of unusual geomorphological formation - valley cut deep into the andesite bedrock of Ipeľská pahorkatina with steep slopes and with high walls of 20-30 m in certain areas. It is a colorful thermophilic vegetation with rare species. Protection level 4, area of 3 133 772 m^2.

NNR Patianska Cerina: Protecting the most pristine samples of cerova stand of the uplands of southern Slovakia for scientific research, educational, cultural and educational goals. Protection level 5, area of 265 500 m^2.

NNR Včelár: Protection of the xerophilous and thermophilic plants and animal communities of the rocky steppes for scientific research, educational, cultural and educational goals. Protection level 5, area of 87 600 m^2.

NATIONAL MONUMENTS AND NATURAL LANDMARKS

National Natural Monument Starohutiansky waterfall: The waterfall is placed up to 5 m high on an unnamed stream flowing into the Starohutianského potok. The wider area of the waterfall is built by Tertiary volcanic rocks represented by the various types of andesites and andesitic vulkanoplastics.

Natural monument Veľký Inovec: Protection of relict forms of andesite flow of top type as evidence of geological and geomorphological evolution of the volcanic structured relief of Pohronsky Inovec and preserved plant and animal communities of the foothills and mountainous stage of volcanic soil. Protection level 4, area of 84 000 m2.

Natural monument River Žitava: protection of the old river Žitava with riparian vegetation as a valuable biological and landscape element in the intensively cultivated land, important for scientific-research, cultural, educational and environmental concerns. Protection level 4, area of 18 221 m2.

Natural monument Putikov vŕšok: The purpose of the natural monument is to ensure protection of the youngest volcanic activity site in Slovakia, with a relatively small volcanic destruction of the structure. Protection level 5, area of 210 600 m2.

In the specific period of time no direct or indirect significant changes in these areas, due to the activities of "Completion of Units 3 and 4 of Mochovce NPP" have been proved.

Spatial distribution of protected areas is shown in the following figure:

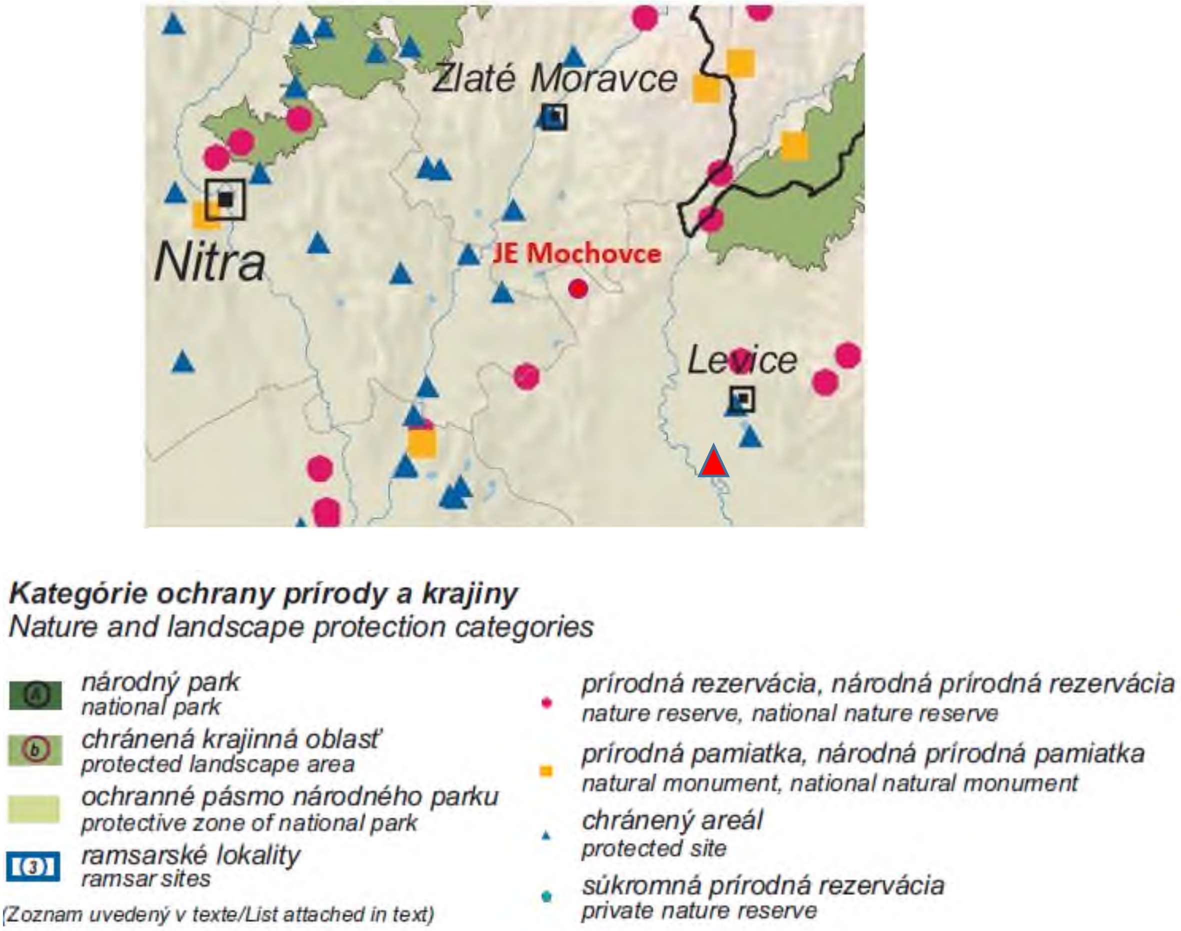


Fig. no. 3: Territorial nature and landscape protection

4.4 TERRITORIAL SYSTEM OF ECOLOGICAL STABILITY, PROTECTION OF SOIL, WATER, AIR, WILDLIFE

TERRITORIAL SYSTEM OF ECOLOGICAL STABILITY

Territorial system of ecological stability (TSES) is defined as a whole structure of interconnected ecosystems, their components and elements, which ensures the diversity of conditions and forms of life in the country. TSES is the most complex solutions in the Act no. 543/2002 Z.z. on nature and landscape protection.

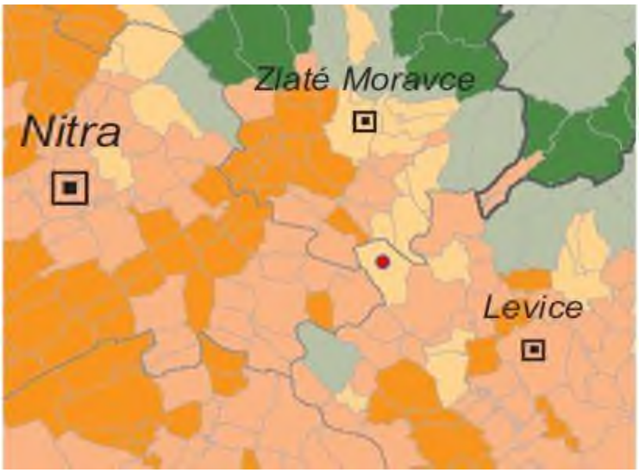
The purpose of ecological stability of the country is the ecological network. The principle is to cover the entire territory of Slovakia so that network elements - the nodes (bio-centers, bio-corridors, interactive elements) create the basis for maintaining species diversity in the country. It is not to declare valuable areas in the system of protected areas, but to create nodes that are of importance to maintain ecological diversity in industrialized and agricultural landscape and the ecostabilizing efficiency.

The term TSES is also related to the concept of biodiversity. Biodiversity is the diversity of conditions and forms of life in the area. In Slovakia, the basic characteristic of biodiversity is the nature and representativeness of the area under consideration.

The SR developed and approved a TSES concept in 1991 which is based on the Master Plan of supra-territorial system of ecological stability (MPSSES) of the Slovak Republic. The concept was approved by the Government Resolution no. 319 in 1992. It was subsequently revised and modified in 2000. All TSES documents of lower lever refer to this document.

The Government Resolution issued in 1998 approved the territorial plan of the large territorial unit of the Nitra region as a regional TSES.

The territory of NPP Mochovce was classified in terms of the coefficient of ecological quality of the area with moderately high coefficient of quality, representing a minimal impact of construction on the environment.



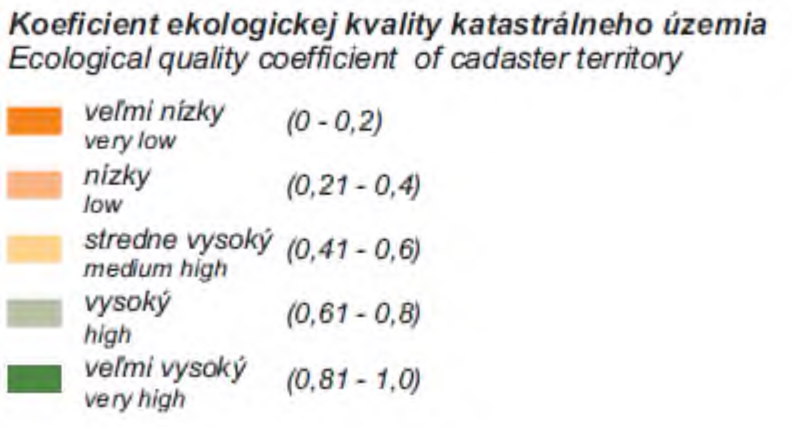
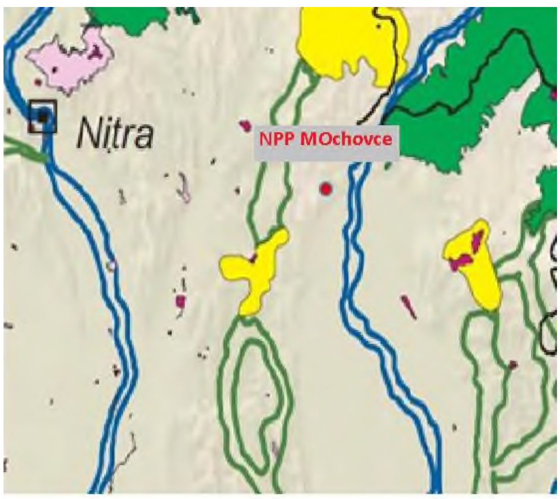


Fig. no. 4: Ecological quality of the cadastral areas by structural use, the state in 2007

According to another definition ecological stability can be understood as the ability of ecosystems to persist during operation disturbance, store and reproduce its essential characteristics also in the conditions of tampering from the outside. When assessing the ecological stability of the territory MO34 + 20 km from the viewpoint of the "Completion of Units 3 and 4 of NPP Mochovce" in a specific period of time the report will be focused in ecological stability formulated. SE-MO34 is situated between two bio-corridors:

- Hydric, supra-regional bio-corridor: Hron and the adjacent riparian vegetation,
- Terrestrial, supra-regional bio-corridor: Gbelce - Patianska Cerina - Zudrok - Včelár.

Due to the distance, but also the nature of the activity "Completion of Units 3 and 4 of NPP Mochovce" it can be concluded that the corridors were not a directly or indirectly affected in the specific period of time.



Biocentres zone	Level of territorial protection under the law 542 / 2002				
	1	2	3	4. a 5. status	4. a 5. proposal
core bio-centers					
bio-center body					
buffer biocentre					
The most important trans-regional bio-corridors					
hydric biocorridors					
terrestrial bio corridor					

Fig. no. 5: Territorial system of ecological stability

In the context of preparation of urban planning documentation for some of the cities situated in the area MO34 + 20 km and its wider surrounding local TSES projects were developped. These include suggestions for measures to be taken to maintain and increase the ecological qualities of major TSES elements. The following towns and villages are involved: Pohranice, Ladice, Dolné Obdokovce, Veľký Lapáš, Malý Lapáš, Vráble, Zlaté Moravce, Topoľčianky, Tesárske Mlyňany, Kozárovce, Rybník, Čajkov, Nová Dedina, Žemberovce, Brhlovce, Levice, Hronské Kosihy, Hronské Kľačany, Nový Tekov, Malý Cetín, Čechynce, Trávnica, Bardoňovo, Podhájska a Horná Seč.

Areas relevant for the conservation of the natural environment around MO34 + 20 km were not directly or indirectly affected by the activity of "Completion of Units 3 and 4 of NPP Mochovce".

PROTECTION OF SOIL

According to this report the the state in the year 2011 is considered as the initial level and the specific period of time reflects the impact of the years 2012 - 2014. In 2011 the construction of SE-MO34 was at a certain stage. It can be stated that in terms of the construction activity the occupation of land was acomplished before 2011. Therefore, it is possible to state that the activity of "Completion of Units 3 and 4 of NPP Mochovce" has minimal, not significant or no demands for occupation of new land. As such, the NPP Mochovce Units 3 and 4 will be built and operated in the future by the already existing auxiliary operations SE-MO12, which means that even in this respect no further land will be occupied.

Before the construction and commissioning of SE-EMO12 was the quality of the soil closely monitored for radionuclide and classical contamination, in order to determine the background or the baseline situation. After the comissioning of SE-EMO12 a year-round monitoring was carried out by the radiation monitoring laboratories. Since the "Completion of Units 3 and 4 of NPP Mochovce" is a construction and installation activity, it has no effect on the radioactive contaminantion as such. It is not relevant to assess such impact.

In the measured values of non-radioactive contamination soil contamination by conventional emissions (soot) was found before the construction of SE-MO34 on the leeward (eastern) side of the town residential area of Levice, Tlmace and Zlate Moravce.
The extent of the pollution was on several tens of hectares. Narrow strips of land along the roads Nitra - Nova Bana, Nitra - Levice and Kalna nad Hronom - Želiezovce were contaminated with lead. In the area of NPP Mochovce soil and rock contamination was negligible. That finding also applied to the years 2012 to 2014.

Soil types in the wider surrounding of the are MO34 + 20 km:

- Alluvial soils on non-carbonate alluvial sediments in a narrow strip along the existing river bed of Hron,
- Mollic on non-carbonate alluvial sediments in two isolated islands on the left edge of the Hron River floodplain from Tlmače to Hronské Kľačany and between Levice and Jur nad Hronom in the floodplain of Žitava from Vráble to the southern border of the territory,
- Degraded black soil on loess terrace on the right bank of the river Hron from Malé Kozmálovce up to the southern border of the area and in the alluvial plain of Kadaň brook in Golianovo,
- Gley soils of non-carbonate alluvial deposits in the alluvial plain of Žitava from Obyce to Vrable and the plain of the river Sikenica under Krškany,
- Brown soils on loess in Žitavská, Pohronská and Ipeľská uplands (only eastward from Levice),
- Gley brown soil on loess and polygenetic clay in the foothills of the Štiavnické vrchy from the Rybník to Nová Dedina and Devičany, in the ridge of Pohronská uplands from Beša to Volkovce from Veľký Lapáš to Pohranice and in the left-bank areas of Sikenice from Bátovce southwards.

WATER PROTECTION

The Water Framework Directive

The current form of planning in the field of water management in the Slovak Republic is based on the requirements of the Directive 2000/60/EC of the European Parliament and of the Council of October 23, 2000 establishing a framework for Community action in the field of water policy (abbreviated called the Water Framework Directive, WFD).
By the act of approval of the WFD a responsibility arose for the Member States of the EU to transpose it into the national legislation and ensure its implementation by December 22, 2003. For Slovakia, at that time as an acceding country to the EU, the obligation imposed on the date of its accession, on May 1, 2004, when the WFD transposed into Act no. 364/2004 Coll. on waters and amending Act No. 372/1990 Coll. of the Council of SR on offenses as amended (Water Act) and its implementing rules.

WFD establishes a legal framework to protect and improve the status of aquatic ecosystems and sustainable, balanced and equitable water use. It introduces a new approach for water management based on river basins and natural geographical and hydrological units, and imposes specific deadlines to EU member countries for the development of river basin management plans, which include the programs of measures. A new approach to water protection allows you to create a unified system of assessment systems within the EU bringing reliable and comparable results on the state of water bodies in any region of Europe, and the same process of defining objectives and implementing necessary measures to protect and improve the water status. The subject of WFD is surface water (rivers, lakes), transitional, coastal, underground and under certain specific conditions terrestrial ecosystems dependent on water and wetlands. WFD introduces a number of innovative approaches to water management, such as public participation in the planning, integration of economic approaches in the planning and integration of water policy with other economic sectors.

Water Plan of Slovakia

Following the requirements of the WFD and in accordance with Act no. 364/2004 Col. on water the Water Plan of Slovakia was prepared under the auspices of the Ministry of Environment. It includes:

- Management plan of the national part of the river basin of the Danube, in which the management plans for sub-basin Morava, Danube, Vah, Hron, Ipeľ, Slaná, Bodva, Hornád and Bodrog are integrated; The sub-basins in these rivers are concerned in the MO34 project;
- Management plan of the river basin Vistula, in which the management plans of the Dunajec and Poprad as a single sub-basin of the administrative area are integrated.

Legend	
River basin of the Danube	
River basin of the Visla	
Bord of the sub-basin	
Main river of the sub-basin	
State border	

Fig. no. 6: SR river basin districts and sub-basins

The current Water Plan of Slovakia is the result of the first planning cycle of the WFD and was prepared for the period of 2009 - 2015. It was approved by the Government and its binding part containing the program of measures has been announced by the Government Regulation of the SR.

The planning cycles of the aquatic plans are set for a period of six years, the second planning cycle for the Water Plan of Slovakia will be for the period of 2016-2021.

Territory of MO34 + 20 km and its links to water

The "Completion of Units 3 and 4 of NPP Mochovce" can affect the surface features of the river Hron (sub-basin of the river Hron) and Telinsky potok (sub-basin of the river Váh) and groundwater by pumping wells HMG-1 and HMG-1/A in Červený Hradok (about 8 km away from NPP Mochovce). In terms of water management of NPP Mochovce the major hydroelectric project is situated on the river Hron in Veľké Kozmálovce (river kilometer 74.00) as a source of surface water for cooling purposes and engineering as well as a recipient for waste water (seepage in the vicinity of the water work).

The river Hron as a whole is divided into five water bodies (SKR0001 - SKR005). Two water bodies are partially situated in the area of MO34 + 20 km - the water body SKR0005 (river kilometer 82.00 - 00.00) and water body SKR0004 (river kilometer 174.00 to 82.00). Telinsky potok (used as a recipient of some wastewater) belongs to the sub-basin of the river Nitra which belongs to the sub-basins of the river Váh and is marked as body SKN0060.

Through wells HMG-1 and HMG-1/A the ground water is collected and supplied to NPP Mochovce from water bodies in Quaternary sediments, the international code of the water body is SK1000700P.

Water quality management

Monitoring of groundwater quality in Slovakia in. 2014 via state monitoring network

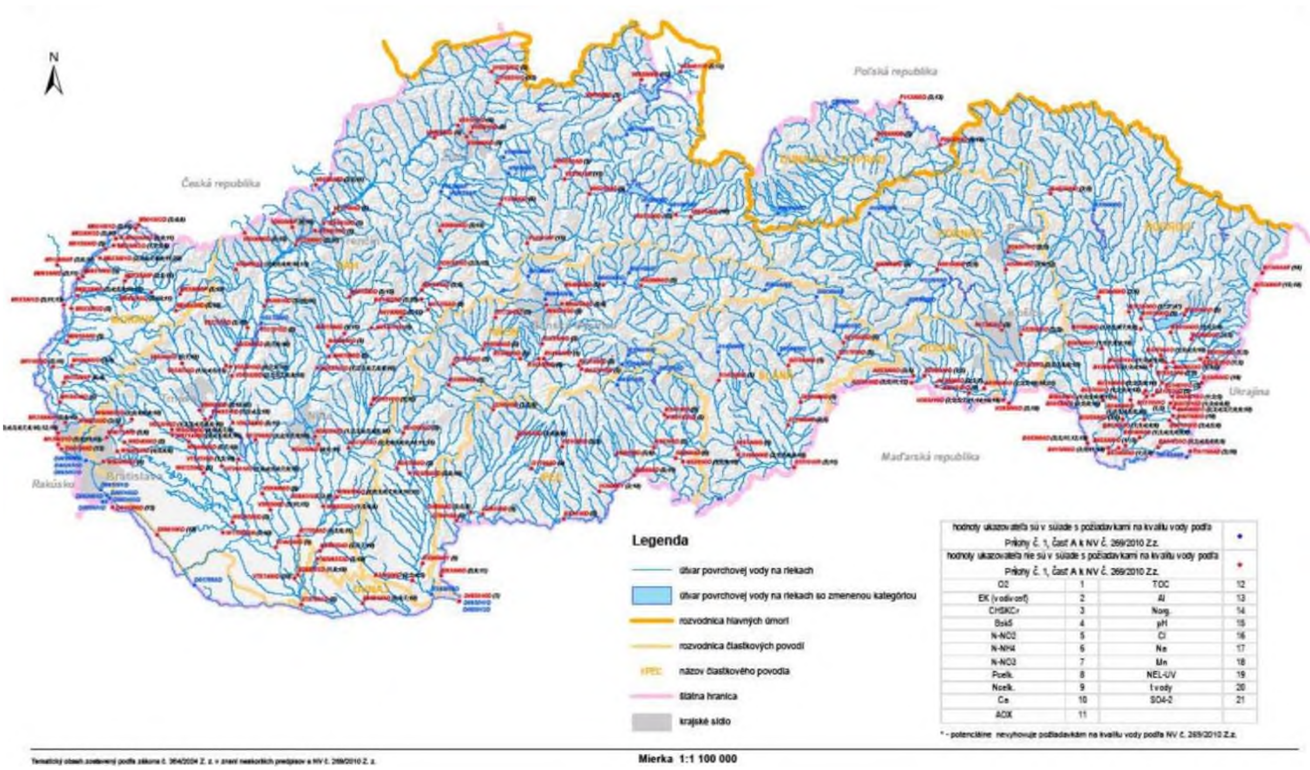


Fig. no. 7: State monitoring network of surface water quality in the Slovak Republic in 2013

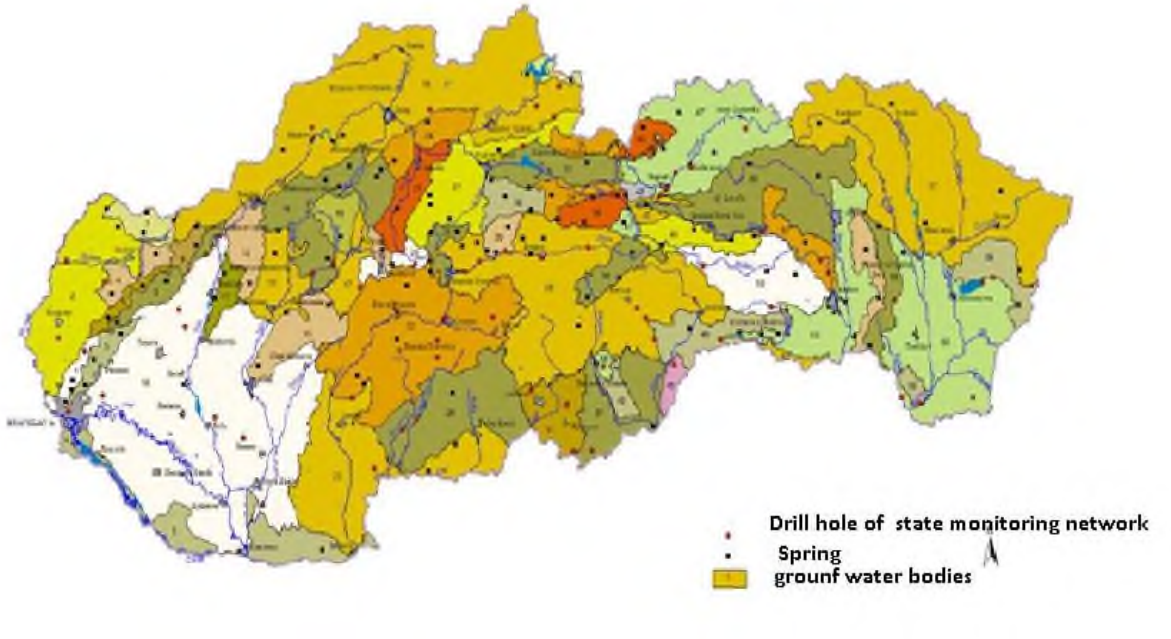


Fig. no. 8: The state monitoring network of groundwater quality in Slovakia in 2014

The withdrawal of the water from the water body and the discharge of waste water into the water body are possible only on the basis of a license issued by the competent state authorities. The water customer and wastewater producer must fully respect the conditions specified in the decision of the authority. Water intake and discharge of waste water may not begin until after the conclusion of the contractual relationship with the administrator of the river basin.

Summary record on waters

The task to keep a Summary record on waters results from the Act No. 364/2004 Col. §29 on waters.

The record on waters is divided into:

a) surface water and groundwater bodies
b) the quantity and quality of water in water bodies including the impacts of human activities
c) the rights and obligations arising from decisions of the state water authorities,
d) protected areas and other areas protected under this Act

The state water authorities keep records of permits and other decisions issued by them and the authorized person keeps a summary record of the waters according to the division in the preceding paragraph.

The record on waters is available to the public. Everyone has the right to make copies of it at an authorized person and a competent state water management.

The mandate for SHMI to keep aggregated records on the waters is given by the Decree of Ministry of Environment and Ministry of Agriculture and Rural Development of the SR No. 418/2010 Col.

laying down the details of detecting the occurrence and evaluation of surface water and groundwater, their monitoring and record keeping on water and the water balance.
Data on consumption of surface water, groundwater abstractions and wastewater discharges into surface or groundwater are transmitted by the operators by January 31 of the following calendar year on the SHMI forms.

Surface water quality - sub-basin of the river Hron
The sub-basin of the river Hron from the point of view of the "Completion of Units 3 and 4 of NPP Mochovce" should be assessed by two basic characteristics:

- Ecological status of the Hron sub-basin;
- Chemical status of the Hron sub-basin.

Data on these two characteristics are publicly available in the "Report on the State of the Environment of the Slovak Republic" (the State of the Environment of the SR), which is annually issued by the Ministry of the Environment and SEA.

Data on the ecological and chemical status of the sub-basin of the river Hron in the Report on the state of the environment of the SR:

1. The Reports on the state of the environment of the SR for years 2011 - 2013 consistently show the characteristics of ecological and chemical status in the year 2010th
2. The Report on the state of the environment of the Slovak Republic for 2014 indicates the characteristics of the ecological and chemical status also for the period of 2009-2012.

The data on the ecological and chemical status of the sub-basin of the river Hron are not available in periods of time that could be useful to assess these characteristics in a specific period of time.The State of Environment of the Slovak Republic for 2014 does not include characteristics for 2011 and 2012, but the cumulative characteristics for the years 2009 to 2012.

The further stated information on the ecological and chemical sub-basin of the river Hron is only of informational character, since the actual situation in a specific period of time may be substantially different.

Ecological status of the sub-basins in the period 2009-2012

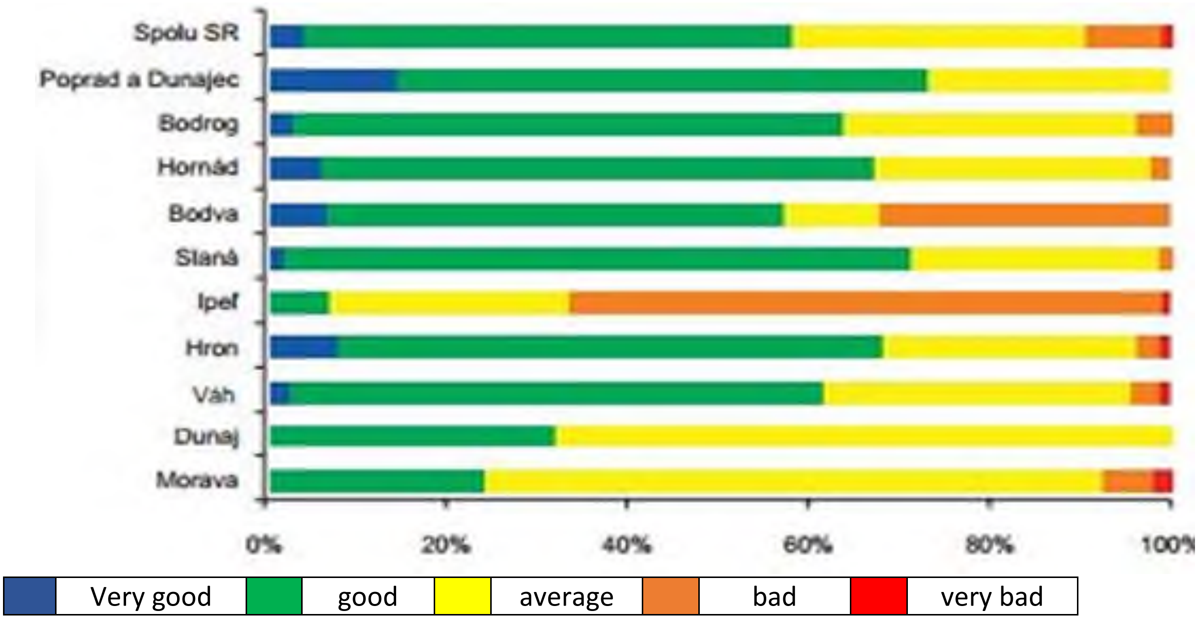


Fig. no. 9: Ecological status of the sub-basins in the period 2009-2012

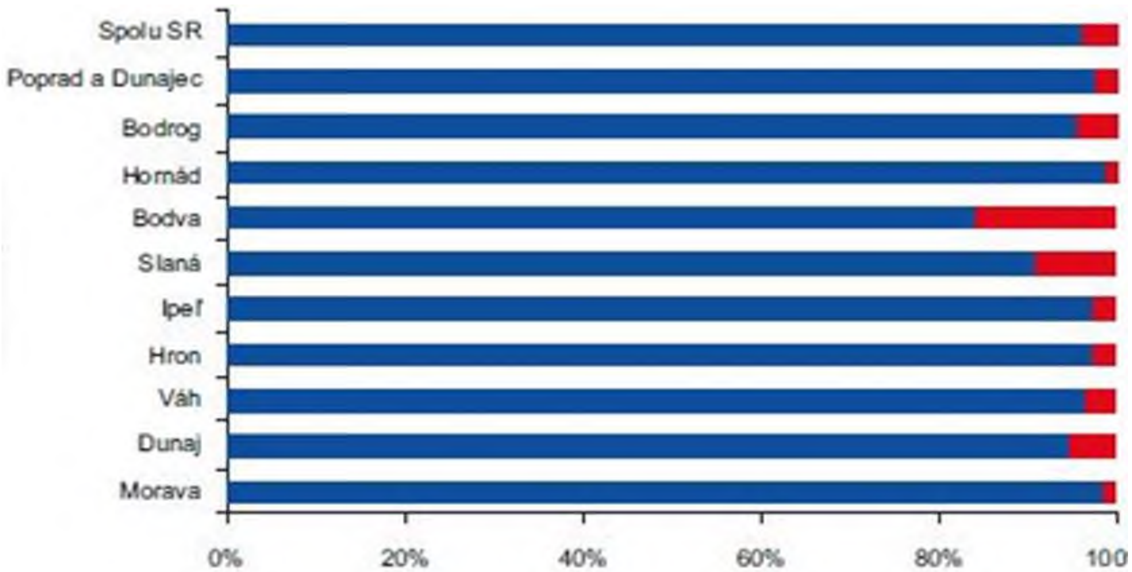
In the period 2009 - 2012 the ecological status of the sub-basin of the river Hron may be assessed as follows:

- Very good ecological status - 7% of the sub-basin
- Good ecological status - 61% of the sub-basin
- Average ecological status - 28% of the sub-basin
- Bad ecological status - 3% of the sub-basin
- Very bad ecological status - 1% of the sub-basin

In the period 2009 - 2012 the ecological status of sub-basin of the river Vah was assessed as follows:

- Very good ecological status - equivalent to 2.7% sub-basin
- Good ecological status - equivalent to 58.7% of sub-basin
- Ecological state average - equivalent to 33.3% of sub-basin
- Bad ecological status - equivalent to 3.3% sub-basin
- Ecological status is very bad - equivalent to 2% of the sub-basin

Chemical status of the sub-basins in the period 2009-2012



Good chemical status | Unsufficient chemical status

Fig. no. 10: Chemical status of the sub-basins in the period 2009-2012

In the period of 2009 - 2012 the chemical state of the sub-basin of the river Hron may be assessed as follows:

- Good chemical status - 97.5% of the sub-basin
- Failing to achieve good chemical status - 2.5% of the sub-basin.

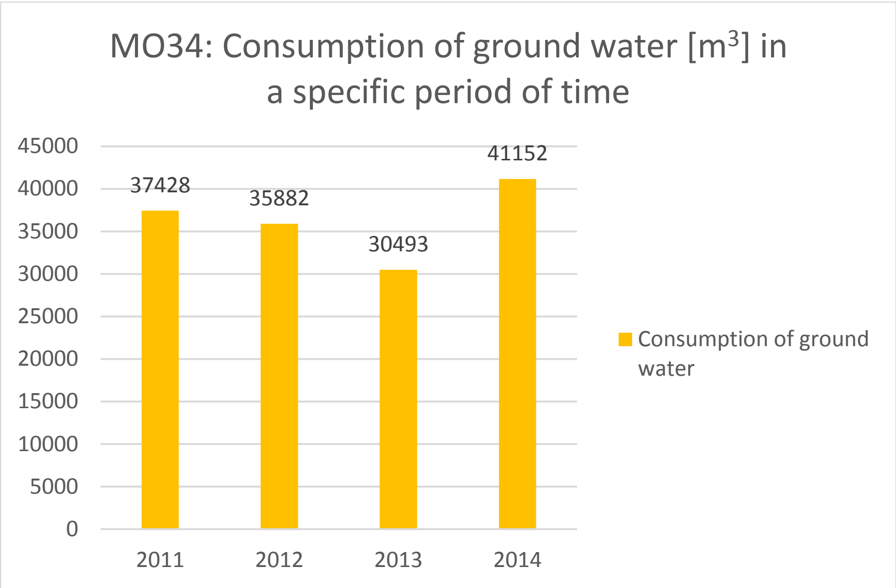
In the period 2009 - 2012 the chemical status of sub-basin of the river Vah was assessed as follows:
– Good chemical status - 89.8% Sub-basin
– Failing to achieve good chemical status - 10.2% Sub-basin.
The data on the ecological status and the chemical status of the sub-basin and its water bodies in the area of MO34 + 20 km for the period of 2009 - 2012 will not be commented on due to the fact that it is not possible to get information from the data for the defined period of time.

The surface water collected from the waterworks Veľké Kozmálovce and the waste water discharged into the Hron River in the vicinity of the dam (under the water reservoir) have only common measurements of collected surface water and discharged waste water for the NPP Mochovce as a whole. It is therefore possible to say how much of the sampled and consumed surface water was used together for the operation of SE-EMO12 and for the "Completion of Units 3 and 4 of the NPP Mochovce." The same applies to the discharged waste water due to one joint permit for collection and discharge of water into the river Hron but for the operational facility MO 34 values are calculated.

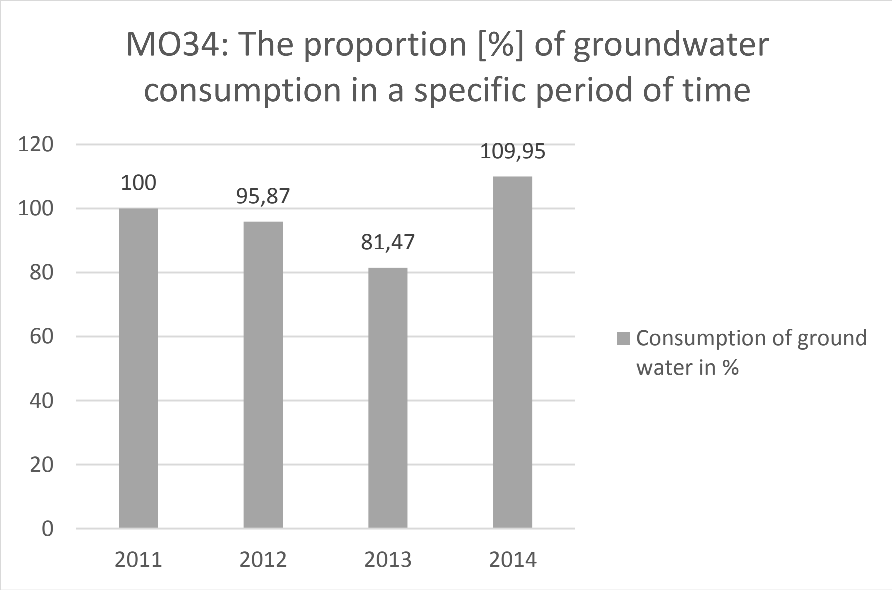
The decision of the Regional Office in Banská Bystrica no. 1094/2/177 / 405.1 / M-93 from 6.7.1993 allows the NPP Mochovce (among other conditions) in paragraph I.3 of the Decisions of surface water consumption from the reservoir of the dam Veľké Kozmálovce the following:

- The maximum amount of collected surface water is 1.8 m3/s;
- The average amount collected is 1.5 m3/s i.e. 129,600 m3/day, 47.304 million m 3/year.

The groundwater for NPP Mochovce is pumped based on the decisions issued by the Western Regional State Commission in Bratislava on 29.4.1985 No. PLVH-4/1746, 1747/1984-8.
The maximum allowed flow rate is 18 l/s (568,037 m3/year) for HMG-1 and 15 l/s (473,364 m3/year) for HMG-1/A.



Graph 7: The consumption of groundwater in SE-MO34 in specific period of time

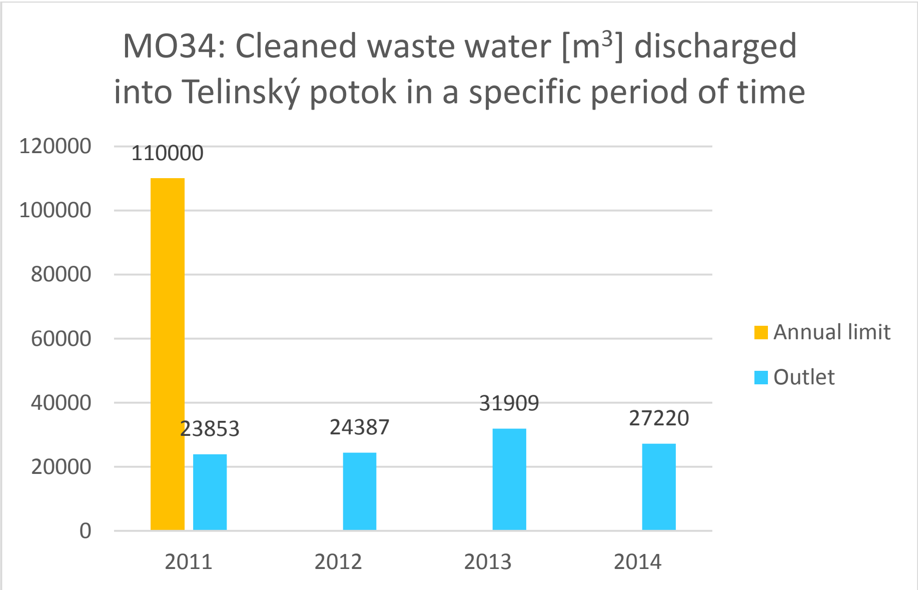


Graph 8: Proportional number of groundwater consumption in SE-MO34 in specific period of time

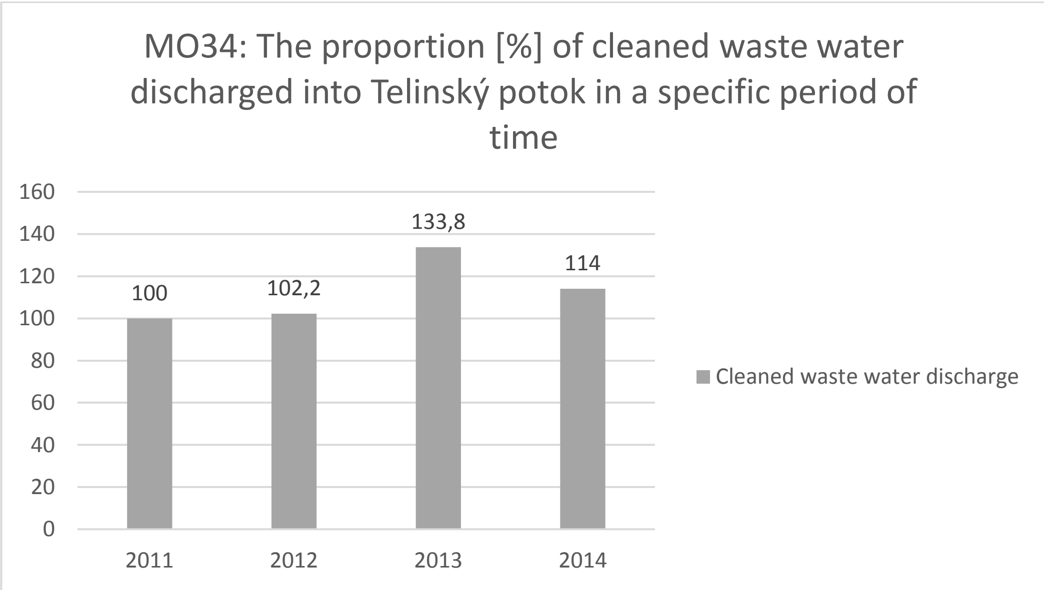
The increase in the consumption of groundwater by 9.95% in the year 2014 compared to the consumption in the year 2011 is associated with an increased number of employees of supplier organizations and also of SE-MO34.

Waste water produced in SE-EMO12 and rain water from the NPP Mochovce as a whole is discharged into the river Hron. Waste water and rain water are discharged by three types of drainage system (sewage, rain, industrial - special) into a common drain pipe (ø 1000 mm, steel, full length covered by concrete) of about 6,0 km long through gravity into the river Hron. Water from the SE-MO34 (building site) and off water from Čifáre and from drinking water treatment is discharged into Telinský potok.

According to the legislation, regulations and following the decision of the company, taking and analyzing samples for monitoring limit values of wastewater at SE-MO34 is performed by an accredited laboratory at NPP Mochovce. Four times a year an analysis of samples composed by mixed samples regularly collected for 8 hours is carried out. In current practice limits were not exceeded.



Graph 9: Discharged waste water into Telinský stream in a specific period of time



Graph 10: Proportional number of discharged waste water into the Telinský potok in specific period of time WTP MO34

Graphic representation of characteristics made by processing data contained in the documents: "The comprehensive report on the state of the environment in SE-MO34" and "A comprehensive report on the environment in SE-EMO" in the specific period of time. Trend of the volume of treated discharged wastewater.

Telinský potok is partially related to the amount of water collected and consumed. The difference between the collected water and the released waste water is the water use in activities related to the "Completion of Units 3 and 4 of NPP Mochovce". The amount of treated discharged wastewater in 2013 was affected by the excessive atmospheric precipitation, which caused the discharge of rainwater into the sewage system through sewage hatches or tanks directly into the WWTP.

AIR PROTECTION

The Slovak Republic is one of the parties of the United Nations Economic Commission for Europe (UNECE) on long-range Transboundary Air Pollution (signed in Geneva in 1979, for Czechoslovakia it came into force in March 1984, the SR has been the follower since May 1993). Implementing Protocols with commitments which were designed for parties to the Convention to reduce individual anthropogenic emissions of pollutants that contribute to global environmental problems have been progressively taken.

- In 1994 the Protocol on further reductions of sulfur emissions was adopted in Oslo, the Slovak Republic ratified it in January 1998, the Protocol entered into force in August 1998,
- In 1998 the Protocol on Heavy Metals to the UNECE Convention on Long-Range Air Pollution was drawn up in Aarhus. Slovakia signed the Protocol in the same year.
- In 1999 the Protocol to Abate Acidification, Eutrophication and Ground-level ozone was adopted in Gothenburg, it was signed by the SR in 1999.
- In 2007 the Directive of the Council No. 1999/13/EC of March 11, 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and in certain facilities entered into force.

Legislative framework for climate protection in the Slovak Republic consists of:

- Act no. 137/2010 Coll. on Clean Air, as amended later.
- Act no. 137/2010 Coll. the Air was amended by Act no. 318/2012 Coll.
- Act no. 414/2012 Coll. on Emission trading and on amendment of certain acts.

In 2014 the following acts were amended in the field of air:

- Act no. 414/2012 Coll. on Emission trading and on amendment of certain acts was amended by Act no. 399/2014 Coll. The change does not affect the "Completion of Units 3 and 4 of NPP Mochovce".
- The Decree of the Ministry of the Environment no. 410/2012 Coll., which implements certain provisions of the Act on Clean Air was amended by the Decree of the Ministry of the Environment no. 270/2014 Coll. The change does not affect the "Completion of Units 3 and 4 of NPP Mochovce".

Programs and integrated programs for pollutants

According to § 11.1 of Act no. 137/2010 Coll. the program (for one pollutant) and integrated program (for more pollutants) determine measures to improve air quality in the areas of air quality management in order to achieve good air quality at the time.

Action plan to ensure air quality

The purpose and terms of action plans to ensure the air quality are regulated by § 12 of Act no. 137/2010 Coll. on Clean Air.
Action plans to ensure air quality include short-term measures to be carried out if there is a risk that the pollution levels exceed the limit values of the pollutant in any of the zones or agglomerations. According to § 12.4 of Act no. 137/2010 Coll. on Clean Air the Action Plans to ensure air quality are issued by the district authorities by an Order and shall publish information on its implementation.

Air quality

Air quality is generally determined by the content of pollutants in the ambient air.
Air quality assessment is carried out as required by Act no. 137/2010 Coll. on Clean Air, as amended. Air quality criteria are set out in the Decree of the Ministry of Environment and Rural Development No. 360/2010 Coll. on air quality. The starting point for assessing air quality in Slovakia are the results of measurements of air pollutants, which are implemented by the Slovak Hydrometeorological Institute (SHMI) at the stations of the National Air Monitoring Network (NAMS).
In accordance with the requirements of the Clean Air Act, the territory of the Slovak Republic is divided into 8 zones and 2 agglomerations and within them were identified 19 areas of air quality management.
<u>The ambient air quality management is defined by agglomeration or part of the zone where the following is exceeded:</u>

- Limit value of one substance or more pollutants plus the margin of tolerance,
- Limit value of one substance or more pollutants, unless limits of tolerance - target value for ozone are specified, $PM_{2,5}$ particles, arsenic, cadmium, nickel and benzo(a)pyrene.

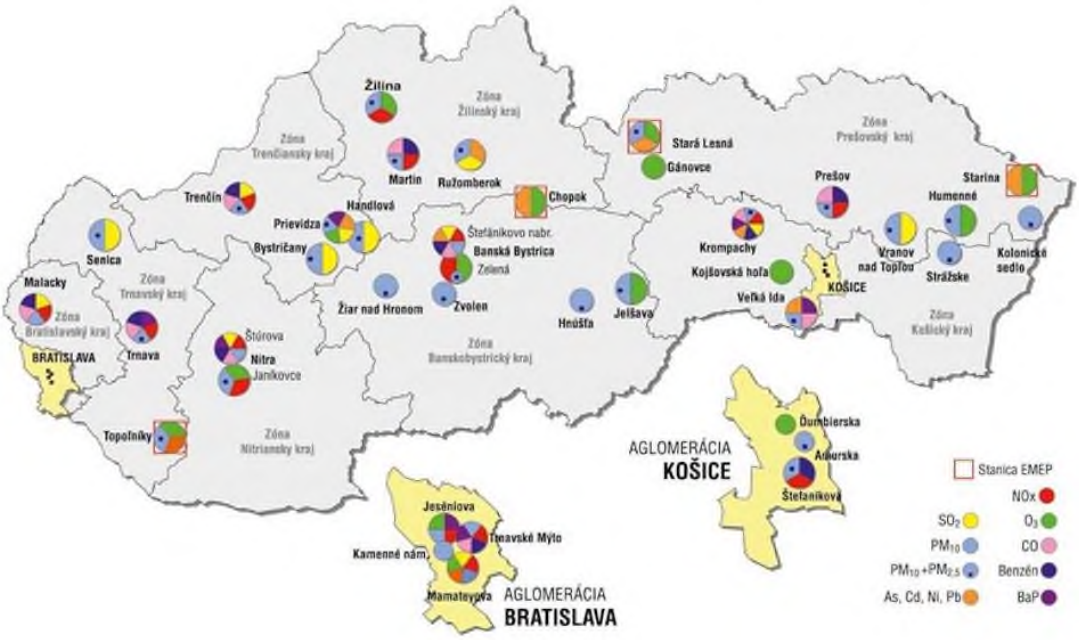


Fig. no. 11: National Air Quality Monitoring Network (NMSKO)

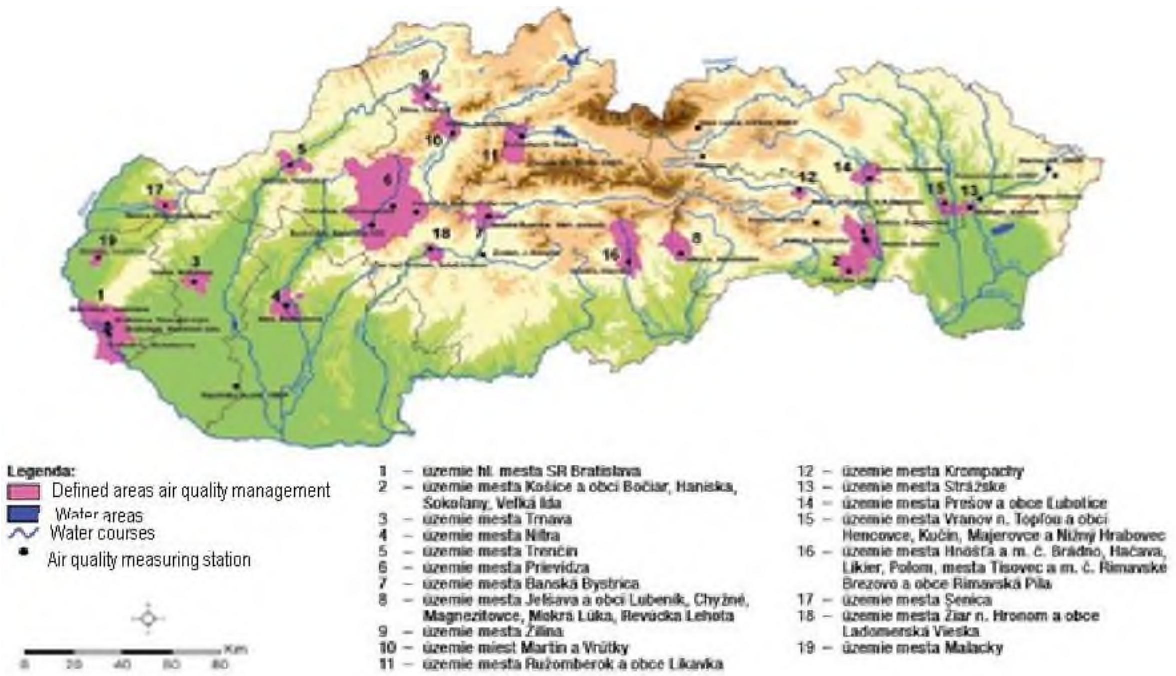


Fig. no. 12: Management of air quality

The territory MO34 + 20 km is not included in the air quality management. That means that in this area no limit values have been exceeded:

- Limit value of one substance or more pollutants plus the margin of tolerance,
- Limit value of one substance or more pollutants, unless limits of tolerance - target value for ozone are specified, $PM_{2,5}$ particles, arsenic, cadmium, nickel and benzo(a)pyrene.

The closest distinct area of air quality management from the territory of MO34+20 km is the area of Nitra.

Air quality management

The basic act in the field of air protection is the Act no. 137/2010 Coll. on Clean Air, as ammended, and following acts, decrees and orders. Any polluter - producer of air pollutants discharged into the environment, must request the relevant state authorities for permission to discharge them (permitting authority). After obtaining the decision drawn up by the authorizing authority, which includes the authorization to discharge such substances the producer may discharge them into the air. The decision of the authorizing body, among other requirements also includes limit concentration values. The polluter is obliged without exception (unless exemption is not part of the decision) to keep the concentration limit values set out in the decision. The balance (quantity) of the pollutants released into the air (unless the units are fitted with continuous measurement) is conducted in a manner to be agreed with the authorized body (eg. measurement or calculation).

The polluters are required to notify and report the quantities of pollutants they produced and released into the environment (National Registry of pollution, National Emission Information System). SE-MO34 as part of the Slovenské elektrárne, a.s. is included in the EU ETS (European Trading System Emissions). The legislative framework for emissions trading constitutes Act No. 414/2012 Coll. on emission trading and on amendment of certain acts, as amended by Act no. 399/2014 Coll.

Inclusion in the EU ETS is part of the air quality management and makes a major contribution to the positive trends in protection against greenhouse gases. SE EMO has allocated free of charge CO2 allowances for greenhouse gas CO2 quotas. For example the decisive contributor for SE-MO12 is a start-up boiler room which has an approved monitoring plan for CO2 every year in the EU ETS system with a report on the production and monitoring of greenhouse gas emissions.

Specific legislative and governing documents are cited in the chapter. 5.2

Publication of data on air quality

Air quality data measured and processed annually are published by the SHMI Ministry of Environment and SEA in the "Report on the State of Environment of the Slovak Republic" (Report on the state of the environment of the SR) for the corresponding previous year.

Air quality of the territory of MO34 + 20 km in a specific period of time is assessed according to the information of specific territorial emissions of CO, NOx, SO2 and particulate matter emissions according to the specific territorial individual districts falling wholly or partly within the territory of MO34 + 20 km.

- Report on the state of the environment of the Slovak Republic in 2011 contains data about CO, NOx, SO2 and PM emissions achieved in 2010;
- Report on the state of the environment of the Slovak Republic in 2012 contains data about CO, NOx, SO2 and PM emissions achieved in 2011;
- Report on the state of the environment of the Slovak Republic in 2013 contains data about CO, NOx, SO2 and PM emissions achieved in 2012;
- Report on the state of the environment of the Slovak Republic in 2014 contains data about CO, NOx, SO2 and PM emissions achieved in 2013;

It can be assumed that the report on the state of the environment of the Slovak Republic from 2015 includes details of the specific local and regional emissions of CO, NOx, SO2 and PM emissions achieved in the year. 2014. In Annex 22 values of a specific territorial emissions of CO, NOx, SO2 and particulate matter of individual districts falling wholly or partly within the territory of MO34 + 20 km are published in the form of maps. The given data are for the period 2011 - 2013 and therefore in relation to the limited period of time only of indicative - informative nature.

Indicative - informative data on air quality in the area of MO34 + 20 km for the period of 2011 - 2013

SHMI based on the results of NMSKO avaluates the areas of districts according to the specific territorial issues as follows:

- Territory with specific territorial annual emissions of pollutant <1 [t.km-2];
- Territory with specific territorial annual emissions of pollutant 1 ÷ 5 [t.km-2];
- Territory with specific territorial annual emissions of pollutant 5 ÷ 10 [t.km-2];
- Territory with specific territorial annual emissions of pollutant> 10 [t.km-2];

The following tables show the indicative - informative data on emissions of CO, NOx, SO2 and particulate matter in the Levice district (LV) Žarnovica (ZC), Zlaté Moravce (ZM), Nitra (NR) and Nové Zámky (NZ), i.e. districts which at least partially extend into the territory of MO34 + 20 km.

SPECIFIC TERRITORIAL EMISSIONS CO [t.km^{-2}]					
District	**LV**	**ZC**	**ZM**	**NR**	**NZ**
2011	< 1	1÷5	< 1	1÷5	< 1
2012	1÷5	1÷5	< 1	1÷5	< 1
2013	1÷5	1÷5	< 1	1÷5	< 1

Tab. no. 5: Territorial emissions of CO

SPECIFIC TERRITORIAL EMISSIONS NO_X [t.km^{-2}]					
District	**LV**	**ZC**	**ZM**	**NR**	**NZ**
2011	< 1	< 1	< 1	1÷5	< 1
2012	< 1	< 1	< 1	< 1	< 1
2013	< 1	< 1	< 1	< 1	< 1

Tab. no. 6: Territorial emissions of NO_X

SPECIFIC TERRITORIAL EMISSIONS SO_2 [t.km^{-2}]					
District	**LV**	**ZC**	**ZM**	**NR**	**NZ**
2011	< 1	< 1	< 1	< 1	< 1
2012	< 1	< 1	< 1	< 1	< 1
2013	< 1	< 1	< 1	< 1	< 1

Tab. no. 7: Territorial emissions of SO_2

SPECIFIC TERRITORIAL EMISSIONS TZL [t.km^{-2}]					
District	**LV**	**ZC**	**ZM**	**NR**	**NZ**
2011	< 1	1÷5	< 1	< 1	< 1
2012	< 1	1÷5	< 1	< 1	< 1
2013	< 1	1÷5	< 1	< 1	< 1

Tab. no. 8: Territorial emissions of particulate matter

Data on the specific territorial issues in the area of MO34 + 20 km for the period of 2011 - 2013 will not be commented on due to the fact that the information cannot be related to the defined period of time.

WILDLIFE CONSERVATION

Wildlife conservation is ensured by a system of protected areas and ecological stability system with its elements and bio-corridors. All these elements create conditions for biodiversity and in it the species diversity of wildlife.

To document the impact it is useful to provide examples from the wider surrounding of the power plant area. In the wider area there are several species of organisms that are present in "red books" or on the lists in Annexes implementing regulations to Act no. 543/2002 Coll. on nature and landscape protection.

Demonstrating a well-functioning system, and confirmation that in the specified time frame the "Completion of Units 3 and 4 of the NPP Mochovce" did not have a negative impact on species diversity and the protection of animals are all facts due to which animals that have previously been pushed out of this area by human activity are gradually returning and are recorded in the wider surrounding area of MO34 + 20 km.

Examples of positive trends and of practical results of protection of nature are the occurrence of the Imperial Eagle in the plane of the Hron basin and the occasional occurrence of brown bear in the woods northeast of the assessed area. Other example habitats of endangered and protected animal species are the lynx, wild cat, otter, smaller dotted eagle, eagle-owl, grass-snake and so on.

A large role in the protection of wildlife conservation is the protection of the important migration corridors for animals. **The river Hron and its immediate surroundings are migration corridors of II. level.**

Important animal migration corridors in the area of MO34 + 20 km and in the wider surroundings are:

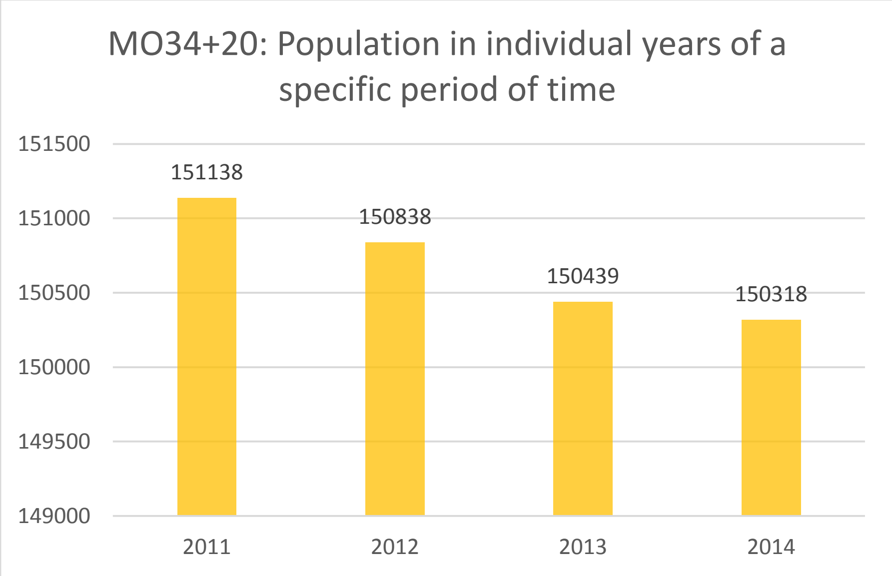
- Aquatic supra-regional bio-corridor: Hron and the adjacent riparian vegetation,
- Terrestrial supra-regional bio-corridor: Gbelce - Patianska Cerina - Zudrok -Včelár,
- Regional bio-corridor: Patianska Cerina - Čifársky Háj - Kozí Chrbát - Rohožnická Hôrka - Slance,
- Regional bio-corridor: Patianska Cerina - Podkamenie – Veľká Vápenná - Skala – Štiavnické vrchy
- Local bio-corridor: Čifársky Háj - Kozí Chrbát,
- Local bio-corridor: Plešovica – Zadný Vrch - Rohožnícka Hôrka,
- Local bio-corridor: Klčovisko - Bôbové,
- Local bio-corridor: Čifársky háj - Podkamenie.

4.5 POPULATION, ITS ACTIVITIES, HEALTH AND SAFETY

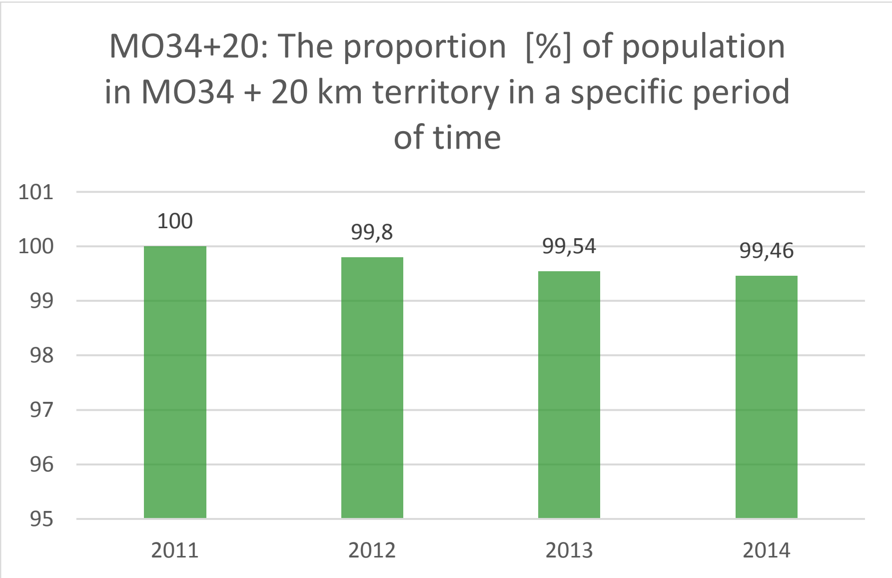
NUMBER OF INHABITANTS IN A SPECIFIC PERIOD OF TIME

Indicators:

1. Total number of inhabitants in the territory of MO34+20 km in a specific period of time;
2. Number of inhabitants of working age in the territory of MO34+20 km in a specific period of time;
3. Number of registered unemployed in the territory of MO34+20 km in a specific period of time;
4. Proportional number of registered unemployed and of the working age population in a specific period of time.

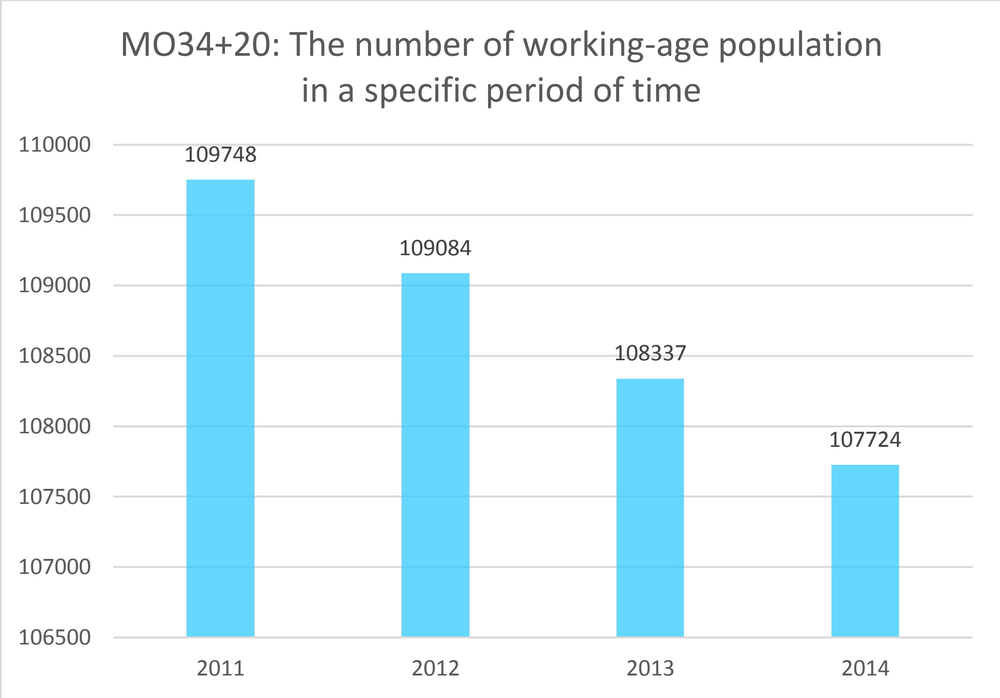


Graph 11: Total number of inhabitants in the territory of MO34+20 km in a specific period of time

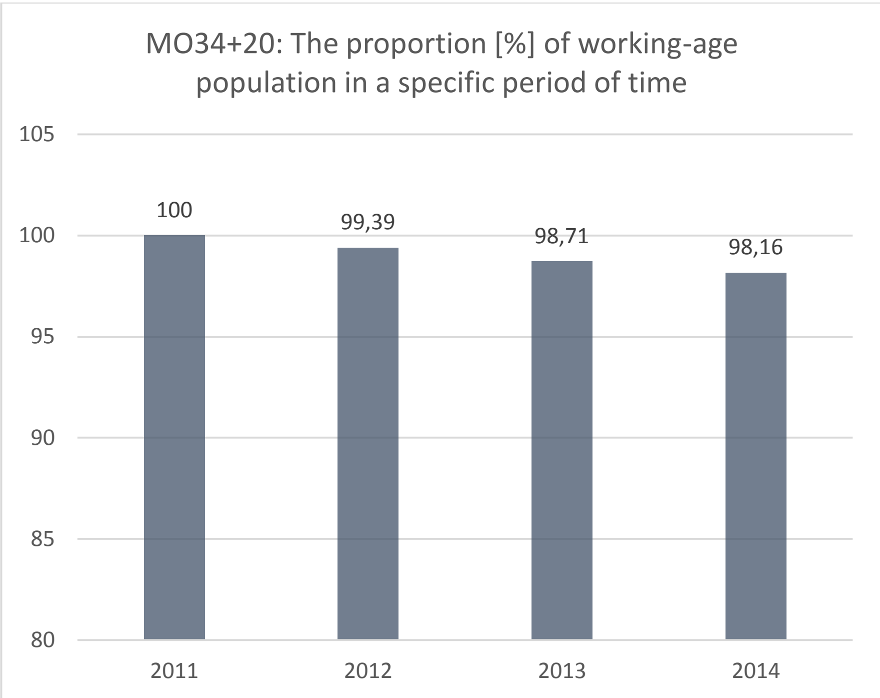


Graph 12: Proportional number of inhabitants of MO34+20 km in a specific period of time

Information on MO34+20 km is based on the data from the Annex no 5.

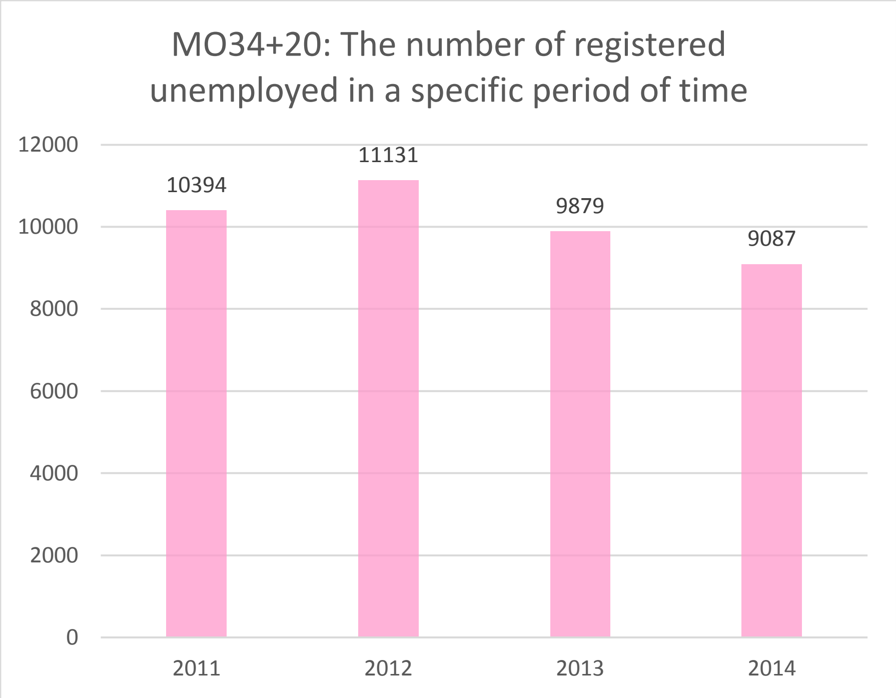


Graph 13: Number of inhabitants of working age in the territory of MO34+20 km in a specific period of time

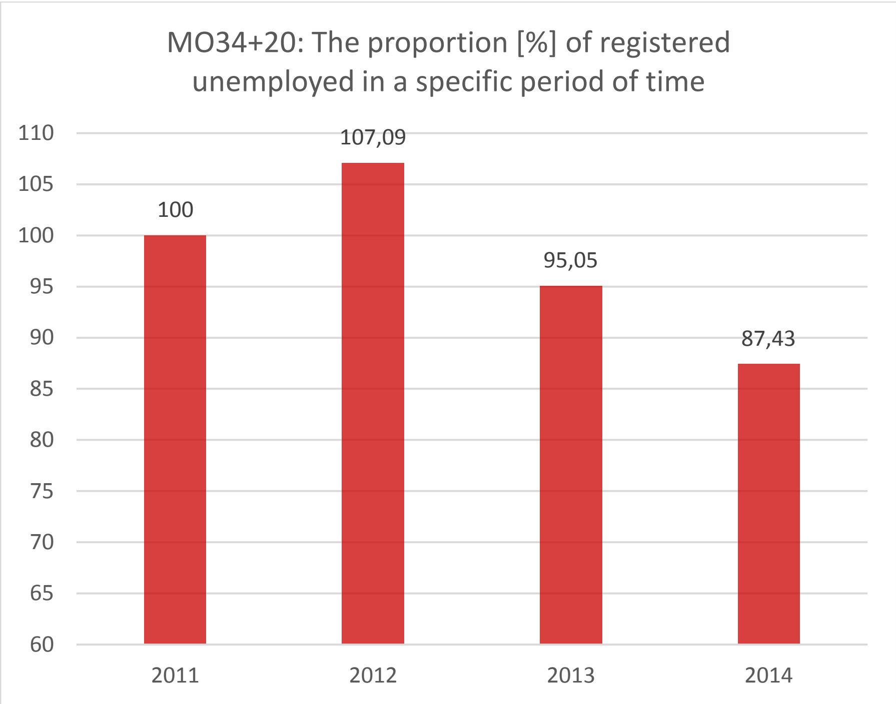


Graph 14: Proportional number of working age inhabitants in a specific period of time

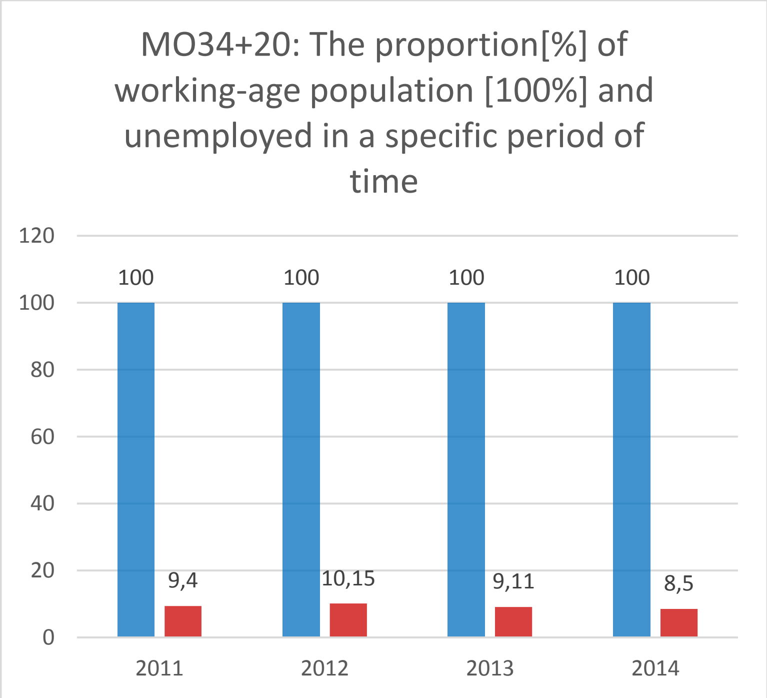
Information on MO34+20 km is based on the data from the Annex no 8.



Graph 15: Number of registered unemployed in the territory of MO34+20 km in a specific period of time



Graph 16: Proportional number in [%] of registered unemployed in a specific period of time



Graph 17: Proportional number of registered unemployed and of the working age population in a specific period of time

Information on MO34+20 km is based on the data from the Annex no 8.

Characteristics of the territory of MO34+20 km

The total number of population decreases in a specific period of time. The number of working-age population in the years 2011-2013 also declined. Since 2013 this trend has stopped and in 2014 the number of working age population increased in number.

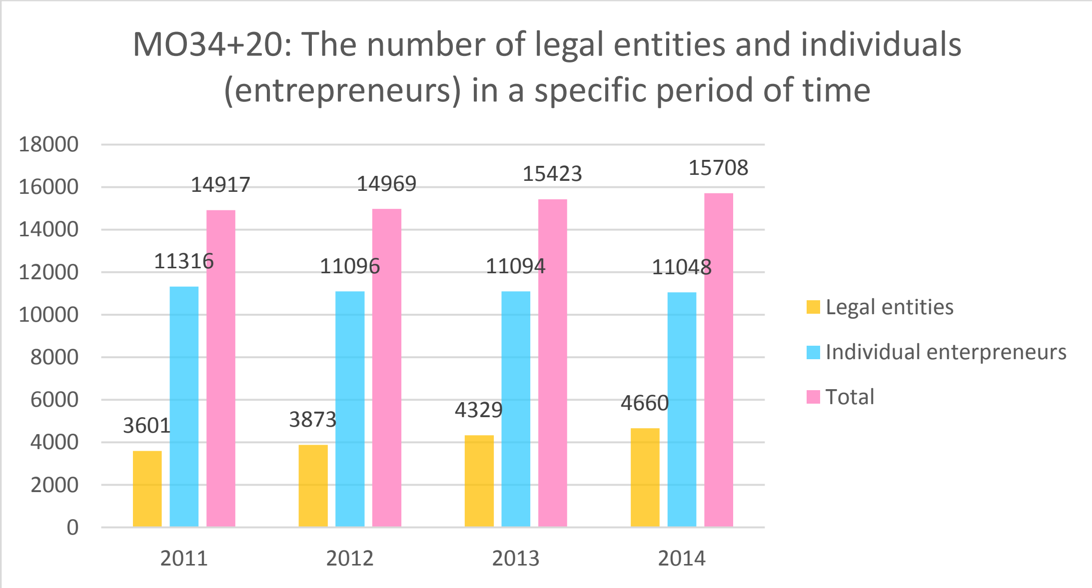
In terms of the number of registered unemployed the year 2012 may be called a critical year. That year, the number of registered unemployed increased compared to 2011 by + 7.09%. In the years following, between 2013 and 2014, there was a very distinct upturn. In 2013 the number of registered unemployed dropped compared to 2011 by -4.95% and in 2014 the number decreased compared to 2001 by -12.57%.

The chart, which shows the ratio between the number of working-age population and the number of registered unemployed can be concluded that the area of MO34 + 20 km belonged in a specific period of time in terms of unemployment in Slovakia to the better areas. The number of registered unemployed with the exception of 2012 amounted in each year <10% of the total population of working age (this ratio does not reflect the level of unemployment).

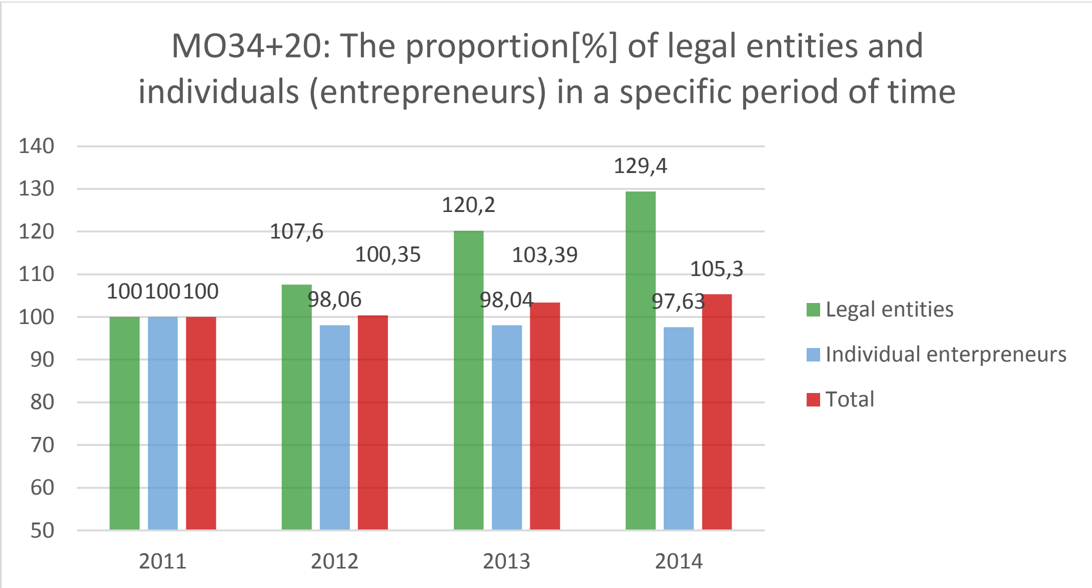
ACTIVITIES OF THE POPULATION

Indicators:

1. Development of the business environment;
2. Structure of the employees in selected economic activities in individual years of the specific period of time;
3. Educational structure of the population in a specific period of time.



Graph 18: Information about business entities - the number of legal entities and individuals (entrepreneurs) in a specific period of time



Graph 19: Proportional number of business entities – the number of legal entities and individuals (entrepreneurs) in a specific period of time

Information on business entities on the territory of MO34+20 km is based on the data from Annex no. 14.

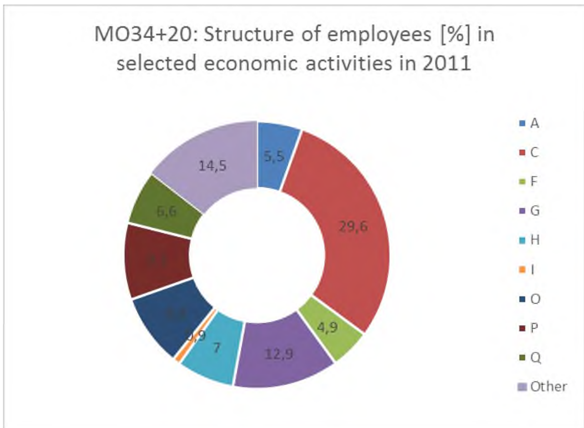
Structure of employees according to the selected economic activities in each year of a specific period of time

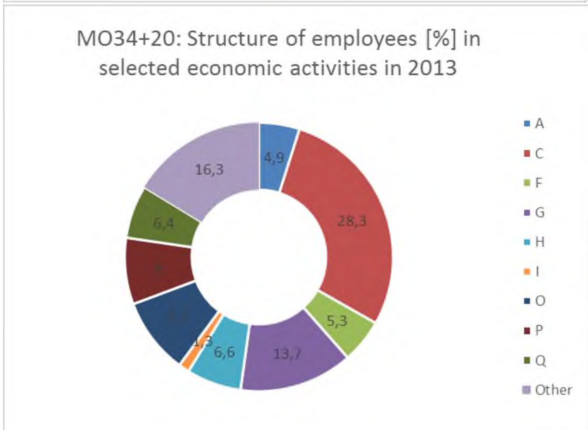
Explanation of abbreviations in the following graphs (reference according to the statistical classification NACE rev. 2, established by the Decree of SO SR no. 306/2007 Coll.):

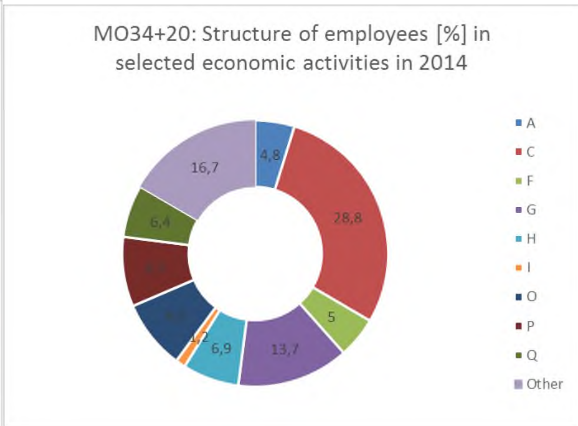
A - Agriculture, forestry, fishing

B,C,D,E – Total industry (B – Mining and quarrying, C – manufacturing, D – Electricity, gas, steam and air conditioning, E – Water supply, sewerage and waste-water treatment, waste management and remediation activities), *Note: "Completion of Units 3 and 4 of NPP Mochovce" is an economic activity included in the group* ***C*** *– manufacturing:*

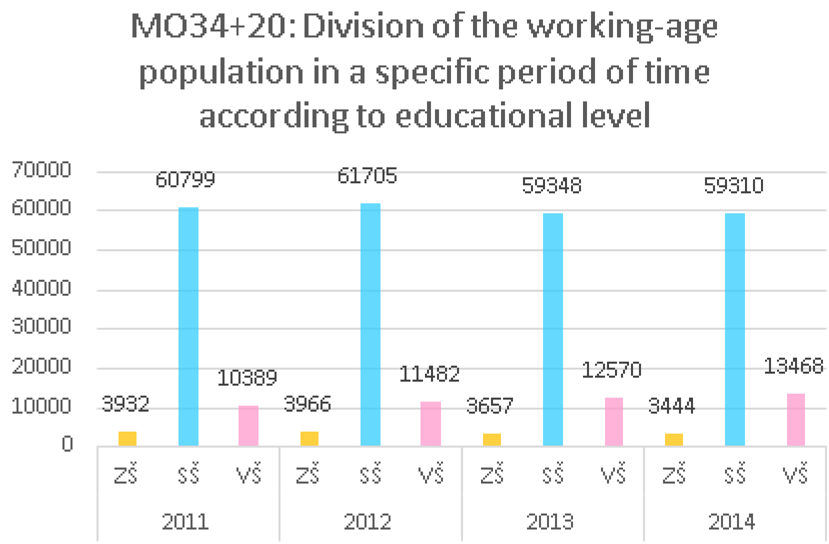
F – Construction
G - Wholesale and retail trade, repair of motor vehicles
H - Transportation and storage
I - Accommodation and food services
O - Public administration, transport, compulsory social security
P – Education
Q - Health Care and Social Assistance
Others



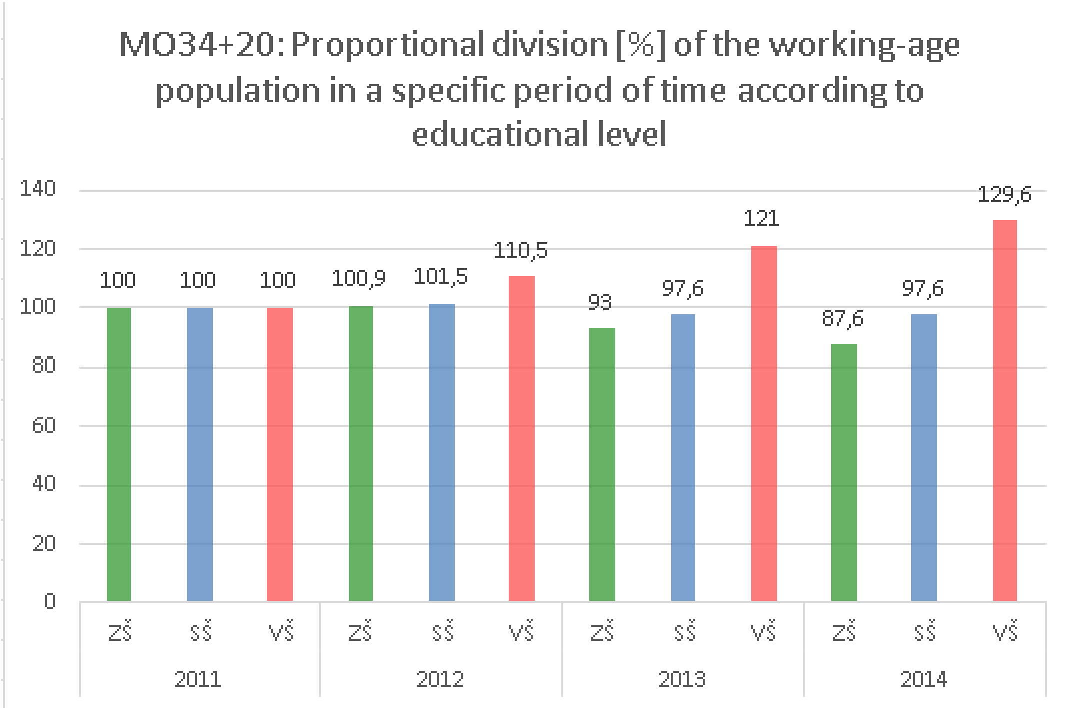




Information on the structure of employees in selected economic activities prepared in accordance with Annex 21.



Graph 20: The educational structure of the population of the area MO34 + 20 km in a specific period of time



Graph 21: Proportional division of the number of working age population in a specific period of time according to the level of educiation

ZŠ –Basic, SŠ – High school, VŠ – Universtiy/College
Information about educational structure prepared in accordance with Annex 15

Characteristics of the area of MO34 + 20 km

In a specific period of time a reasonable expansion of business activities can be observed in the MO34 + 20 km area - even though the number of entrepreneurs (individuals) declined from year to year, the number of legal entities rather skyrocketed. The number of entrepreneurs (individuals) was in the year 2014 compared to 2011 2.37% lower, the number of legal persons is growing every year in a much faster rate. In 2014 was the rate compared to 2011 by 29.4% higher. Together (the sum of legal entities and entrepreneurs - individuals) the number of business enterprises increased in the year 2014 compared to 2011 by 5.3%.

The population of the area MO34 + 20 km is employed in various economic activities. The dominant economic activity as the employer is the industry. Industry employed in different years of the specific period of time from 32% to 33.7% of the employed population of the territory MO34 + 20 km. In terms of this report an important activity is industry C - manufacturing and other important economic activities are the construction and accommodation and food services.

In terms of education of the population in the area of MO34 + 20 km an annual growth of education towards university can be seen. In 2014 was compared to 2011 this increase by 29.6%, although each year in a specific time period residents with secondary education dominate in terms of education.

4.6 HEALTH OF THE POPULATION

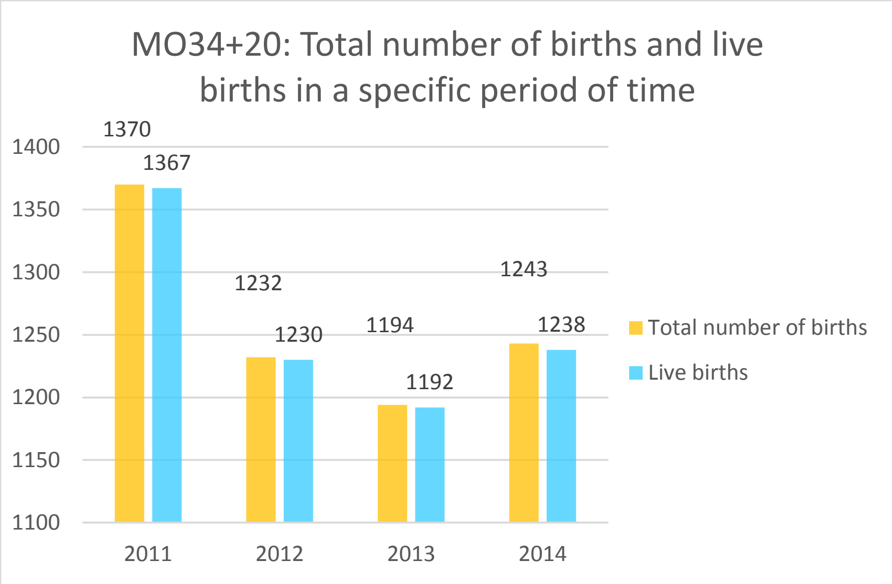
Indicators:

1. Total number of births and live births in a specific period of time,
2. Total number of deaths in a specific period of time,
3. Causes of death according to the following structure:

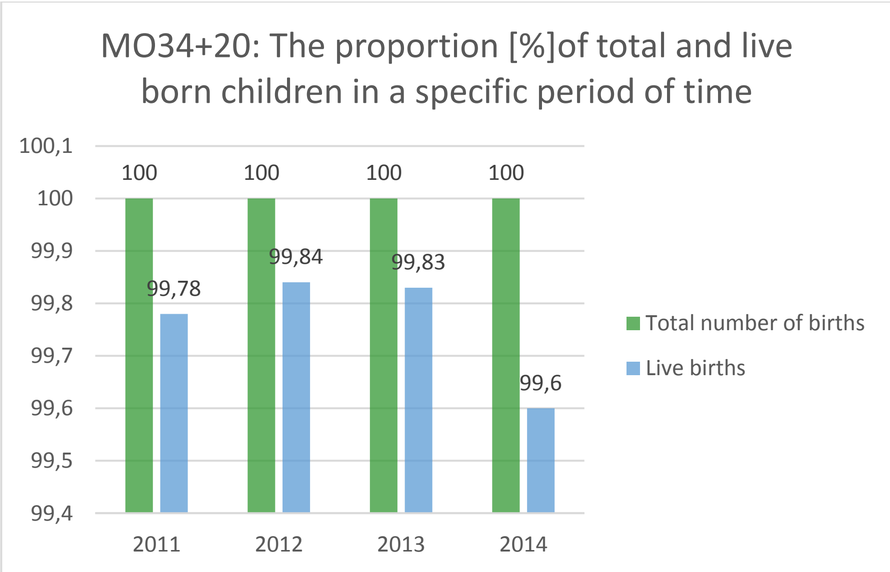
For each year of a specific time period, the total number of deaths according to the cause of death is divided into the following categories:

- Diseases of the circulatory system - according to the International Classification of Diseases (ICD-10) diseases referred to in Chapter IX.
- Tumors - according to ICD-10 diseases referred to in Chapter II.
- External causes - according to ICD-10 causes of death listed in Chapter XIX. and XX.
- Respiratory diseases - according to ICD-10 causes of death listed in Chapter X.
- Digestive system diseases - according to ICD-10 disease referred to in Chapter XI.
- Other:
  Total number of deaths reduced by the number of deaths according to the previous points

TOTAL NUMBER OF BIRTHS AND LIVE-BORN CHILDREN IN A SPECIFIC PERIOD OF TIME



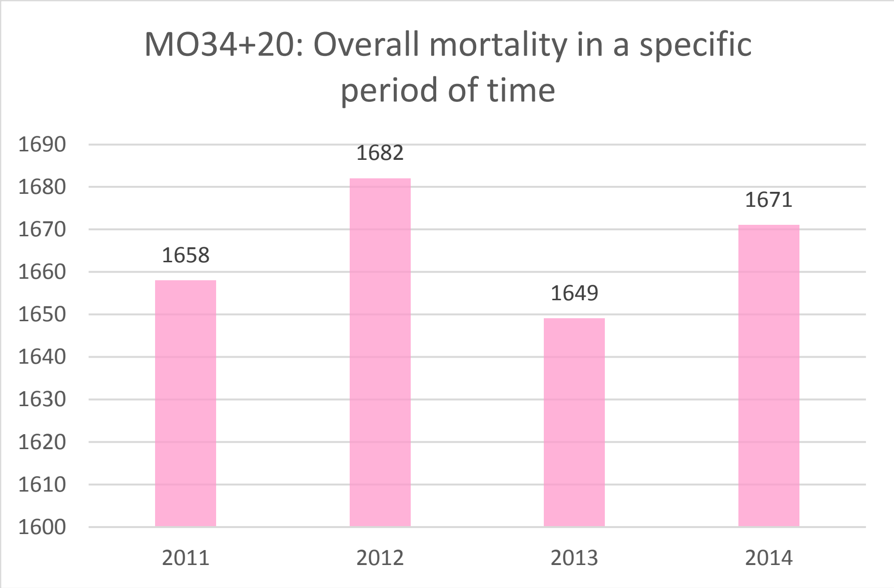
Graph 22: The total number of births and live births in a specific period of time



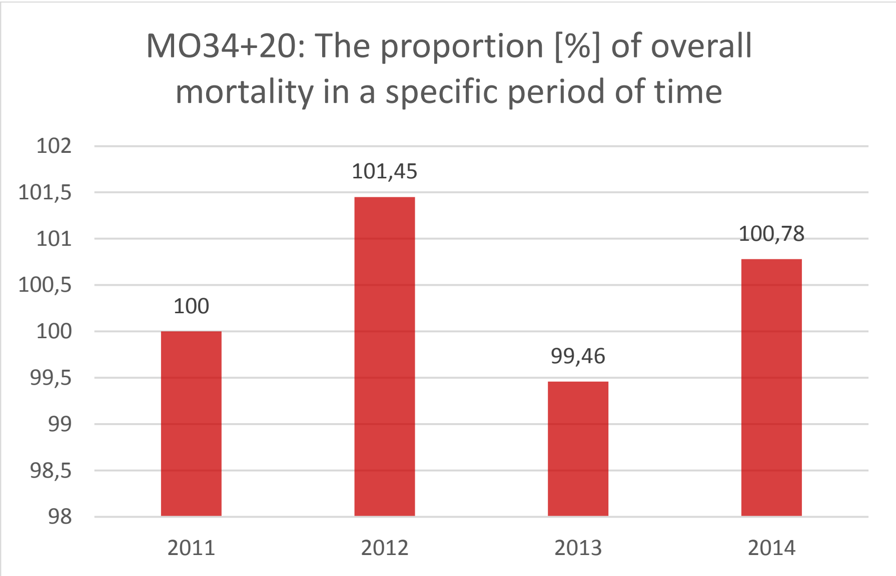
Graph 23: Proportional number of live births and total number of births in a specific period of time

Information about the area of MO34 + 20 km processed based on the data in Annex 10

TOTAL NUMBER OF DEATHS AND THE STRUCTURE OF THE CAUSES IN A SPECIFIC PERIOD OF TIME



Graph 24: Overall mortality in a specific period of time



Graph 25: Proportional number of total deaths in a specific period of time

Information about the cause of death in MO34 + 20 km

Causes of death in MO34+20 km				
Year	**2011**	**2012**	**2013**	**2014**
Overall mortality	1658	1682	1649	1671
Diseases of the circulatory system	863	887	834	824
Tumors	391	400	432	460
External causes	99	92	94	98
Diseases of the respiratory system	102	108	105	86
Diseases of the digestive system	99	95	84	79
Other	104	100	100	124

Tab. no. 9: Information about the cause of death in MO34 + 20 km

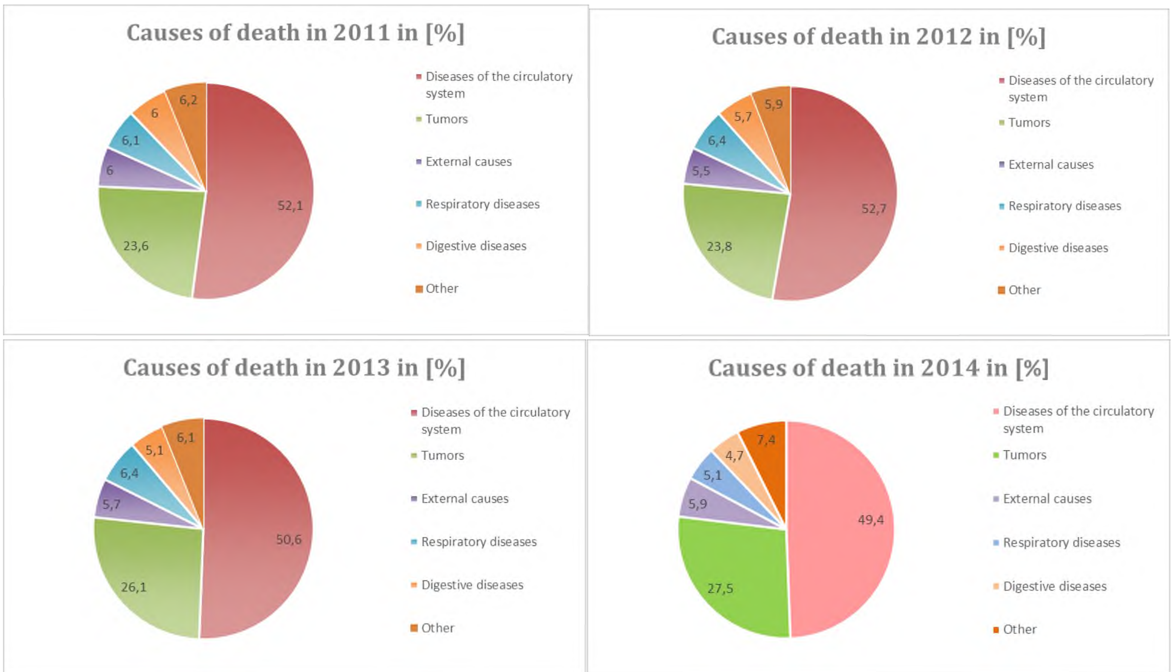
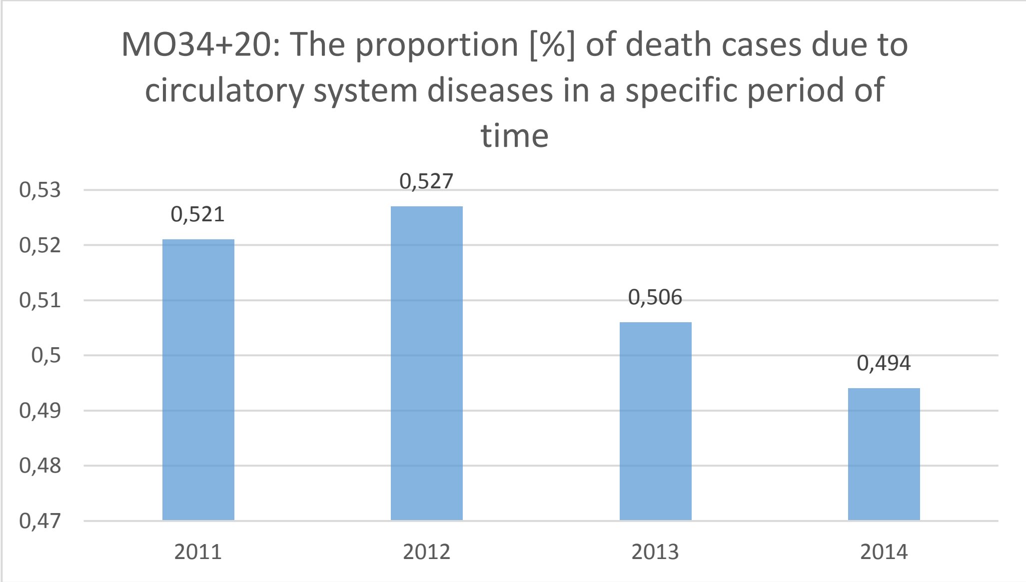
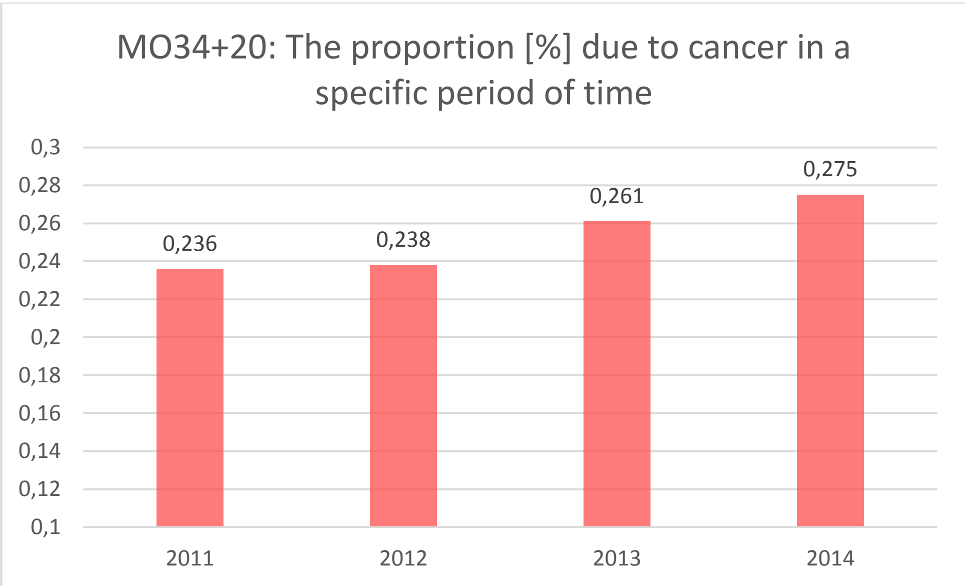


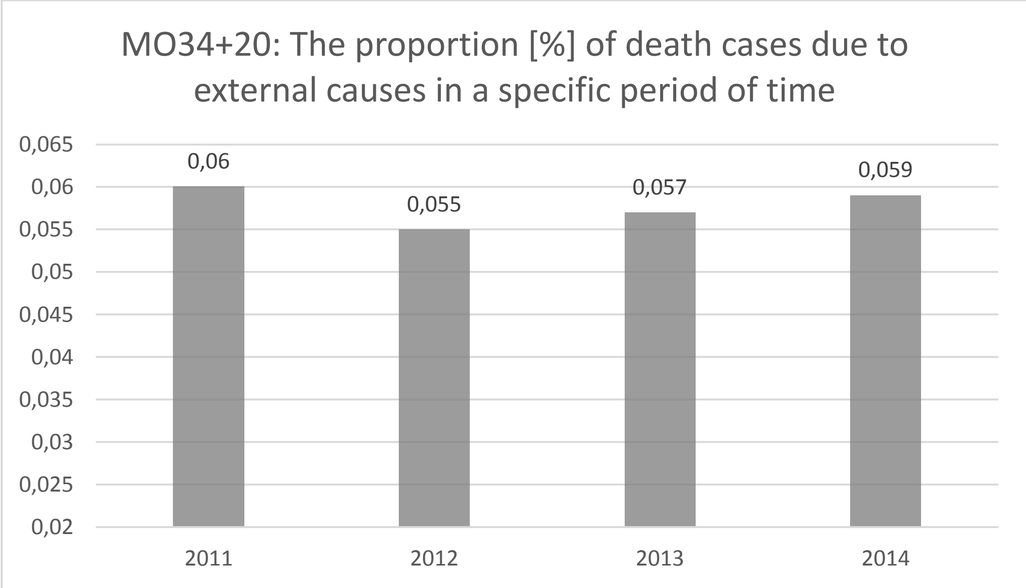
Fig. no. 13: Structure of the death causes



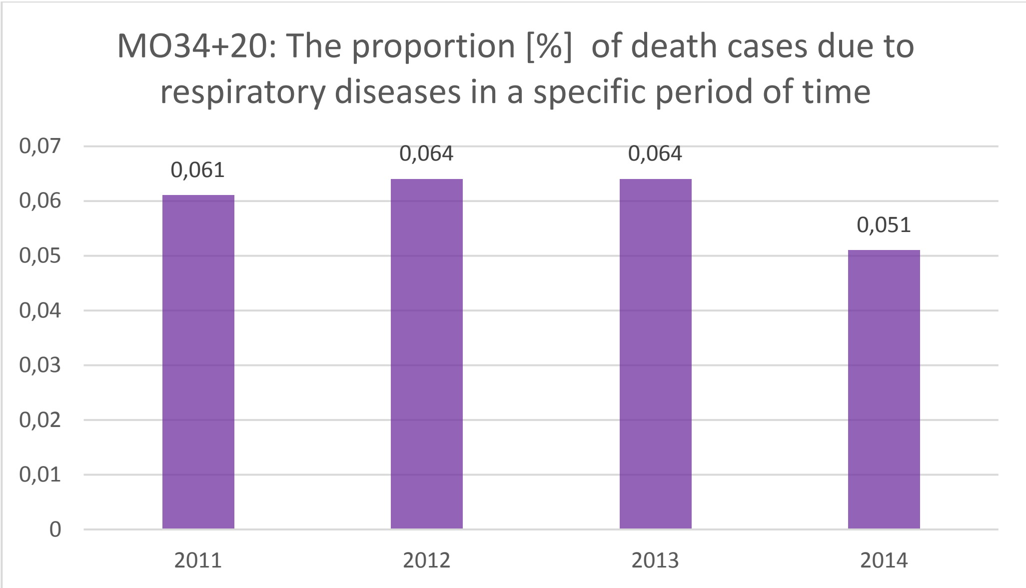
Graph 26: Proportional number of death cases due to circulatory system diseases in a specific period of time



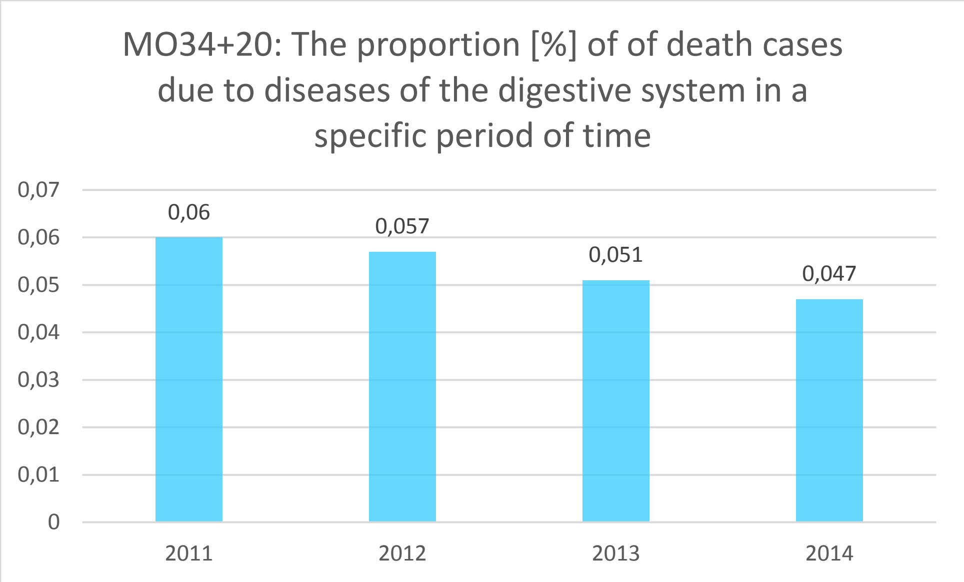
Graph 27: Proportional number of death cases from cancers in a specific period of time



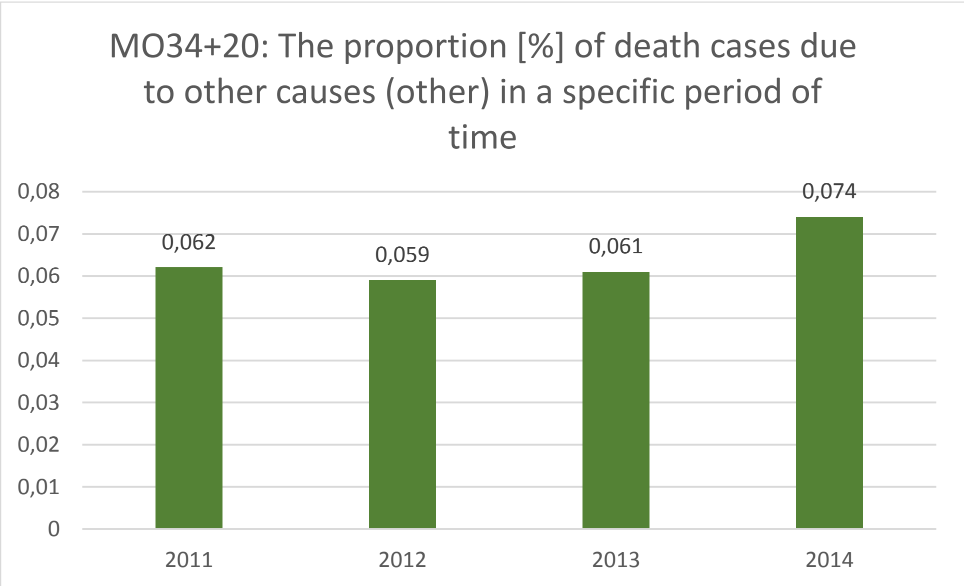
Graph 28: Proportional number of death cases due to external causes in a specific period of time



Graph 29: Proportional number of death cases due to respiratory diseases in a specific period of time



Graph 30: Proportional number of death cases due to diseases of the digestive system in a specific period of time



Graph 31: Proportional number of death cases due to other causes (other) in a specific period of time

Information about MO34 + 20 km processed according to the data in Annex 10
Input data are taken from the medical yearbooks of the SR from 2011, 2012, 2013, 2014.

Characteristics of the area of MO34 + 20 km

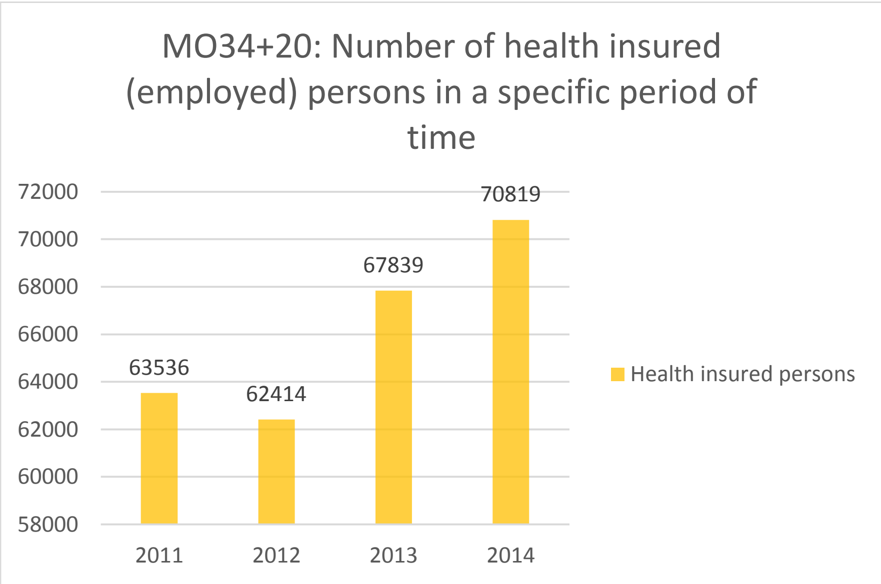
The indicators of mortality and causes of death in the area of MO34 + 20 km are comparable with the indicators of these characteristics in the whole Slovakia. The "Completion of Units 3 and 4 of NPP Mochovce" has a very small or negligible impact on mortality and causes of death in the area MO34 + 20 km.

4.7 SAFETY

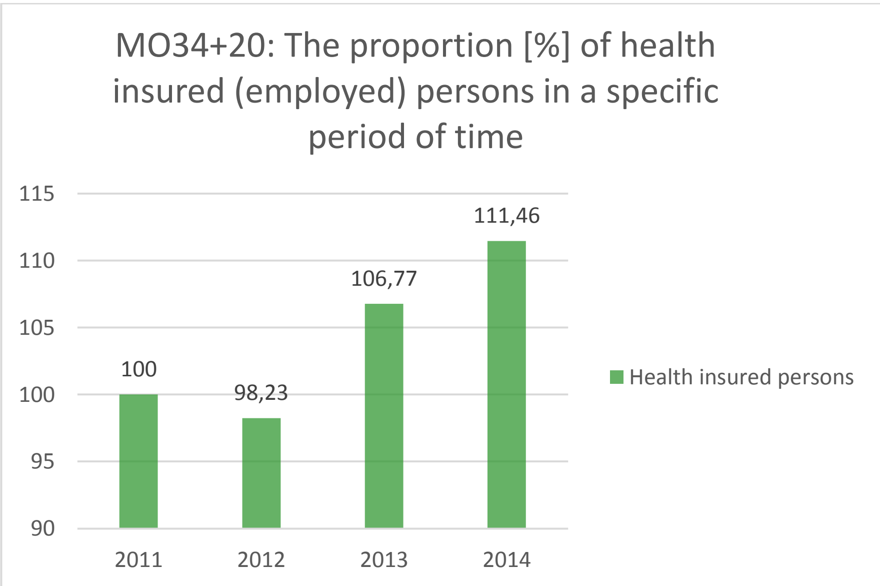
Indicators:

1. Sickness and accident rate;
    - Health insurance (employed) persons in a specific period of time;
    - Number of sick leaves and the number of accidents in a specific period of time;
2. Accident rate;
    - Total number of accidents, fatal accidents, accidents with serious injuries, accidents with minor injuries and accidents with damage to property in a specific period of time

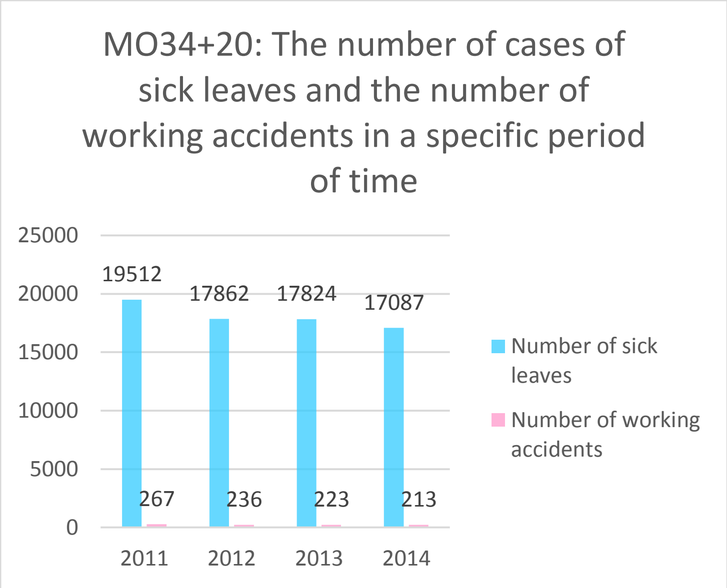
SICKNESS AND ACCIDENT RATE



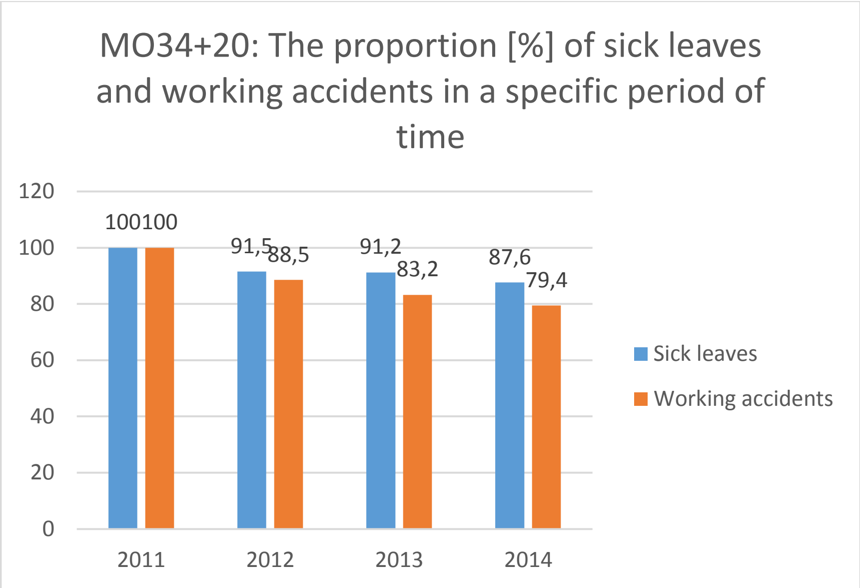
Graph 32: Number of healt insured (employed) persons in a specific period of time



Graph 33: Proportional number of health insured (employed) persons in a specific period of time



Graph 34: The number of cases of sick leave and the number of accidents in a specific period of time



Graph 35: Proportional number of event of sickness leaves and accidents in a specific period of time

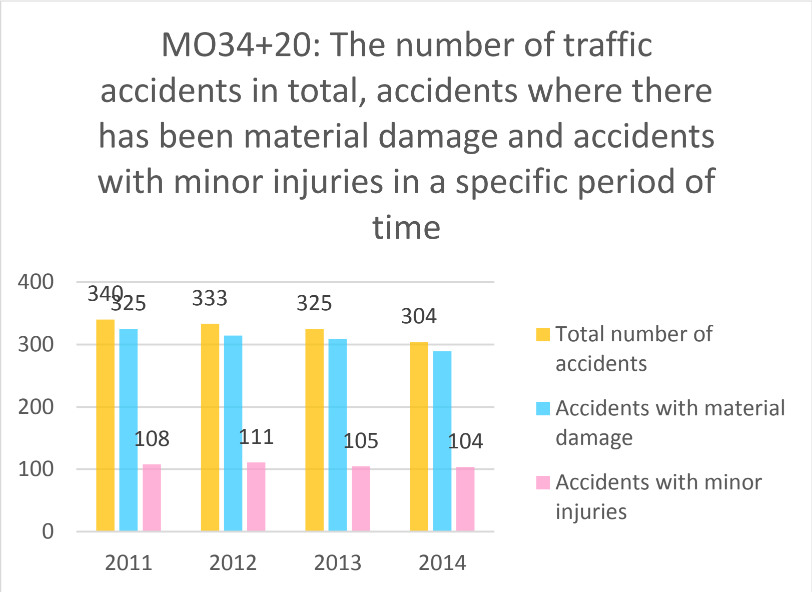
Information about MO34 + 20 km are processed based on the data from Annex 10

Characteristics of the area of MO34 + 20 km in terms of sick leaves and workplace accidents

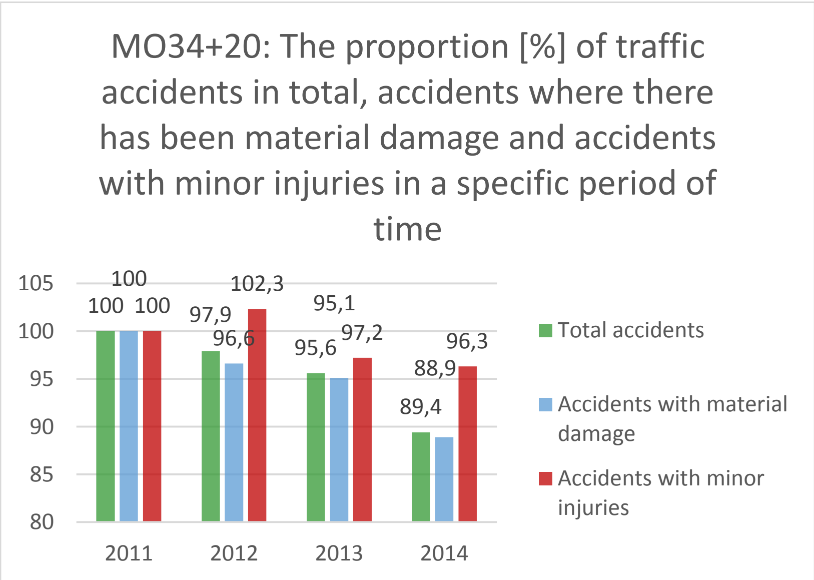
In a specific period of time (except for the year 2012 which records a drop by 1.77%), there was an increase in sickness insurance of employed persons. In 2014 compared to 2011 there was an increase of 11.46%.

The number of sick leaves declined every year of the specific time period. In 2014, the number of sick leaves compared to 2011 decreased by 12.4%. The number of accidents also decreased. In 2014 the number decreased by 20.6% compared to 2011.

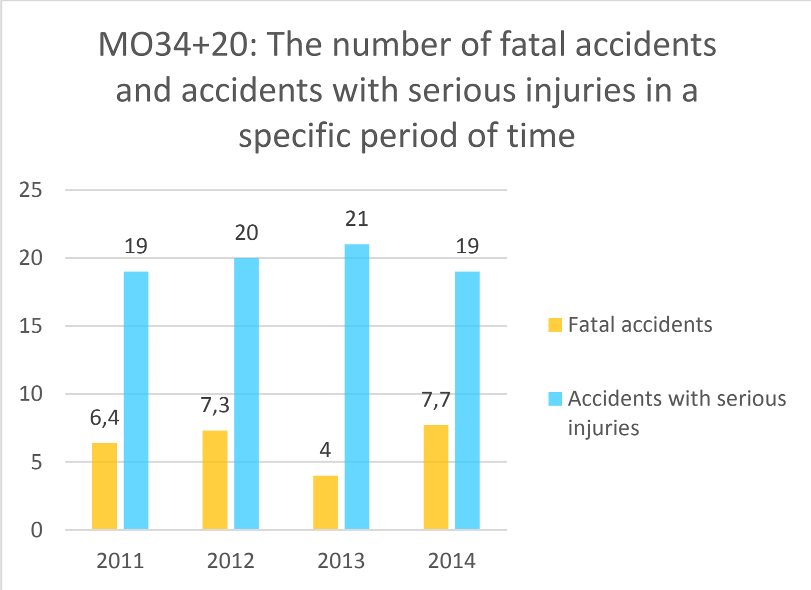
ACCIDENT RATE



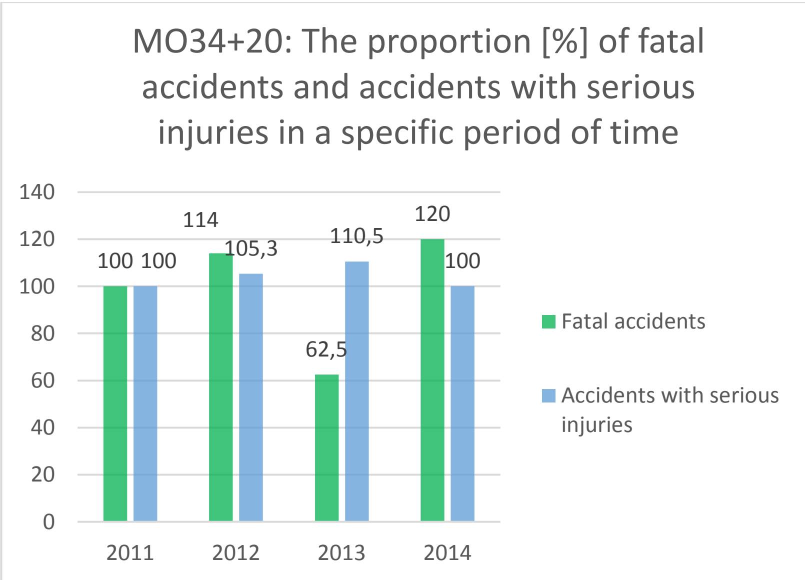
Graph 36: Total number of traffic accidents, accidents with material damage and accidents with minor injuries in a specific period of time



Graph 37: Proportional number of traffic accidents, accidents with material damage and accidents with minor injuries in a specific period of time



Graph 38: The number of fatal accidents and accidents with serious injuries in a specific period of time



Graph 39: Proportional number of fatal accidents and accidents with serious injuries in a specific period of time

Information about the area of MO34 + 20 km are processed based on the data from Annex 11

Characteristics of the area of MO34 + 20 km in terms of traffic accidents
The total number of accidents decreased every year of the specific period of time. In 2014 there was a decline compared to 2011 decline by 10.6%. The number of traffic accidents involving damage to property, declined annually. In 2014 the decline compared to 2011 was by 11.9%. The number of traffic accidents with a minor injury, except the year 2012, declined yearly. In 2014 the decline was compared to 2011 by 3.7%. The number of traffic accidents involving serious injury increased in 2012 and 2013, but it is important to realize that in fact the number refers to tens of such accidents. In 2014, the number of such accidents reached the same value as in 2011. The actual number of accidents with serious injuries was as follows: in 2011 - 19 accidents, in 2012 - 20 accidents, in 2013 - 21 accidents and in 2014 - 19 accidents.
Even more complicated is the assessment of fatal accidents. The numbers refer to units of such accidents, i.e. the occurrence of any single fatal accident has a relatively high impact on the balance sheet of the relatively small area (territory of MO34 + 20 km). Therefore, for the sake of clarity, the values stated below are not in % but in real numbers, in 2011 - 6 accidents, in 2012 - 7 accidents, in 2013 - 4 accidents and in 2014 - 8 accidents.

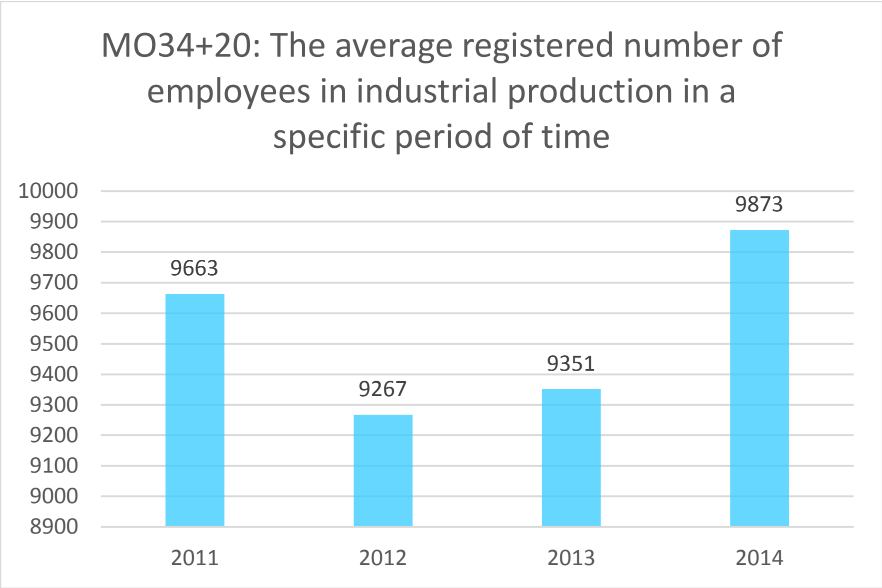
5 REVIEWED CUMULATIVE EFFECTS OF THE COMPLETION OF UNITS 3 AND 4 OF NPP MOCHOVCE ON THE ENVIRONMENT BETWEEN 2011 AND 2014

5.1 ADDITIONAL OPPORTUNITIES FOR EMPLOYMENT

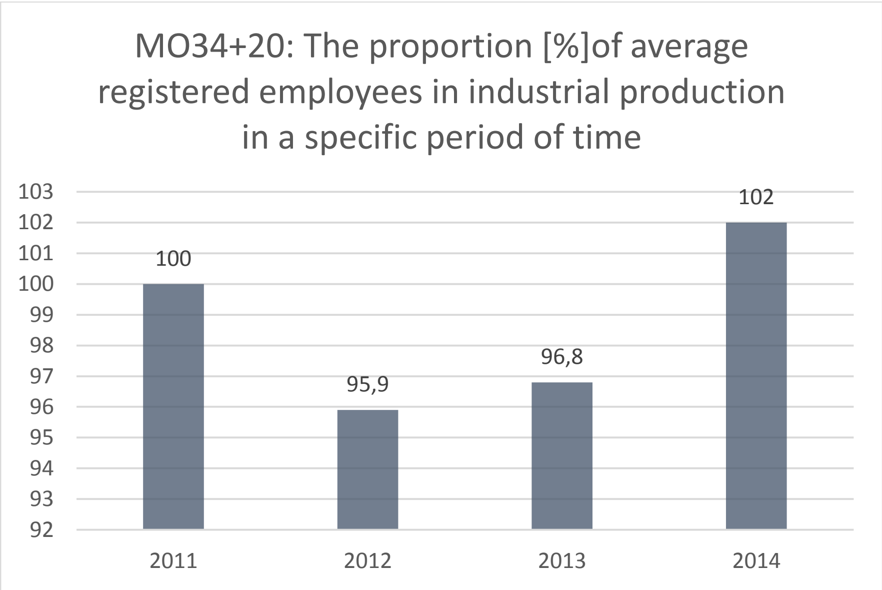
In this paragraph, which is mainly of social nature, it is necessary to take into account a wider range of issues than just additional opportunities for employment. It is mainly the need to revise the project documentation itself - to incorporate into it all the so called "Post-Fukushima“ improvements and modifications of existing building structures and possibly already installed technological equipment. Mainly due to the revision of project documentation delays and deadline shifts were created in the construction schedule of Units 3 and 4 of NPP Mochovce.

Indicators:

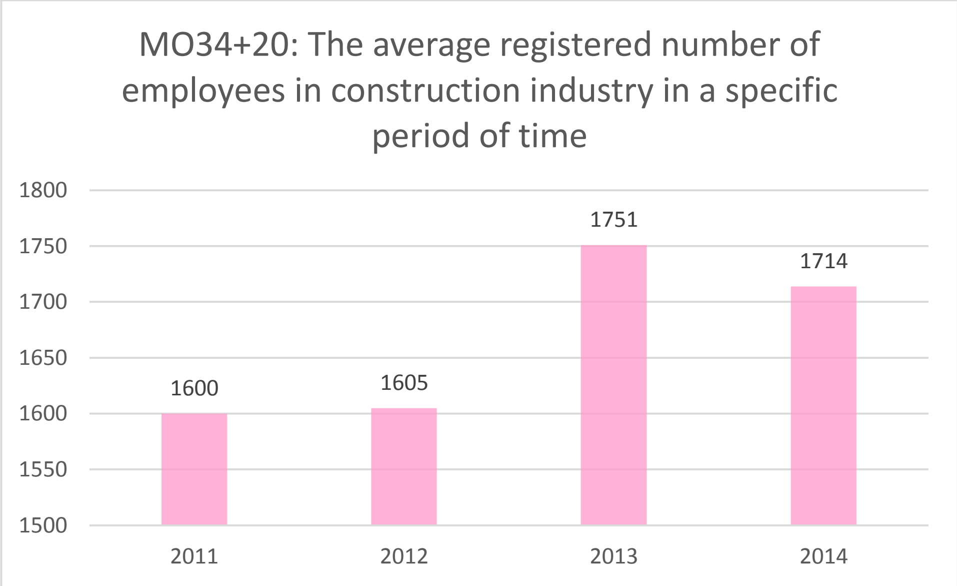
1. The average registered number of employees in industrial production, energy sector / civil engineering, in accommodation and food services within a specific period of time,
2. The ratio [%] expressing average registered number of employees in industrial production, energy sector / civil engineering and accommodation and food services within a specific period of time,
3. Cumulative totals of registered number of employees in industrial production, energy sector / civil engineering, accommodation and food services in a specific period of time,
4. Ratio [%] expressing cumulative totals of recorded number of employees in the activities of industrial production, energy sector / civil engineering, accommodation and food services in a specific period of time.



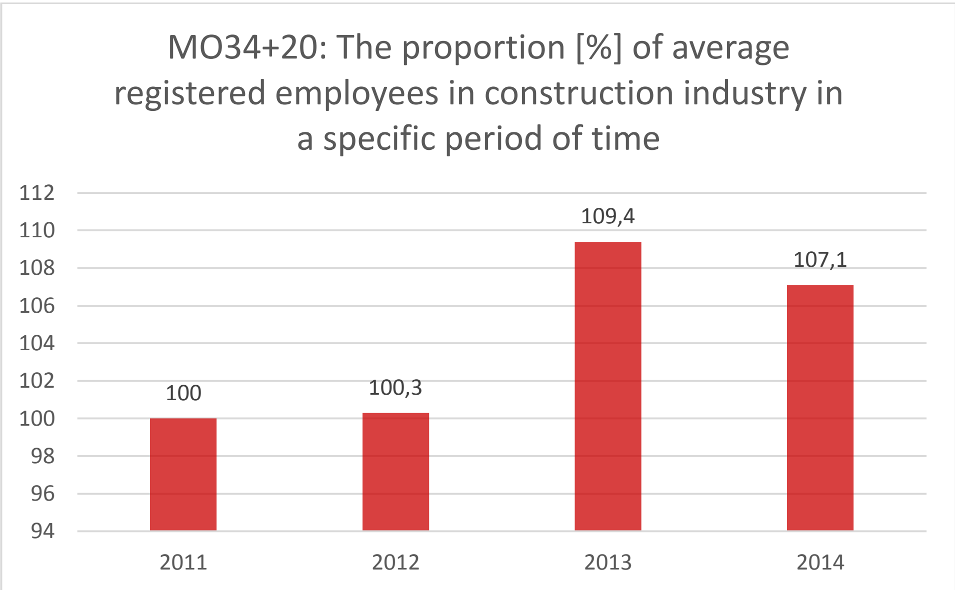
Graph 40: The average registered number of employees in industrial production



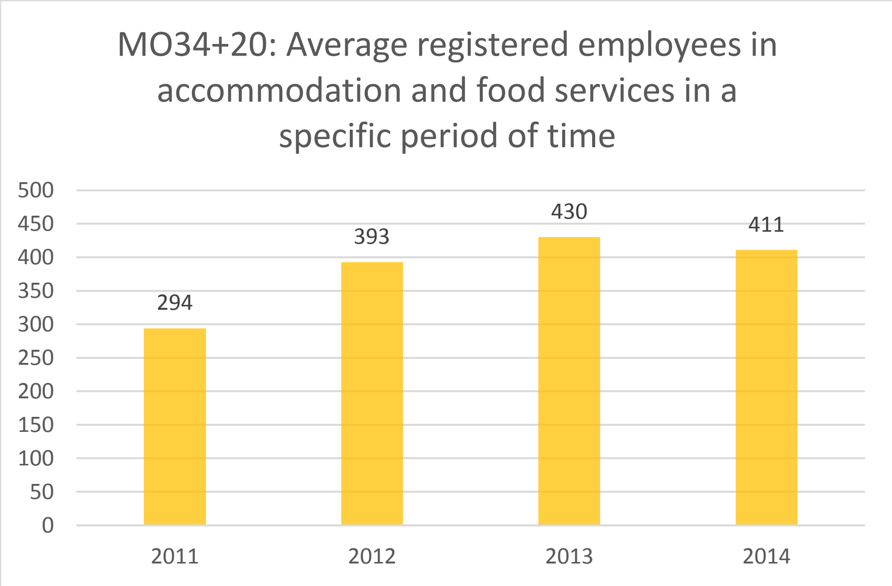
Graph 41: Proportional number of average registered number of employees in the industrial production



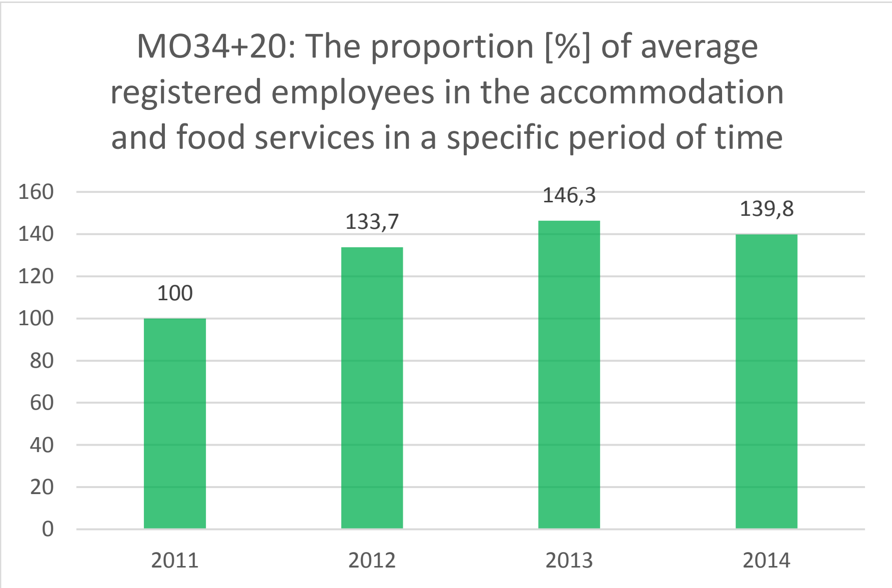
Graph 42: Average registered number of employees in civil engineering



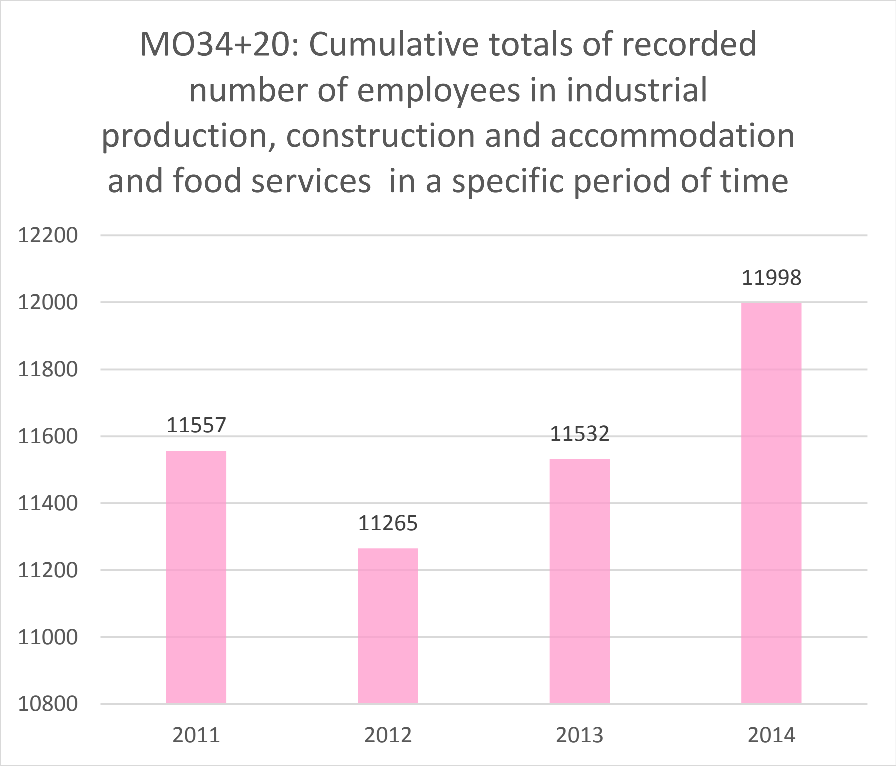
Graph 43: Proportional number of average registered number of employees in civil engineering



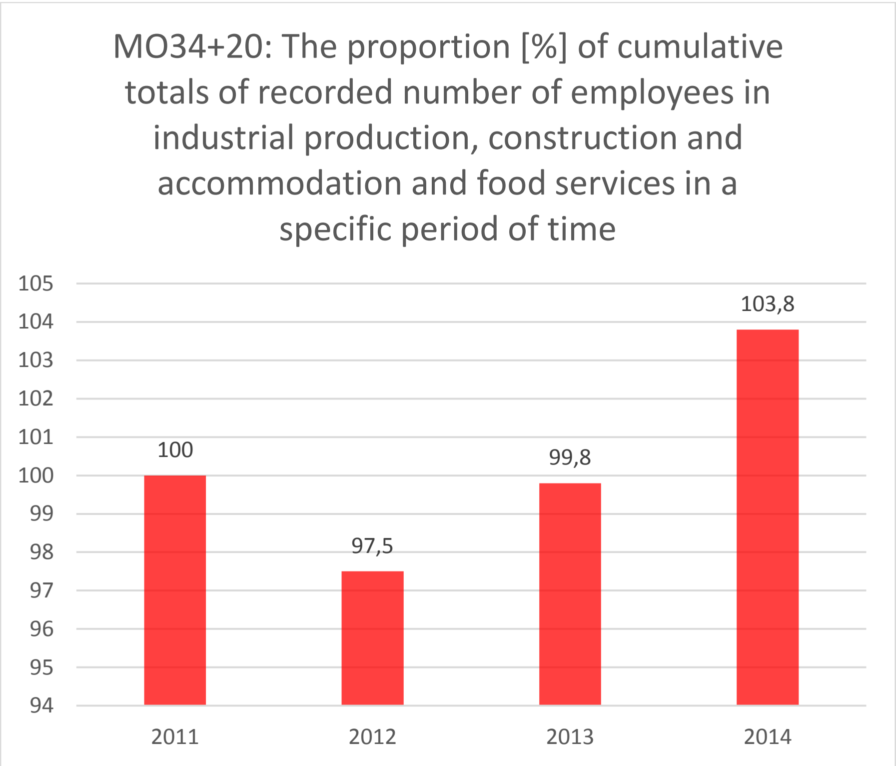
Graph 44: Average registered number of employees in accommodation and food services



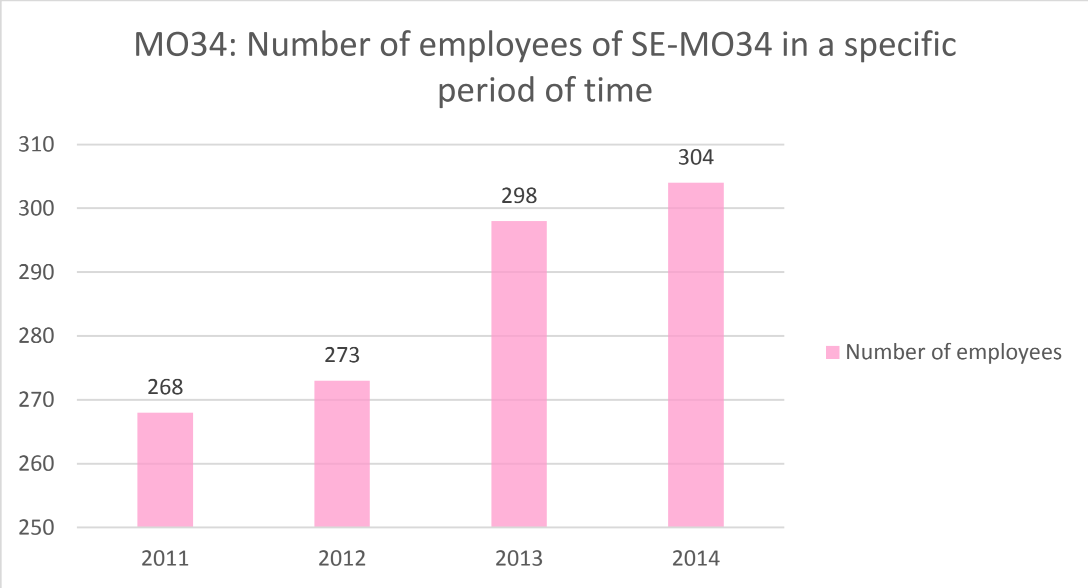
Graph 45: Proportional number of average registered number of employees in accommodation and food services



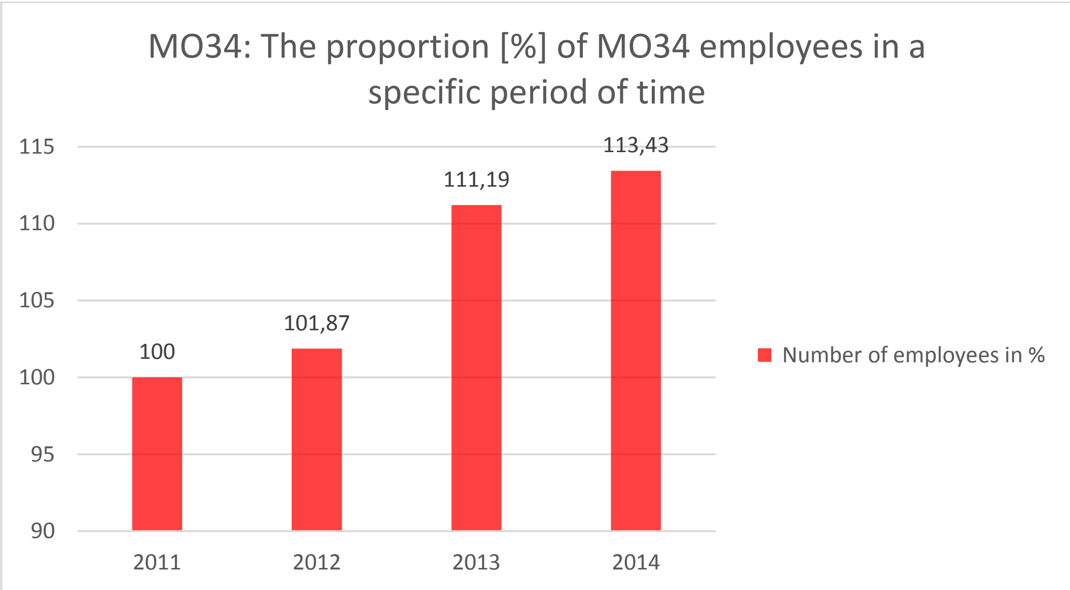
Graph 46: Cumulative totals of registered number of employees in industrial production, civil engineering, accommodation and food services



Graph 47: Proportional number of cummulative totals of registered number of employees in industrial production, civil engineering, accommodation and food services



Graph 48: Number of employees of SE-MO34 in specific period of time



Graph 49: Proportional number of employees of SE-MO34 in specific period of time

Information about the area of MO34 + 20 km prepared in accordance with Annex 21 and about the number of employees of SE-MO34 in accordance with Annex 20.

Characteristics of the area of MO34 + 20 km in terms of opportunities for employment

Employment opportunities for the population of the area of MO34 + 20 km were affected by the construction of Units 3 and 4 of the NPP Mochovce. The first impact was the division of former Czechoslovakia and the creation of independent states of the Czech and Slovak Republic. After this division the construction of the third and fourth units of the Mochovce was stopped.

The second factor was the nuclear power plant accident in Japan (Fukushima Daiichi Nuclear Power Plant). At that time Units 3 and 4 of NPP Mochovce already reached an advanced stage of construction. Drawing on lessons learned from the Fukushima accident changes resulted in requirements of the project documentation of these units with an impact on the timetable for implementation of works.

This impact was clearly manifested during the "Completion of Units 3 and 4 of NPP Mochovce " in 2012 when the number of registered employees in industrial production in the area of MO34 + 20km decreased compared to 2011 by 4.1% and it lasted until 2013 included. The number of registered employees in industrial production rose, but still compared to 2011 it showed a decrease. Between the registered employees in the industrial production in 2013 and in 2011 the decrease was "only" 3.2%.

The year 2014 can be called as the "turning point" in the development of the number of registered employees in industrial production in the area of MO34 + 20 km. The number of registered employees in industrial production in 2014 compared to 2011 increased by 2%, indicating a revival of the activity itself, especially the installation of technological equipment.

The second impact had no effect on the registered number of employees in the area of civil engineering. The number of registered employees in civil engineering continued to grow. In 2012 the number increased compared to 2011 by 0.3%, in 2103 by 9.3%. In 2014 it scored a drop of the value compared to 2013 from +9.3% in 2013 to +7.1%. This decline points out that the construction of Units 3 and 4 is gradually coming to its final stage.

This impact also had no effect on the registered number of employees in accommodation and food services. The number of registered employees in these services continued to grow. In 2012 it increased compared to 2011 by 33.7% and in 2013 it increased compared to 2011 by 46.3%. In 2014 a decrease of the value compared to 2013 is noticeable from +46.3% in 2011 to +39.8%.

A surplus of employees in accommodation and food services and a decrease in their number may be due to the increase in the total number of registered employees in industrial production explained by the fact that workers in industrial production do not use these services in such number as employees in civil engineering – they probably come from the vicinity of NPP Mochovce and thus from the territory of MO34 + 20 km.

5.2 OTHER/ADDITIONAL ENVIRONMENT POLLUTANTS (AIR, WATER)

The environment that surrounds us consists of a set of many interrelated relationships and bonds. Therefore, it is useful when assessing the situation to focus on the most vulnerable components which clearly play a key role. Currently, the most vulnerable components of the environment are air and water.

In terms of "Completion of Units 3 and 4 of NPP Mochovce" it is not relevant to assess the status and influence of radioactivity in the air or in water.

Air quality is reflected by air pollutants, i.e. pollutants contained in the atmosphere which are in direct contact with live component and may affect the health of living organisms.

For the operation of large source of air pollution for SE-EMO the decision of SEI COI OIPaK no. 4273/985-OIPK/05-KK/370700105 dated 29.7.2005 is valid, which granted an integrated permit for carrying out activities in the operation of SE, a.s. NPP Mochovce - SE-EMO12 in the auxiliary start-up boiler.

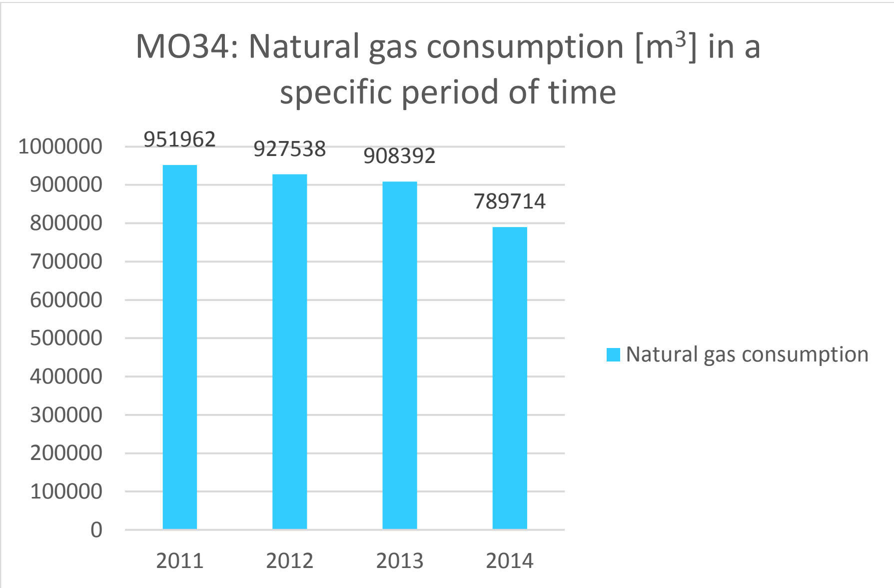
The District Environmental Office Levice issued the Decision T-11/01007-OVZ-KE on 29.6.2011, which permits the emission of greenhouse gases (CO2) for the source of "diesel generation station" and the auxiliary start-up boiler. This decision was amended by Decision No. T-2012/01849-OVZ-KE dated 06.12.2012, which also approved an annual plan for monitoring CO2 emissions.

<u>Significant decisions for SE-MO34 issued by the state administration in the area of air protection in 2014.</u>

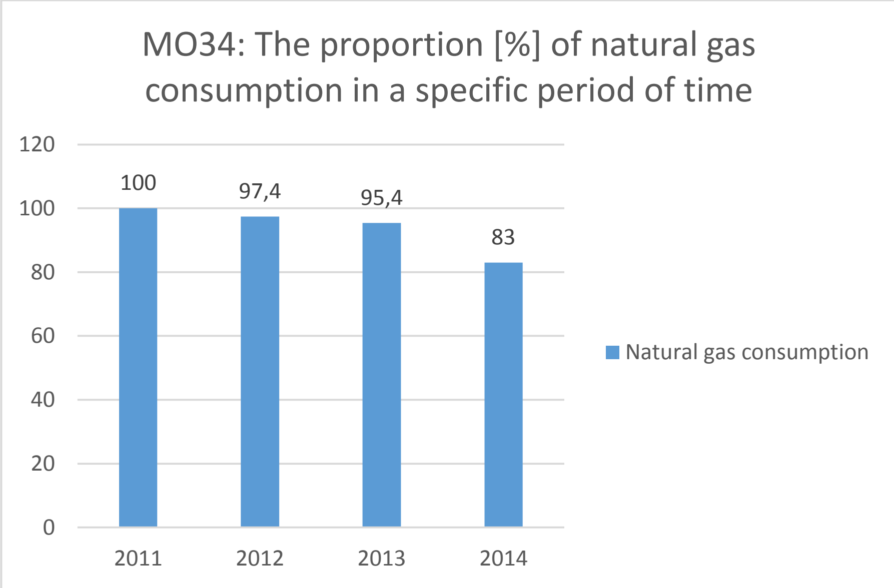
In 2014 the District Office Levice, Department of environmental protection issued the following decisions:

- Decision no. OU-LV-OSZP-2014/00221-KE of 04/03/2014 - Determining annual fee for 2014 for air pollution
- Decision no. OU-LV-OSZP-2014/013955-KE of 12/08/2014 - Approval for the operation of medium-sized air pollution sources after the change of the main boiler room (No. 11-651/001) and the boiler SA3 (No. 11- 651/011E)
- Decision no. OU-LV-OSZP-2014/013956-KE of 12/08/2014 - Approval of the procedure of calculating the quantities of discharged pollutants for the main boiler room (No. 11-651/001) and the boiler SA3 (Cat. No. 11-651/011E)

At that time, SE-MO34 operated and it still continues to operate 8 Medium air pollution sources - boiler rooms, which serve to heat buildings and domestic hot water. It uses natural gas as fuel, the combustion has a lower impact on air as any other commonly used type of fuel. SE-MO34 had and still has also a small source of air pollution - waste water treatment plant. For small sources of pollution emission values for pollution are not calculated.
In 2014 two gas boilers were replaced - a new gas boiler was installed in the Main boiler room and another new gas boiler was installed in the boiler room SA3. By the Installation of new boilers the energy efficiency of equipment was increased in accordance with the requirement of the Ministry of Economy no. 337/2012 Coll. laying down stricter parameters for energy conversion efficiency in the operation, reconstruction and construction of installations for the production of electricity and heat generator.

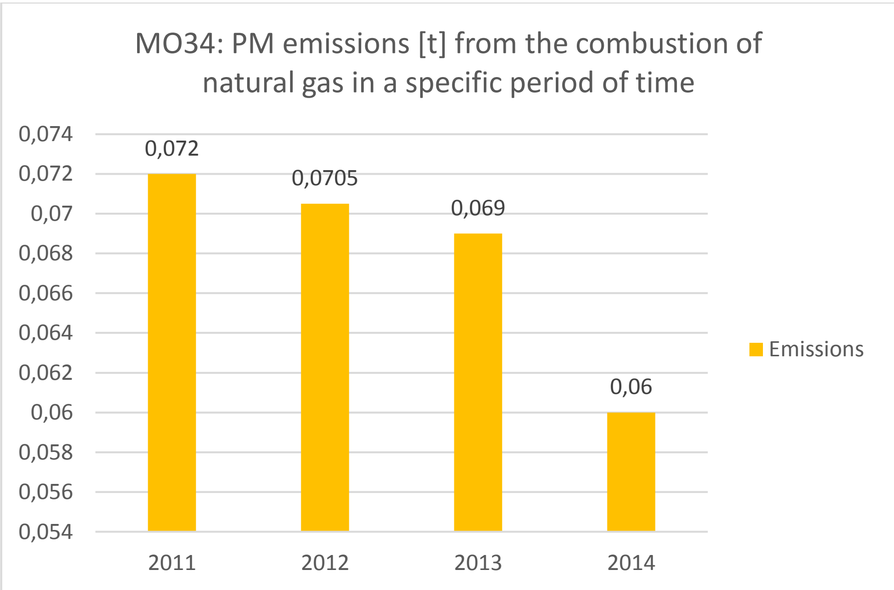


Graph 50: Consumption of natural gas [m3] in a specific period of time

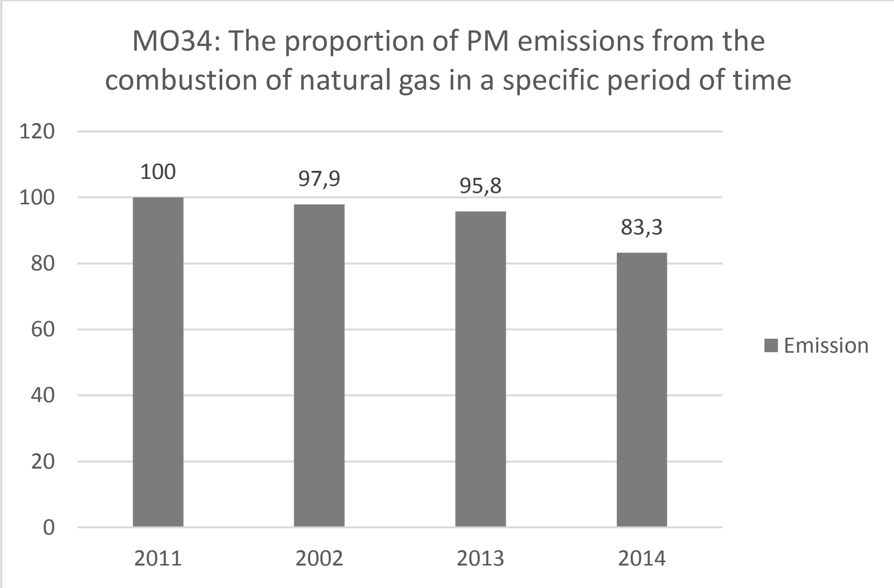


Graph 51: Proportional number of natural gas consumption in specific period of time

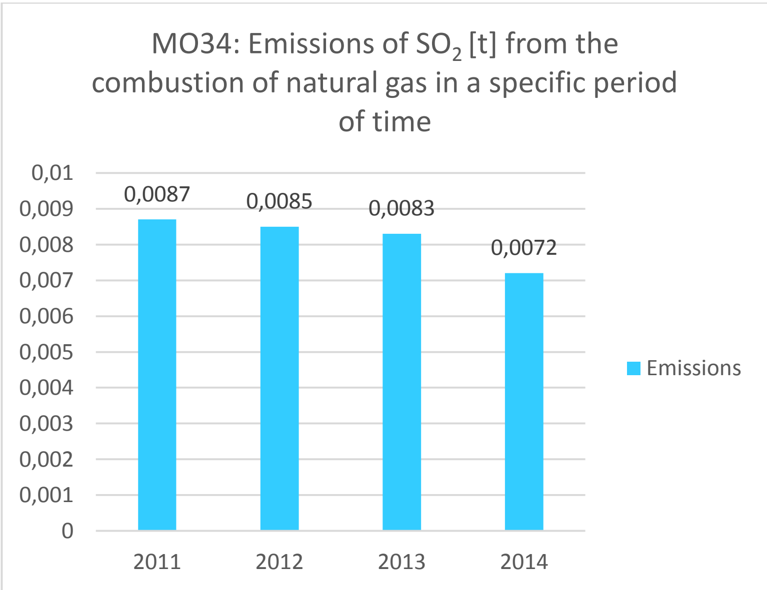
The trend in consumption of natural gas in a specific period of time is a downward trend. In 2014 there was a decrease in consumption of natural gas as a result of the planned installation and operation of new boilers with higher efficiencies.



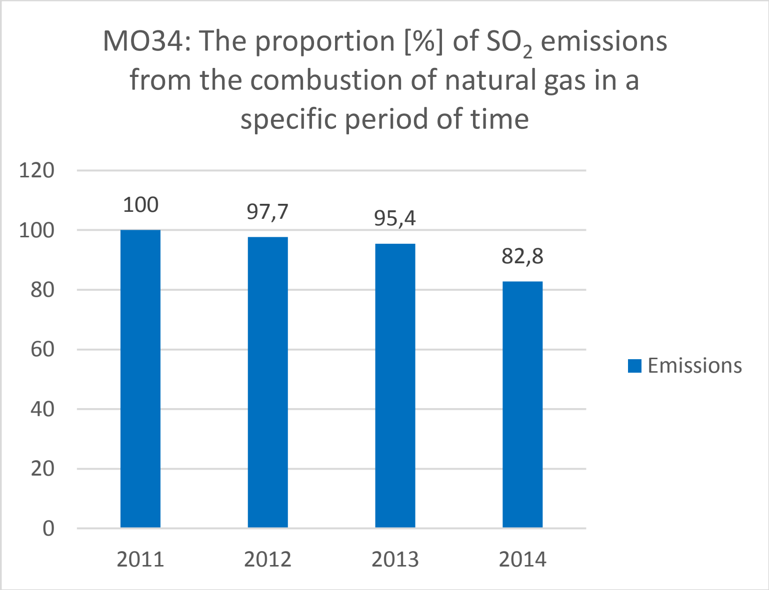
Graph 52: Particulate emissions [t] from the combustion of natural gas in a specific period of time



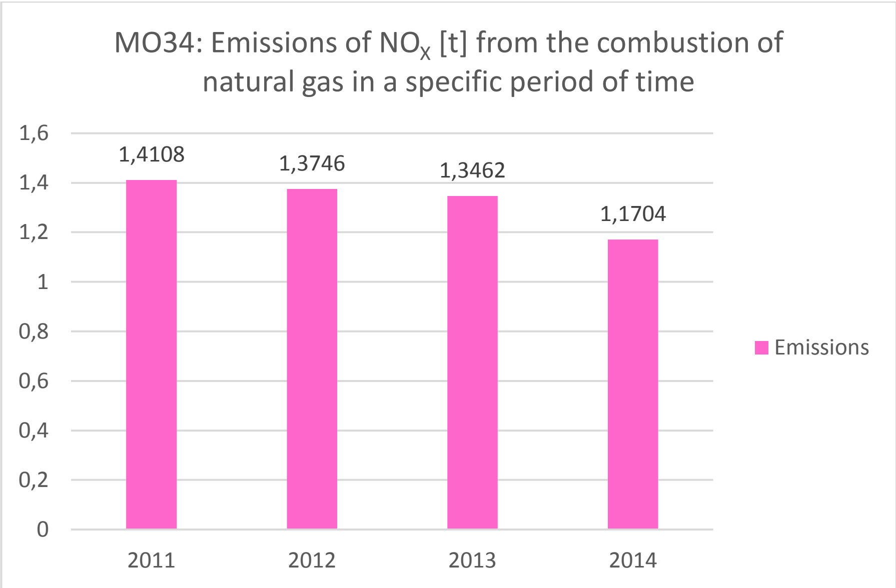
Graph 53: Proportional number of particulate emissions from the combustion of natural gas in a specific period of time



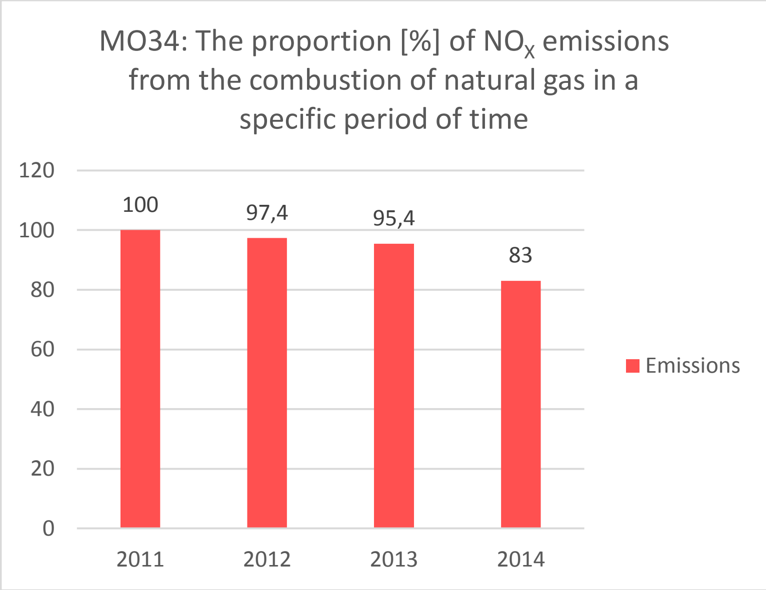
Graph 54: Emissions of SO_2 [t] from the combustion of natural gas in a specific period of time



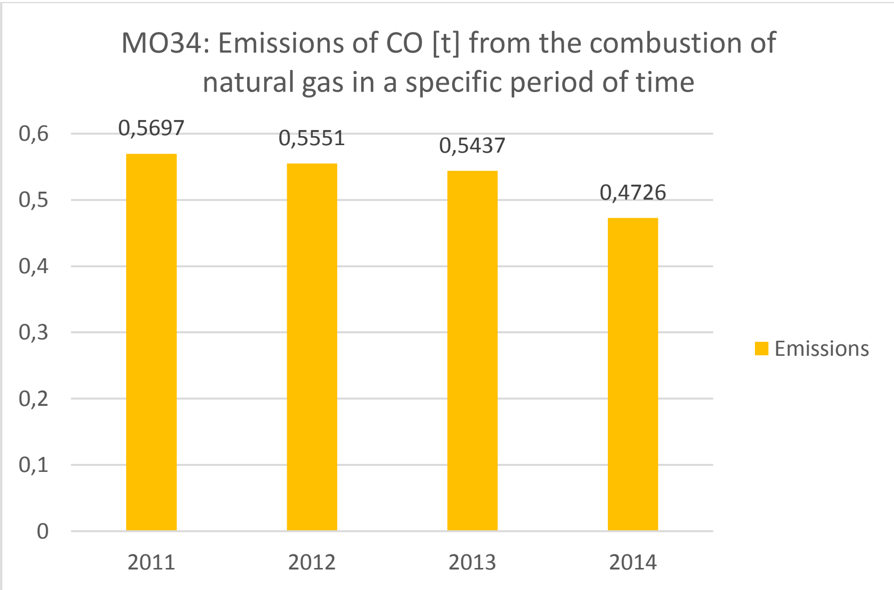
Graph 55: Proportional number of SO_2 emissions from the combustion of natural gas in a specific period of time



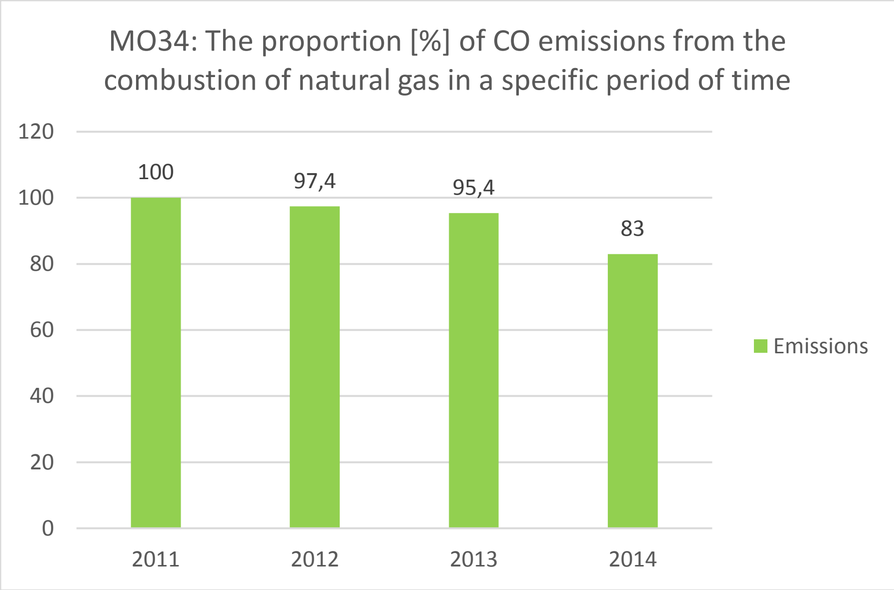
Graph 56: Emissions of NO_X [t] from the combustion of natural gas in a specific period of time



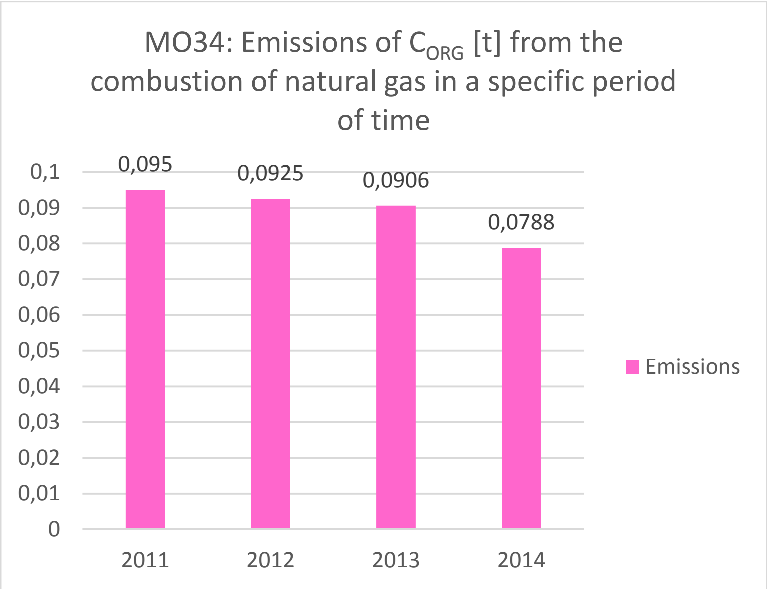
Graph 57: Proportional number of NO_X emissions from the combustion of natural gas in a specific period of time



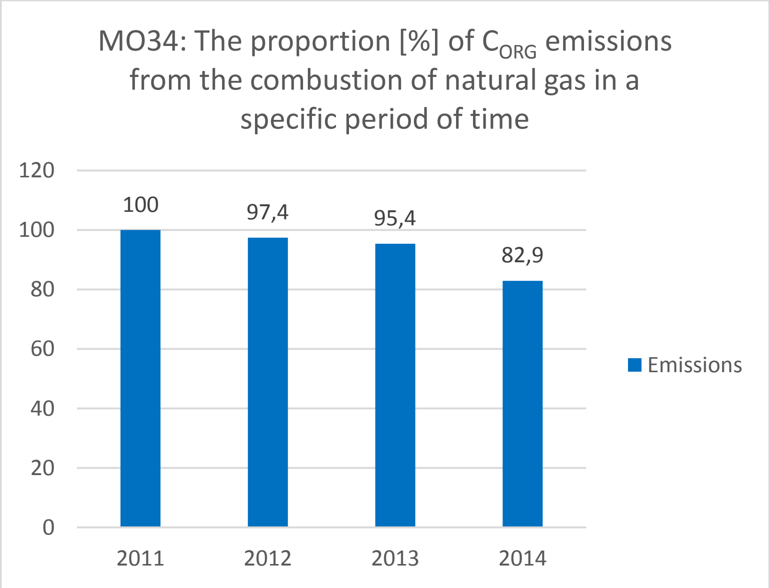
Graph 58: CO emissions [t] from the combustion of natural gas in a specific period of time



Graph 59: Proportional number of CO from the combustion of natural gas in a specific period of time



Graph 60: Emissions of C_{ORG} [t] from the combustion of natural gas in a specific period of time



Graph 61: Proportional number of C_{ORG} emissions from the combustion of natural gas in a specific period of time

The amount of emission is determined by calculation of the emission factor and natural gas consumption. The method of calculation is approved by the District Office Levice, Department of environmental care.

NPP Mochovce as a whole and thus the location of the "Completion of Units 3 and 4 of NPP Mochovce“ did not belong to the significant sources of air pollution in the defined period of time. Even nowadays it does not belong to the major sources of pollution. Transportation can be considered in terms of "Completion of Units 3 and 4 of NPP Mochovce" as the second largest source of pollution (after the gas combustion). Given the fact that in the specific period of time there was no intensive construction activity, the impact of transportation does not escape the average values in the wider surrounding area MO34 + 20 km.

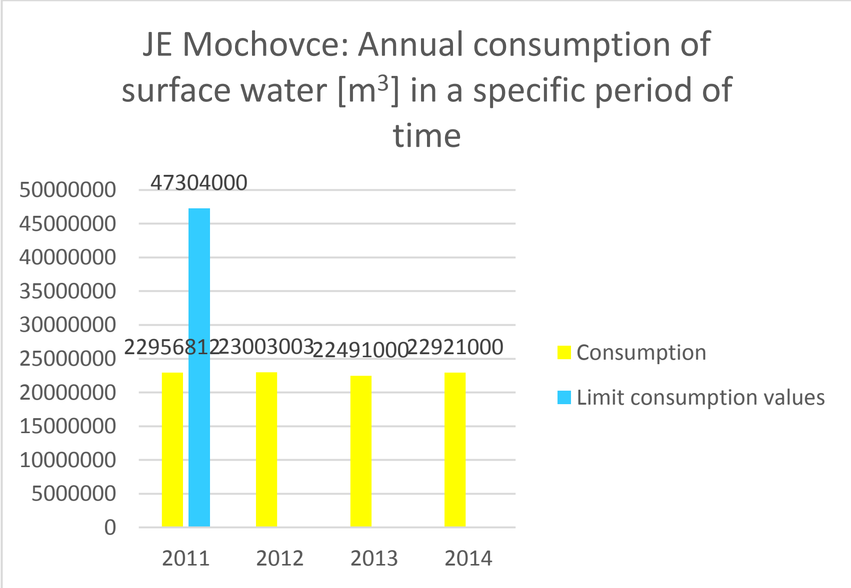
The main local resources that contribute most heavily to air pollution are in particular transportation, winter road sanding, suspension and resuspension of particles from insufficiently cleaned roads, construction sites, landfills with bulk materials, home heating with solid fuels and agriculture, which directly affect the level of pollution.

Surface water

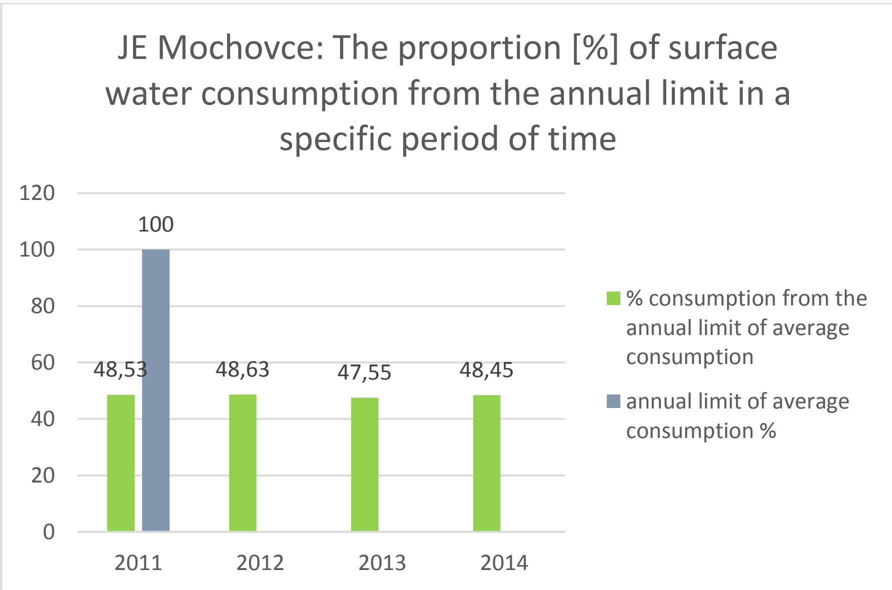
The decision of the Regional Office in Banská Bystrica no. 1094/2/177/405.1/93-M from 6.7.1993 allows NPP Mochovce (among other conditions) in paragraph I.3) surface water withdrawal from the reservoir of the dam Veľké Kozmálovce as follows:

- Maximum amount of collected surface water is 1,8 m^3/s;
- Average amount collected is 1,5 m^3/s i.e. 129 600 m^3/day 47 304 000 $m^3/year$

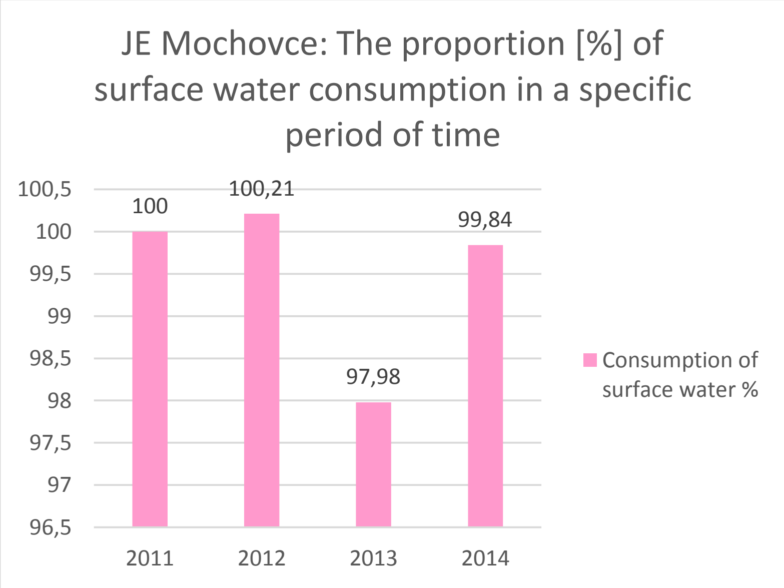
The surface water collected from the reservoir of the dam Veľké Kozmálovce is at NPP Mochovce used as technical and cooling water. NPP Mochovce has only common measurement of surface water, it is possible to determine how much of the collected surface water was consumed at MO12 and how much at the "Completion of Units 3 and 4 of the Mochovce NPP."



Graph 62: Annual consumption of surface water [m3] at NPP Mochovce and limit of the average annual consumption of specific period of time



Graph 63: Proportional number of the consumption of surface water from the annual limit of Mochovce for each year in a specific period of time



Graph 64: Proportional number of surface water consumption at NPP Mochovce in a specific period of time

Tab. no. 10: The limit values of chemical indicators of the waste water discharged into the river Hron

Limit values of chemical indicators of the waste water emitted into Hron [mg.l^{-1}]					
Indicator	**Limit values**	**Specified period**			
		2011	2012	2013	2014
$CHSK_{CR}$	**35**	14,04	17,52	21,95	21,19
$N-NH_4$	**1,5**	0,145	0,227	0,2733	0,3097
Cl^-	**100**	36,71	52,32	50,581	31,45
BSK_5	**12**	2,58	2,79	3,57	2,4166
NEL	**0,5**	< 0,1	0,11	< 0,1	< 0,1
RL_{105}	**1500**	890,959	913,78	848,94	694,388
RL_{550}	**1000**	709,41	721,53	668,29	545,71
$P_{CELK.}$	**1,00**	0,382	288	0,171	0,163
T [°C]	**30**	19,58	18,66	18,25	18,12
NL	**40**	11,659	11,07	10,62	10,1837
SO_4^{2-}	**690**	331,155	332,64	309,88	248,05
pH	**6,0 - 9,0**	8,763	8,765	8,76	8,556
Hydrazine	**0,5**	< 0,02	0,0216	0,0242	0,0279
Active CL	**0,1**	< 0,05	0,064	0,062	0,05375
AOX	**0,2**	< 0,05	< 0,05	0,0525	< 0,05
$N-NO_3^-$	**16**	9,136	8,191	8,609	6,8948

Tab. no. 11: Balance values of chemical indicators of waste water discharged into the river Hron

Balance values of chemical indicators of the waste water emitted into Hron [$t.r^{-1}$]					
Indicator	**Limit values**	**Specified period**			
		2011	2012	2013	2014
$CHSK_{CR}$	**210**	79,736	98,62	106,99	121,482
$N\text{-}NH_4$	**9**	0,823	1,278	1,332	1,776
Cl^-	**600**	208,485	294,495	246,536	180,304
BSK_5	**90**	14,652	15,704	17,4	13,85
NEL	**3**	0,568	0,619	0,487	0,573
RL_{105}	**9000**	5059,96	5143,42	4137,797	3980,947
RL_{550}	**6000**	4028,9	4061,3	3257,3	3128,571
$P_{CELK.}$	**6**	2,169	1,62	0,832	0,934
NL	**240**	66,214	62,31	51,74	58,38
SO_4^{2-}	**4140**	1880,7	1872,34	1510,378	1422,078
Hydrazine	**3**	0,114	0,122	0,118	0,16
Active CL	**0,6**	0,284	0,36	0,302	0,308
AOX	**1,2**	0,284	0,281	0,256	0,287
$N\text{-}NO_3^-$	**96**	51,885	46,105	41,96	39,53

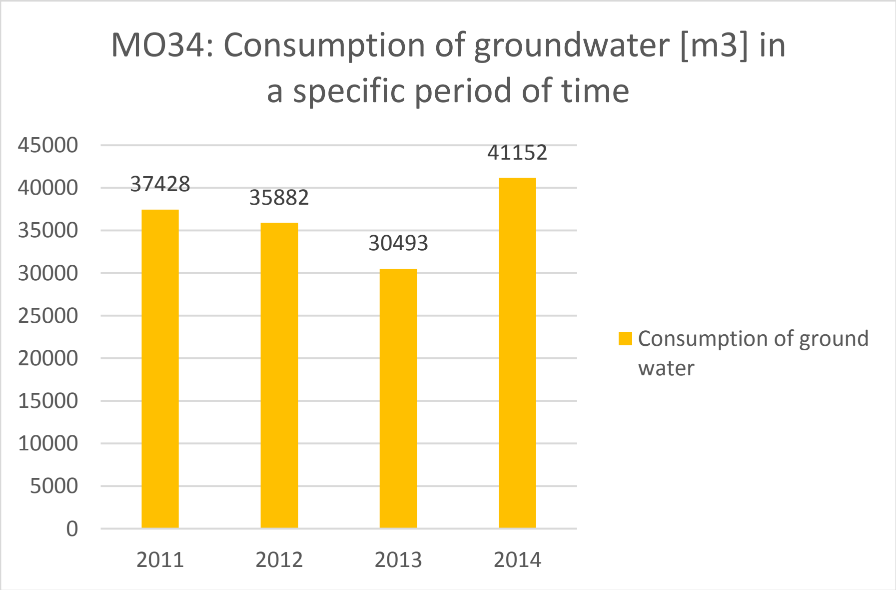
Chemical parameters are monitored by continuous analyzers positioned within the corporate building of waste water treatment (building used for NPP Mochovce as a whole). Exceeding the limit concentration causes an automatic stop of wastewater. According to the characteristics of continuous measurements, Mochovce also controls the amount of water discharged into the Hron.
Information obtained by processing data from the document: "The comprehensive report on the state of the environment in SE-MO34" and "A comprehensive report on the environment in SE-EMO" in the specific period of time.

Commens on the consumption of surface water: The consumption did not reach the maximum level in any year of the specific period of time. The consumption of surface water is at 50% of the permitted average value as established by the decission of the Regional Authority in Banská Bystrica. This means that the dominant activity of surface water consumption in NPP Mochovce is the operation of SE-EMO12 and the "Completion of Units 3 and 4 of NPP Mochovce" has a negligible impact on the consumption of surface water. NPP Mochovce as a consumer of surface water from the river Hron (i.e. the sum of consumption of surface water for the operation of SE-EMO12 and for the "Completion of Units 3 and 4 of NPP Mochovce") has did not exceed 50% of the permitted limit in any year of the specific period of time (the peak value from 2012 was at 48.63% of the annual limit).

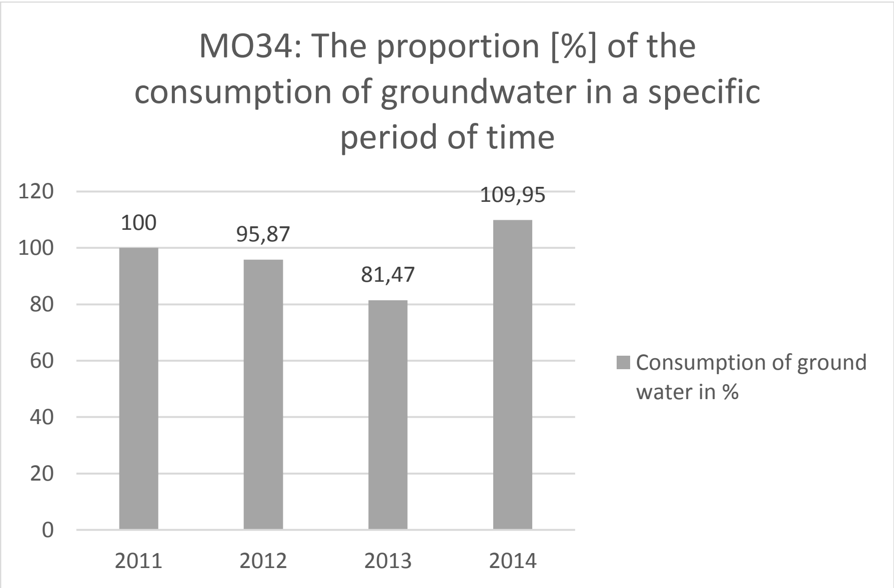
The last relevant modification of the permit for waste water treatment in a specific period of time made by the water authority was the decision no. OU-NR-OSZP2-2014/034076 of the District Office in Nitra, Department of environmental protection of 8/11/2014 – Amendments to the Decision no. 2007/00029 of 25.1.2007 - Decision for special use of water - wastewater discharges from the premises of the nuclear power plant into the surface flow of Hron. The decision allows temporary derogations for wastewater discharges from the NPP Mochovce in p_H, NL, RL_{550} indicators during the commissioning of cooling water technology for the completion of Mochovce 3&4. The exception was given until the end of 2015.

In terms of the cumulative effects the "Completion of Units 3 and 4 of the NPP Mochovce" has in a specific period of time a negligible almost not evaluable impact compared to other pollutants.

Maximal allowed groundwater abstraction from wells HMG-1 = 18 l/s. Maximal allowed consumption of HMG-1/A = 33 l/s. The total annual limit of groundwater consumption = 1,041,401 m^3/year.



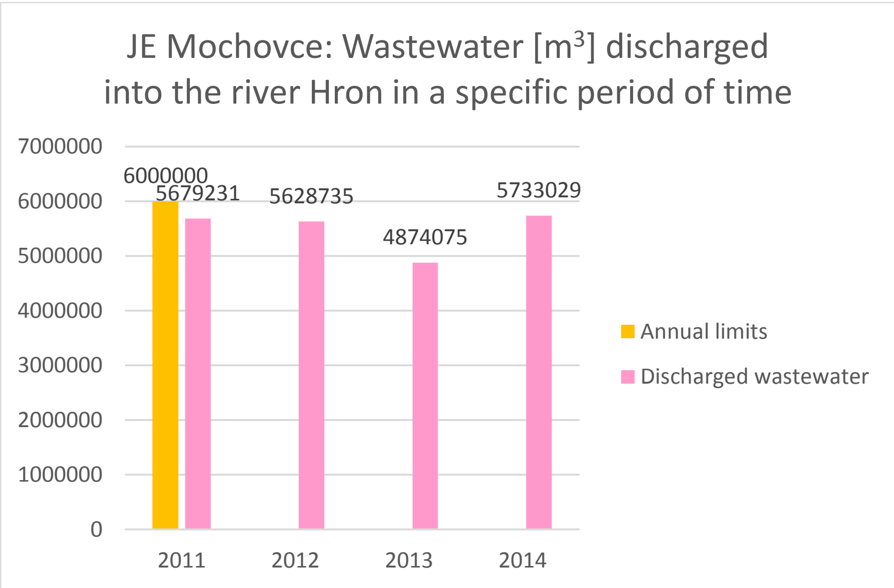
Graph 65: The consumption of groundwater in SE-MO34 in a specific period of time



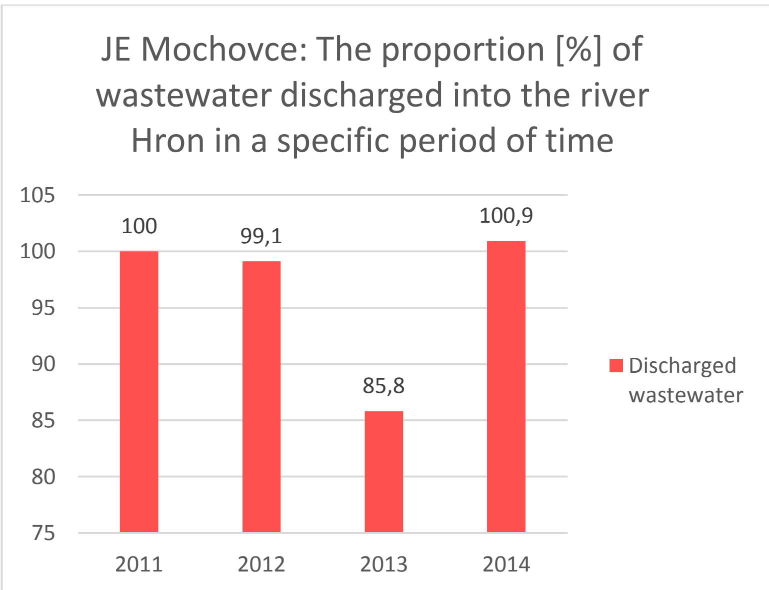
Graph 66: Proportional number of groundwater consumption in SE-MO34 in a specific period of time

The increase in consumption of groundwater/drinking water by 9.95% in 2014 compared to the consumption in 2011 is associated with an increased in the number of employees of supplier organizations and also of SE-MO34.
The waste water produced in the NPP Mochovce and SE-MO34 site is discharged into the river Hron. Water from SE-MO34 (warehouse and office area) and water from sludge bed Čifáre and from the treatment of drinking water is discharged into Telinský potok.

Waste water from the technological and cooling water is discharged into the Hron by three types of drainage system (sewage, rain, and industrial - special) into a common waste pipe (ø 1000 mm, steel, full length covered by concrete) and about 6,0 km by gravity into the river.



Graph 67: Discharged wastewater [m^3] into the Hron in specific period of time



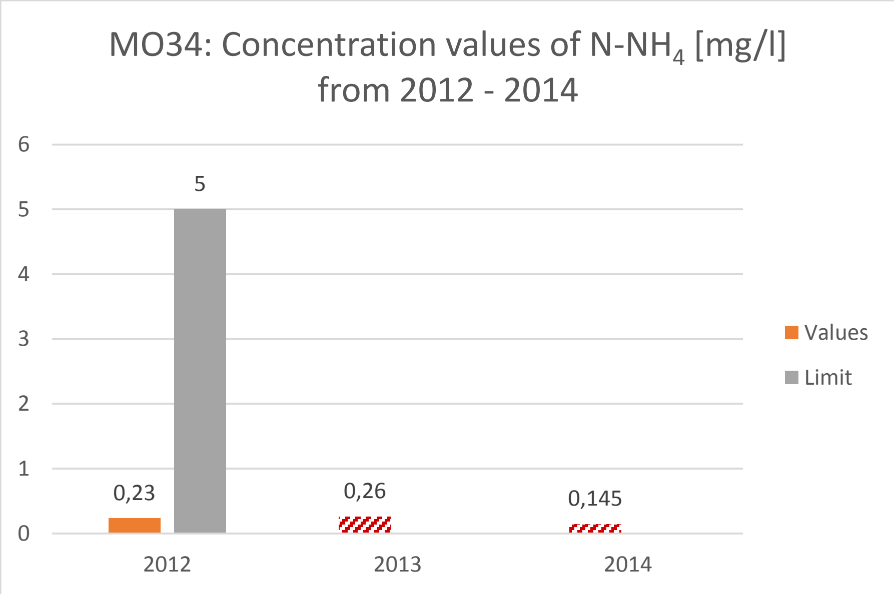
Graph 68: Proportional number of discharged wastewater [m^3] into the Hron in specific period of time

According to the legislation, regulations and the decision of the company the taking and analyzing of samples for monitoring of pollution of waste water for the NPP Mochovce is carried out by an accredited laboratory at NPP Mochovce. The analysis of samples composed of mixed samples regularly collected every 8 hours is carried out four times a year. In current practice limit values have never been exceeded.

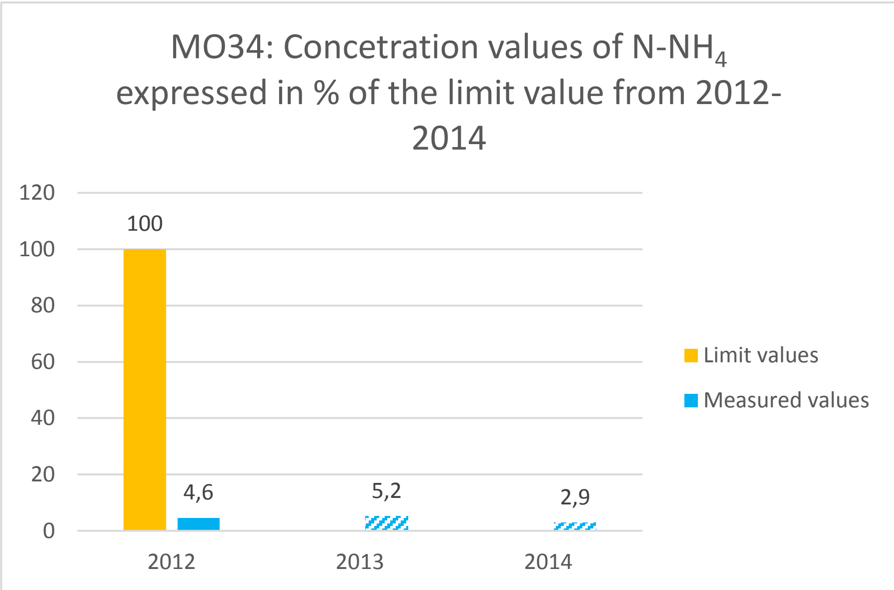
Additional water pollutants

- If some of the values in the columns of the following graphs are filled with striped patterns it means that the value was assessed with the sign of less than (<).

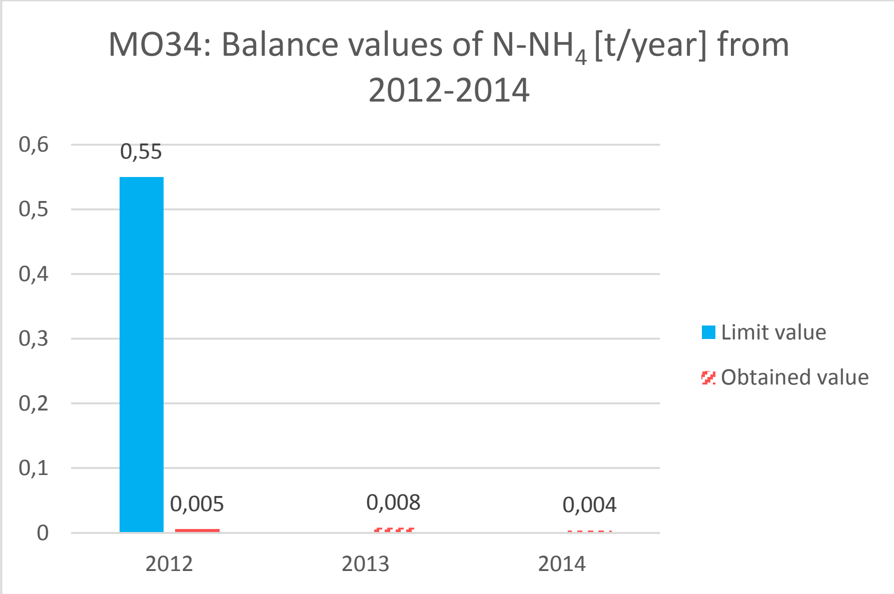
N-NH_4



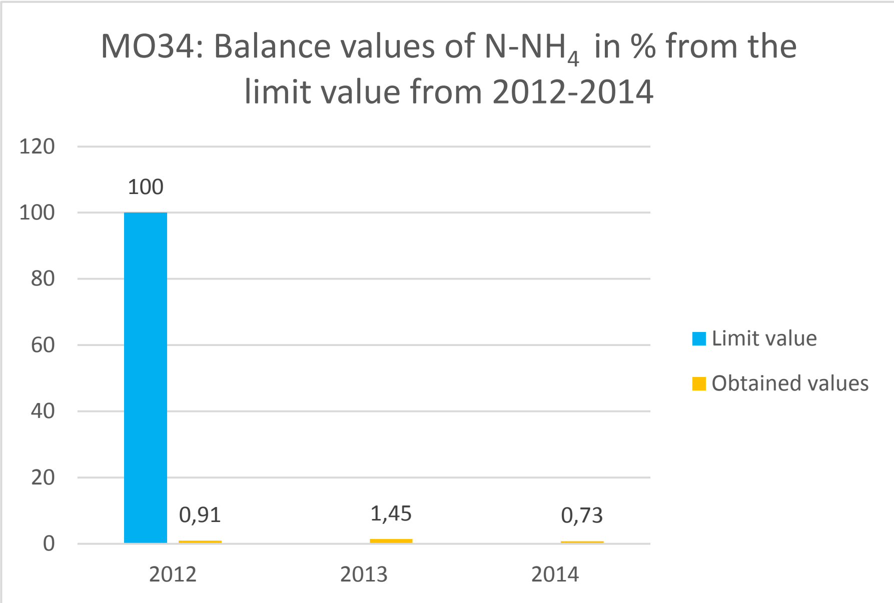
Graph 69: Concentration values of N-NH_4



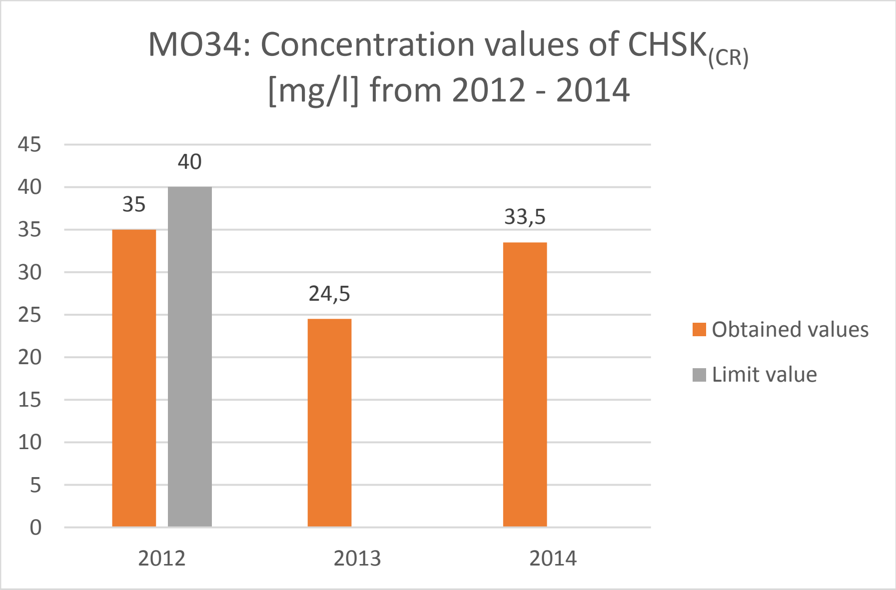
Graph 70: Concentration values of N-NH_4 expressed in % of the limit value



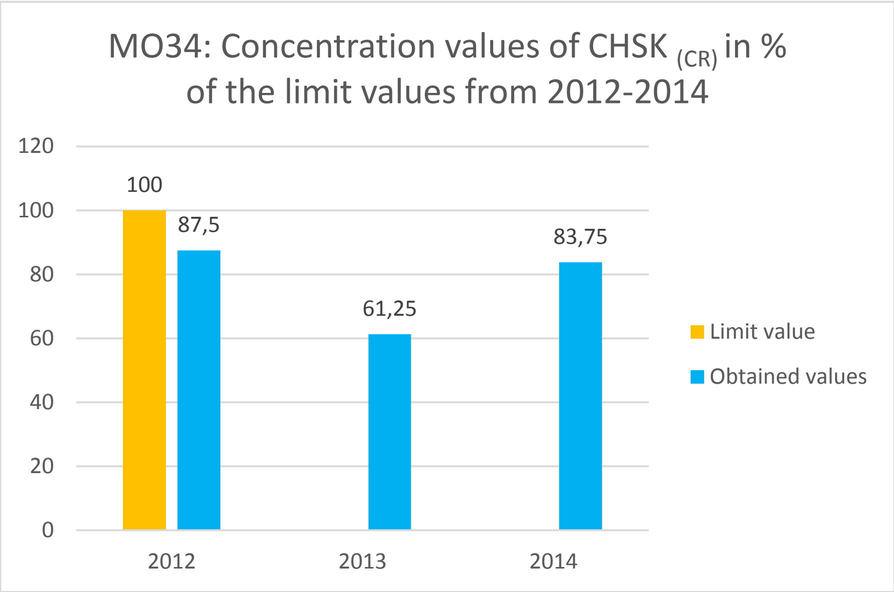
Graph 71: Balance values of N-NH_4



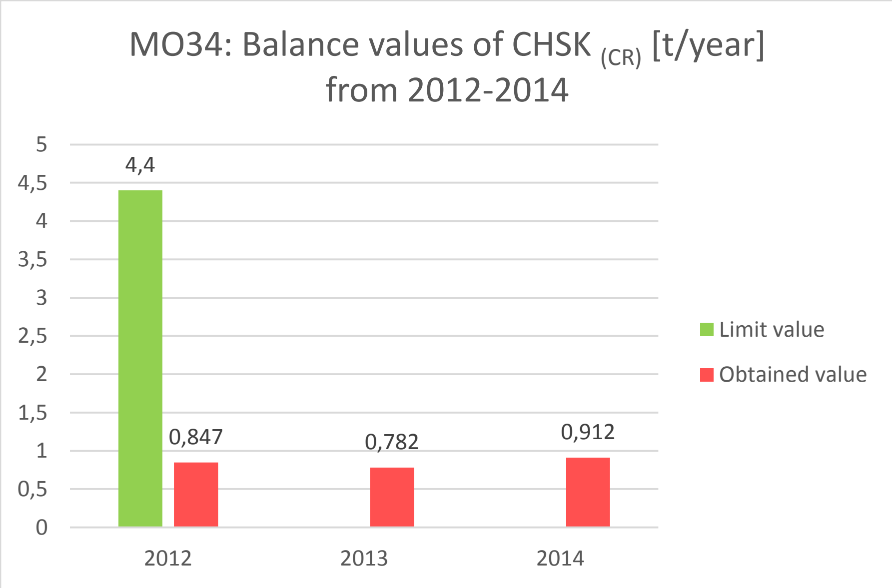
Graph 72: Balance values of N-NH_4 expressed in % of the limit value



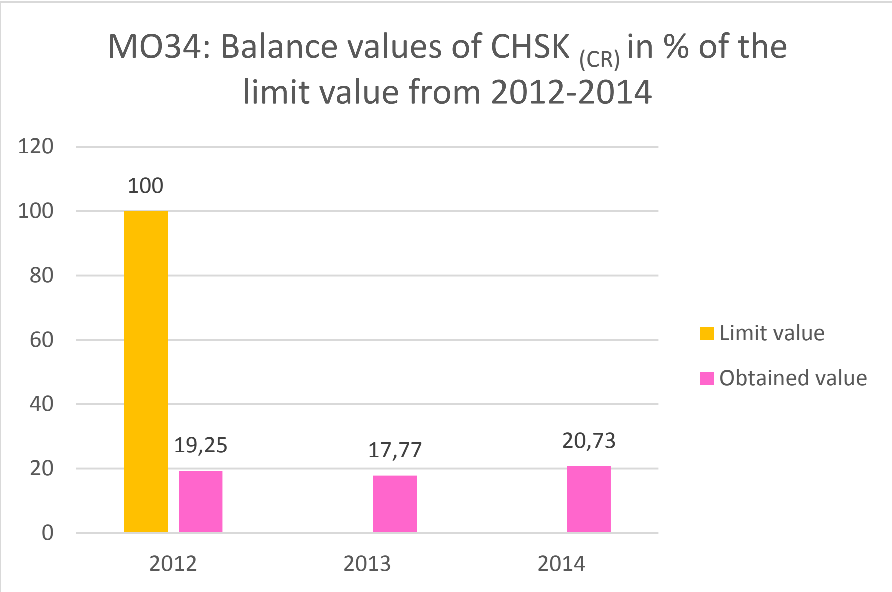
Graph 73: Concentration values of CHSK $_{(CR)}$



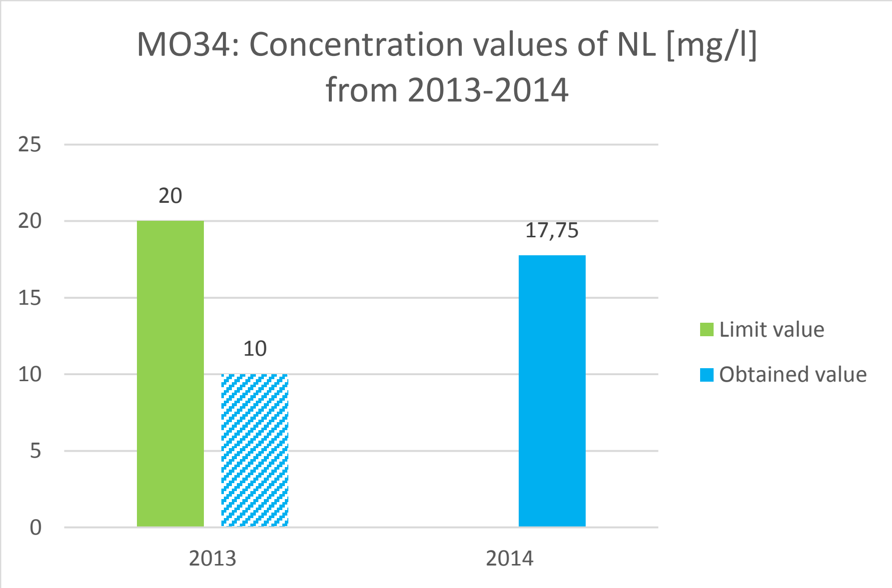
Graph 74: Concentration values of CHSK $_{(CR)}$ expressed in % of the limit value



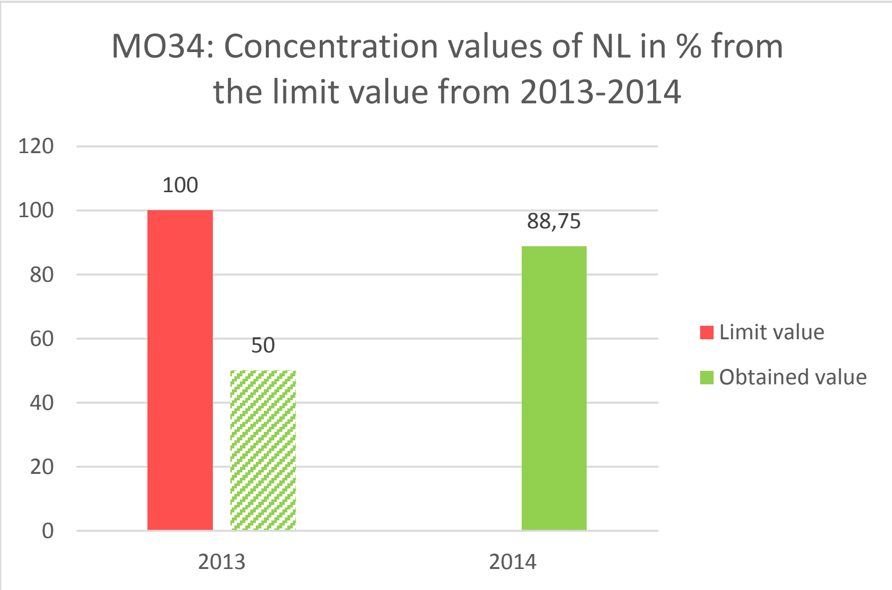
Graph 75: Balance values of CHSK $_{(CR)}$



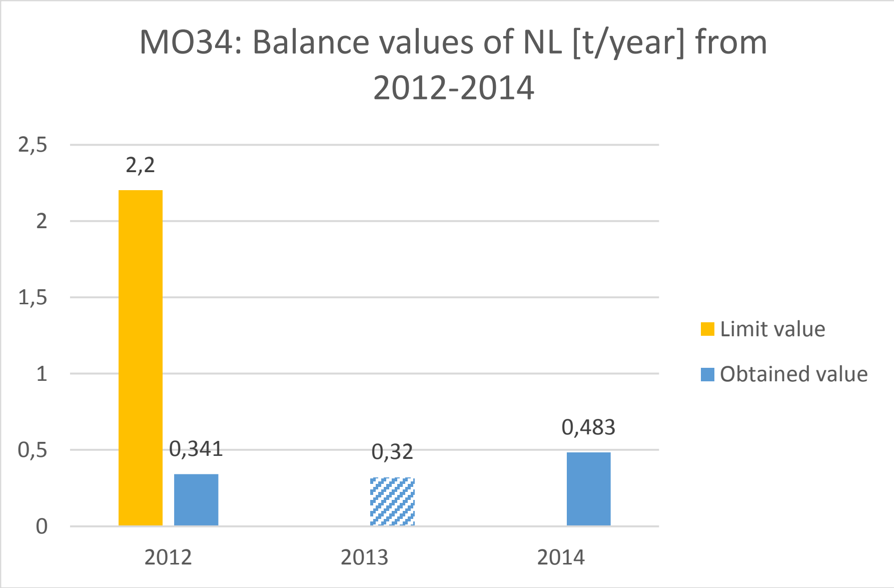
Graph 76: Balance values of CHSK $_{(CR)}$ expressed in % of the limit value



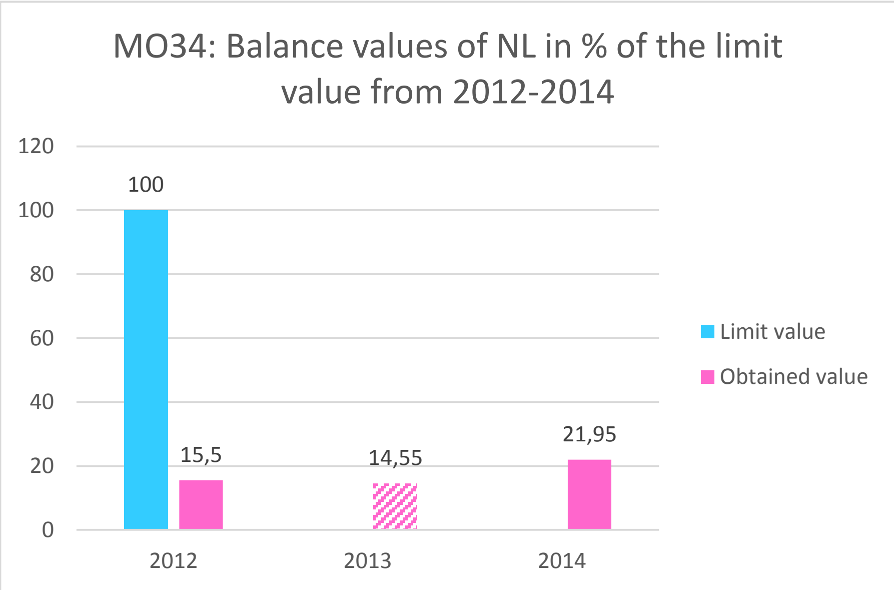
Graph 77: Concetration values of suspended solids



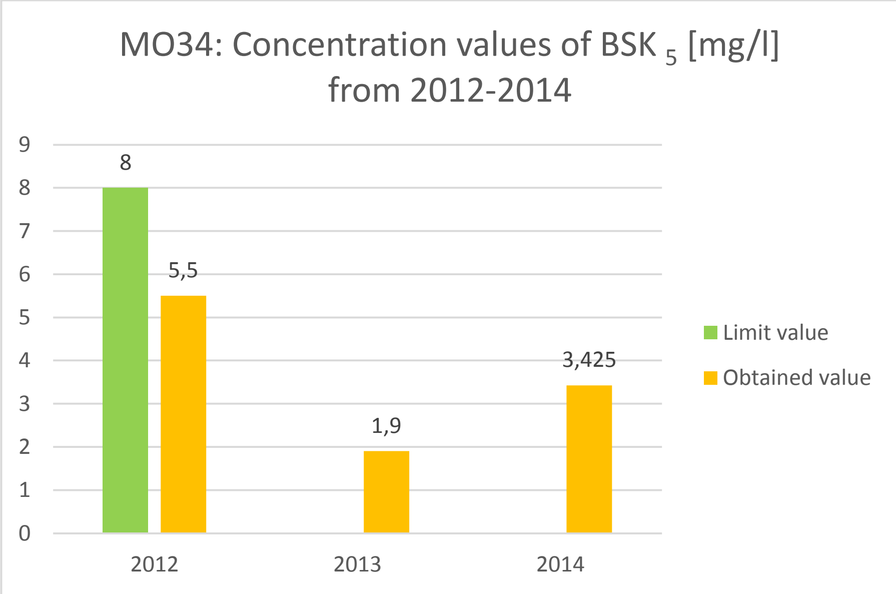
Graph 78: Concentration values of suspended solids expressed in % of the limit value



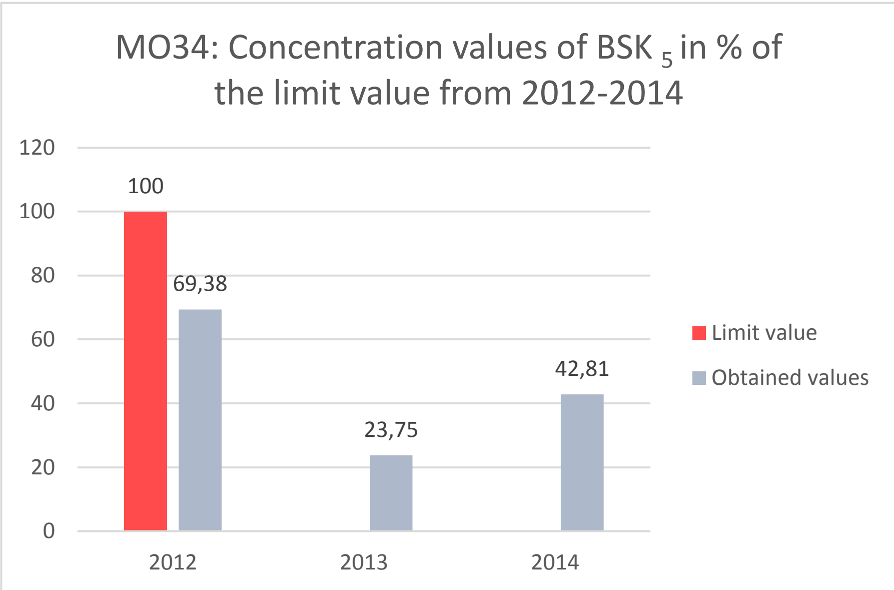
Graph 79: *Balance values of the suspended solids*



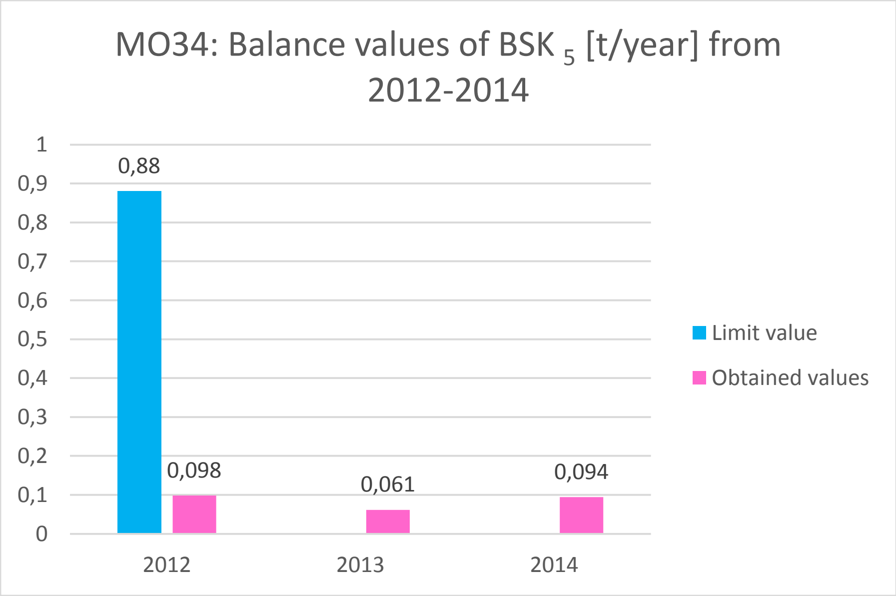
Graph 80: *Balance values of the suspended solids expressed in % of the limit value*



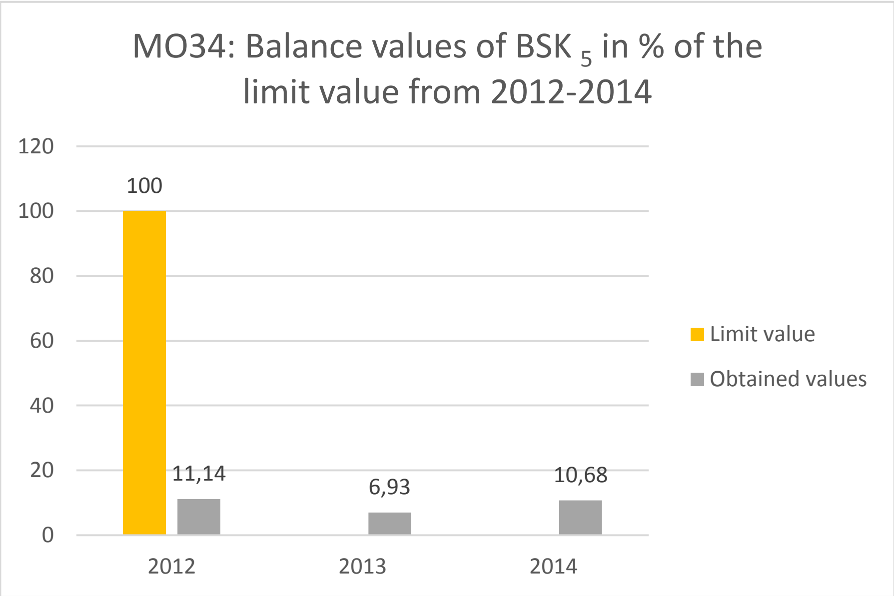
Graph 81: Concentration values of BSK_5



Graph 82: Concetration values of BSK_5 expressed in % of the limit value



Graph 83: Balance values of BSK_5



Graph 84: Balance values of BSK5 expressed in % of the limit value

5.3 ADDITIONAL CASES OF DISEASES, PROBLEMS WITH ALCOHOL AND DRUGS AND CRIME

ADDITIONAL CASES OF DISEASES

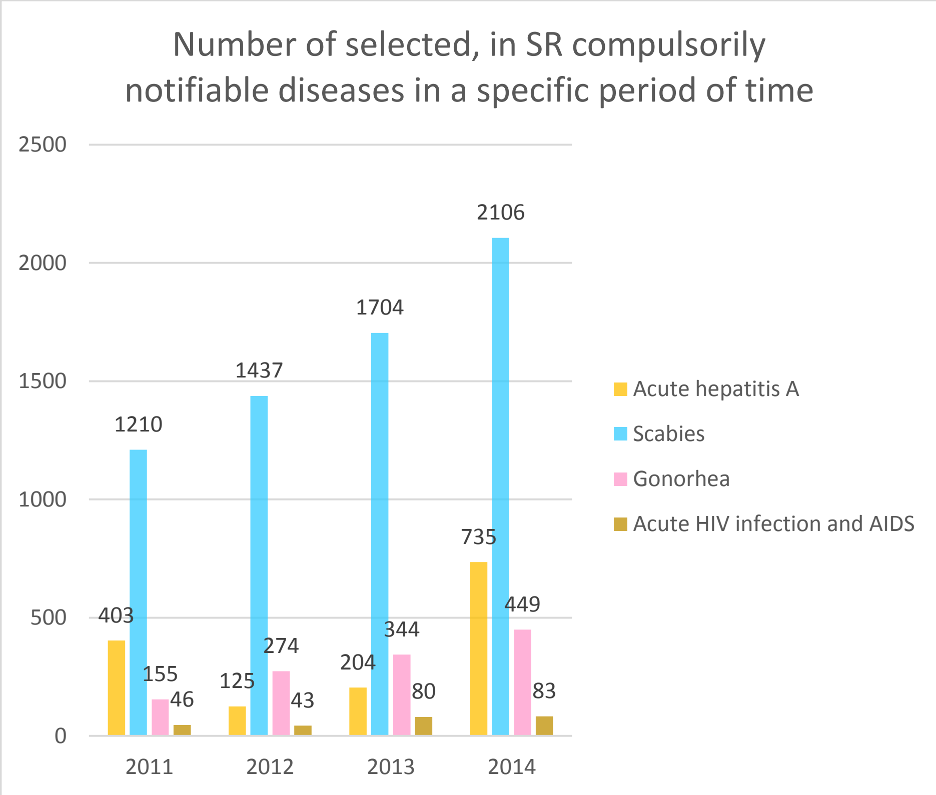
In this section it would be helpful to consider the broader context - in particular the possibility of "transmission" or possible increases in of diseases caused by labor migration. That is why this section specifies data for the whole of Slovakia (not only for the population of the area of MO34 + 20 km), the territory of MO34 + 20 km can be "at risk" from the outside.
The given figures relate to diseases in the statistics commonly referred to as "diseases compulsorily notifiable." Table no. 1. of annex 18 indicates the number of occurrences of these diseases (including their classification according to ICD-10).
From Table no. 1 in Annex 18 with the number of occurrences of compulsorily notifiable diseases in the SR in a specific period of time Table no. 2 was created with the number of occurrences of compulsorily notifiable diseases in the territory of MO34 + 20 km so that the number of occurrences in the Slovak Republic was multiplied by the relative number of populations of the territory of MO34 + 20 km to the population of Slovakia.
Subsequently, the data of Table no. 2 were modified and the compulsorily notifiable diseases whose introduction into the territory of MO34+20 km is unlike were omitted (probability of occurrences within the territory of MO34 + 20 km in a specific period of time):

- In none of the specific time period it exceed the value of 1 and
- the ratio of probable occurence in 2014/2011 ≥ 2).

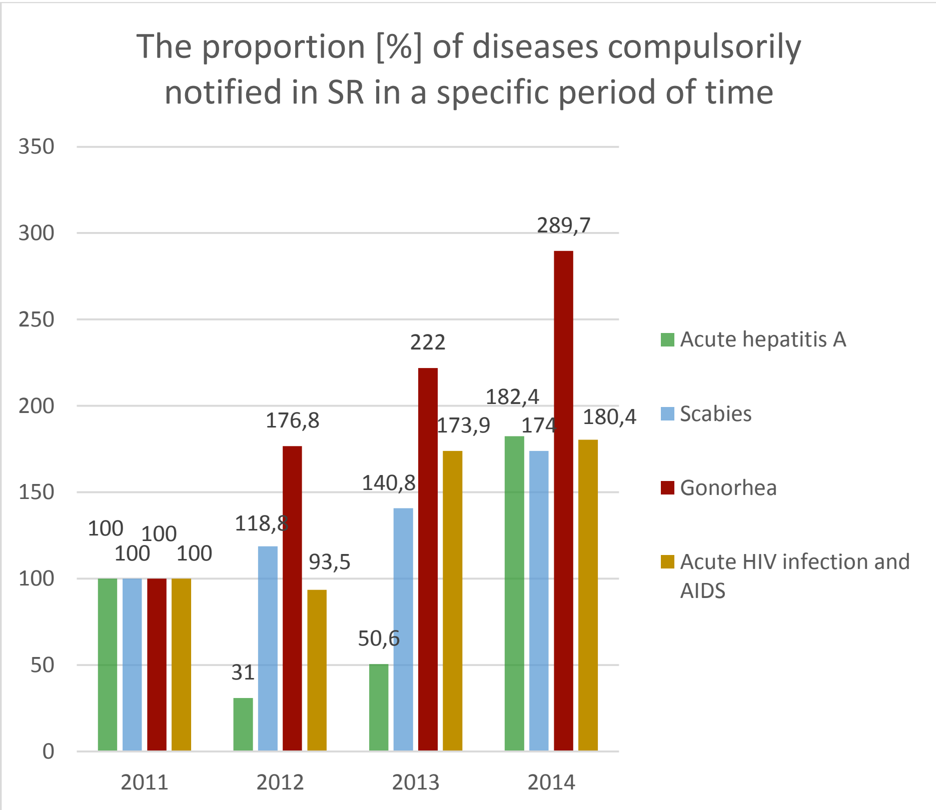
After the adjustment described above the compulsorily notifiable diseases were determined with a relatively high probability of introduction into the territory of MO34 + 20 km:

- Acute hepatitis A (B15)
- Mumps ((B26) (although it does not fully meet the selection criteria, increase in disease by comparing the years 2011 and 2014 is nearly 800 times)
- Psoriasis (B86)
- Gonorrhea (A54)
- Acute HIV infection and AIDS (B20-B24).

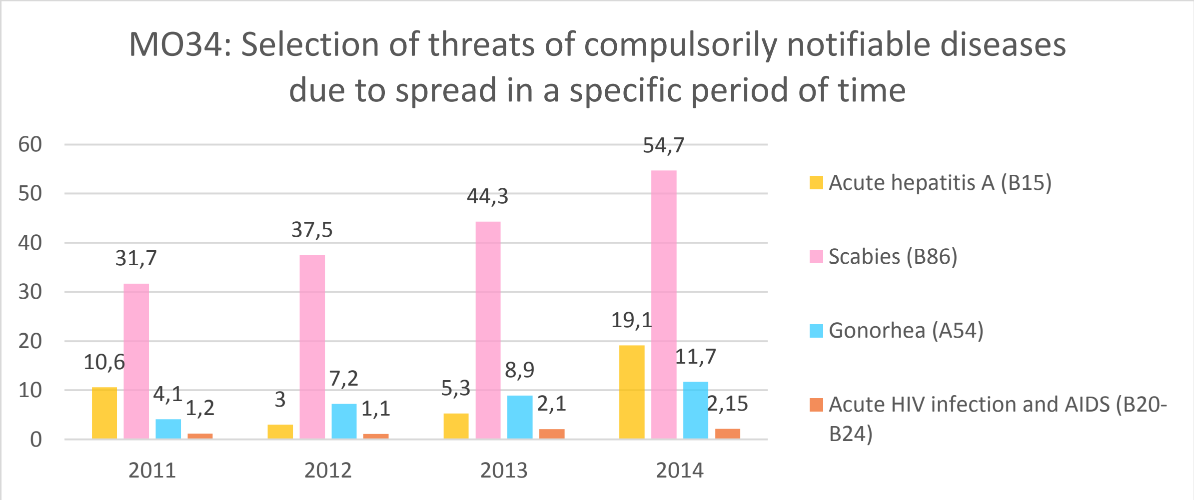
Greatly simplified characteristics of the diseases are listed in Annex no. 18.
The most frequent occurrence of the disease Mumps is with individuals from 5 to 15 years. In "Completion of Units 3 and 4 of NPP Mochovce" the group that can transferred to the territory of MO34 + 20 km any of the compulsorily notifiable diseases is the working age group, i.e. 15 to 64 years. Mumps disease will be further examined.



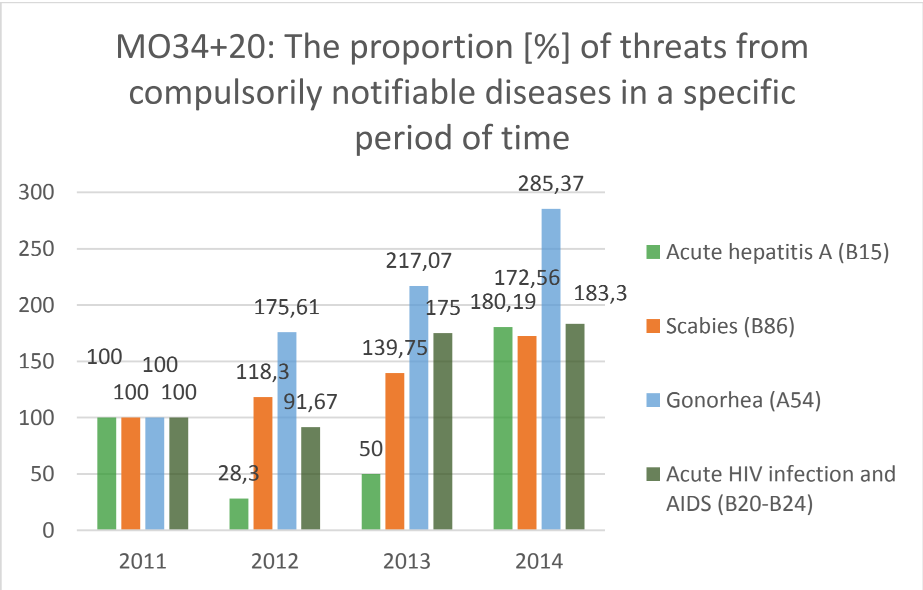
Graph 85: The number of selected, in the SR compulsorily notifiable diseases in a specific period of time



Graph 86: Proportional number of selected, in the SR compulsorily notifiable diseases in a specific period of time



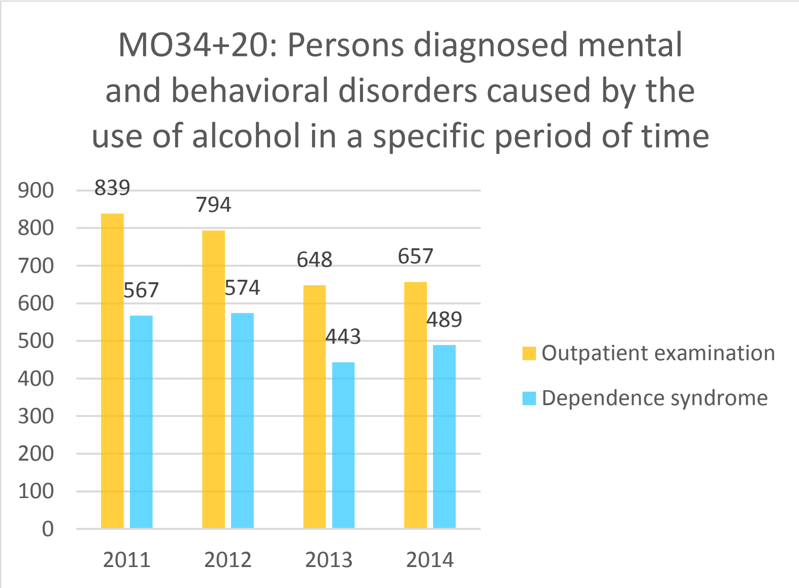
Graph 87: The number of selected compulsorily notifiable diseases, which may have been entrained into the area of MO34 + 20 km in a specific period of time



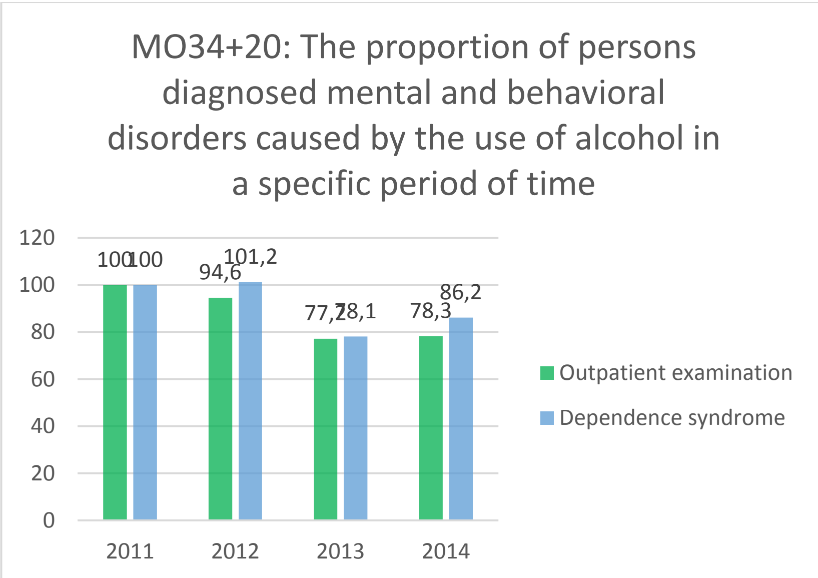
Graph 88: Proportional number of selected in the SR compulsorily notifiable diseases, which may have been entrained into the area of MO34 + 20 km in a specific period of time

Information about the area of MO34 + 20 km are based on data in Annex 18.

MENTAL AND BEHAVIORAL DISORDERS DUE TO THE USE OF ALCOHOL
According to the ICD-10 diagnosis F-10 F-10.02



Graph 89: Number of persons with mental or behavioral disorder caused by the use of alcohol in a specific period of time

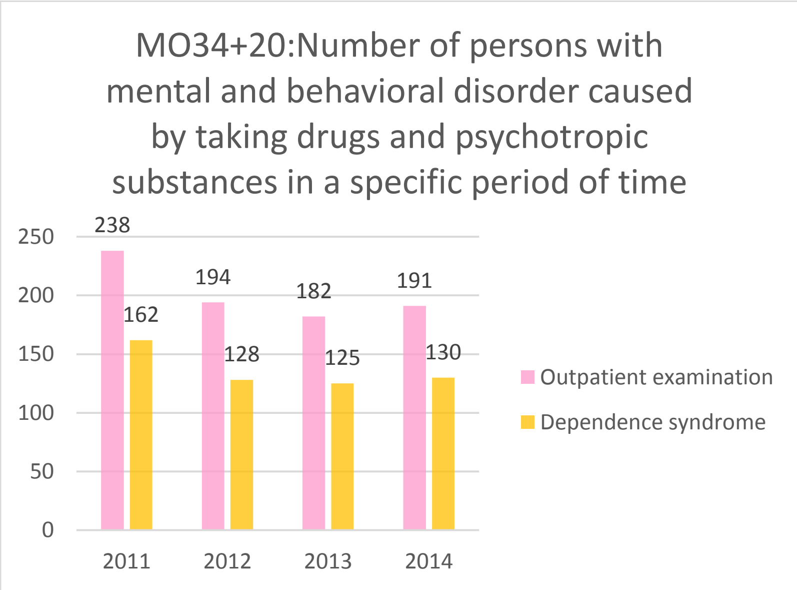


Graph 90: Proportional number of people with mental or behavioral disorder caused by the use of alcohol in a specific period of time

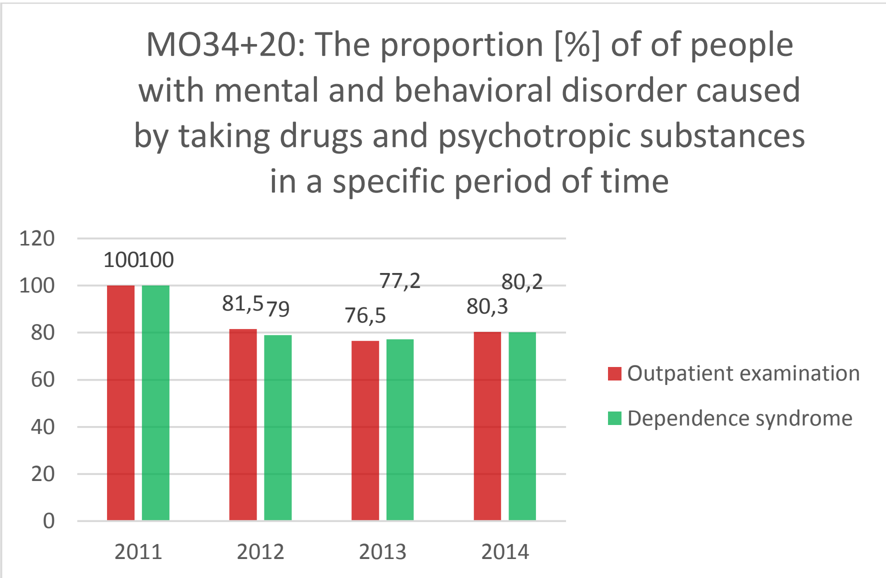
Information about the area of MO34 + 20 km are based on data in Annex 16.

MENTAL AND BEHAVIORAL DISORDERS DUE TO THE USE (TAKING) OF DRUGS AND PSYCHOACTIVE SUBSTANCES

Drugs and psychotropic substances - according to ICD-10 diagnosis F-11 ÷ F-19 and F-F-11.2 ÷ 19.2



Graph 91: Number of persons with mental or behavioral disorder caused by the use (taking) of drugs and psychotropic substances in a specific period of time



Graph 92: Proportional number of people with mental or behavioral disorder caused by the use (taking) of drugs and psychotropic substances in a specific period of time

Information about the area of MO34 + 20 km are based on data in Annex 16.

Characteristics of the area of MO34 + 20 km for possible additional cases of diseases and in terms of problems with alcohol and drugs

In terms of possible additional diseases the following diseases have been identified as risky to the area of MO34 + 20 km:

- Acute hepatitis A
- Psoriasis,
- Gonorrhea,
- Acute HIV infection and AIDS.

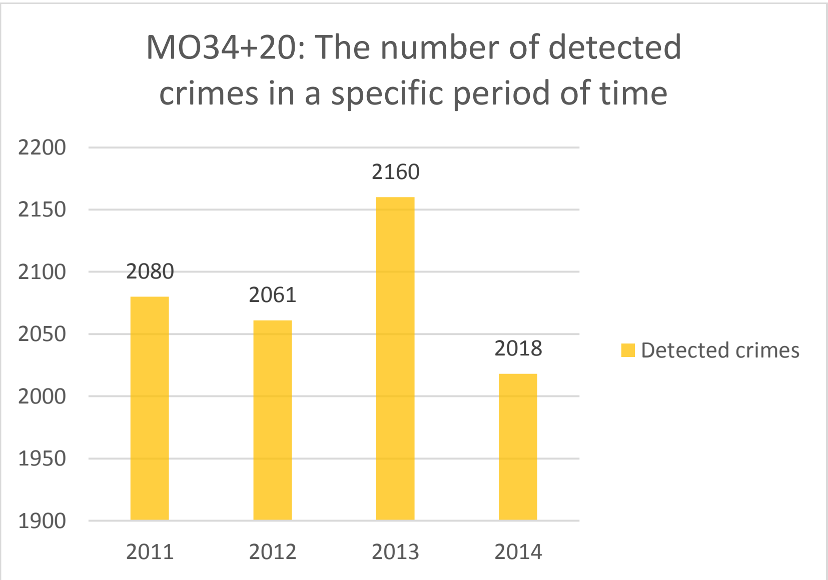
In terms of the impact of the "Completion of Units 3 and 4 of NPP Mochovce" on the problems with alcohol and drugs in the area of MO34 + 20 km it is not important to evaluate these according to the characterization, but by the regime protection system of SE-MO34 against this problem. The regime protection system during the "Completion of Units 3 and 4 of NPP Mochovce" is identical to the regime protection system operated by SE-EMO12 - very strict with clearly defined sanctions in case of an individuals but also in case of their employer.

From characteristics it is possible to determine that in case of problems with the use of alcohol between 2011 and 2014, there was a decrease by 21.7% and in case of problems with alcoholism between 2011 and 2014 there was a decrease by 13.8%.

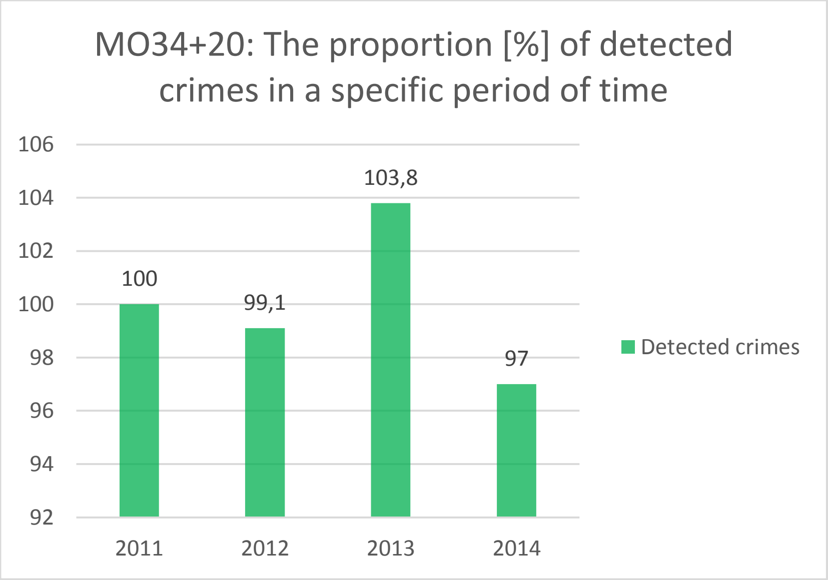
In case of problems with the use of drugs or psychotropic substances, the situation is very similar to the problems caused by alcohol. In case of problems with the use of these substances there was a decrease by 19.7% between 2011 and 2014, and in case of problems with drug use there was a decrease by 19.8% between 2011 and 2014.

The impact of the "Completion of Units 3 and 4 of NPP Mochovce" on the problems with alcohol and drugs can be evaluated as highly positive.

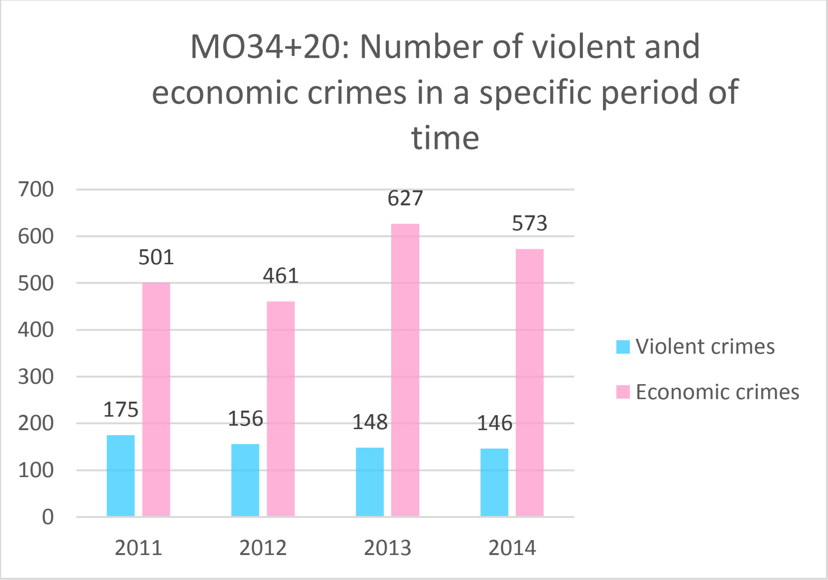
CRIME



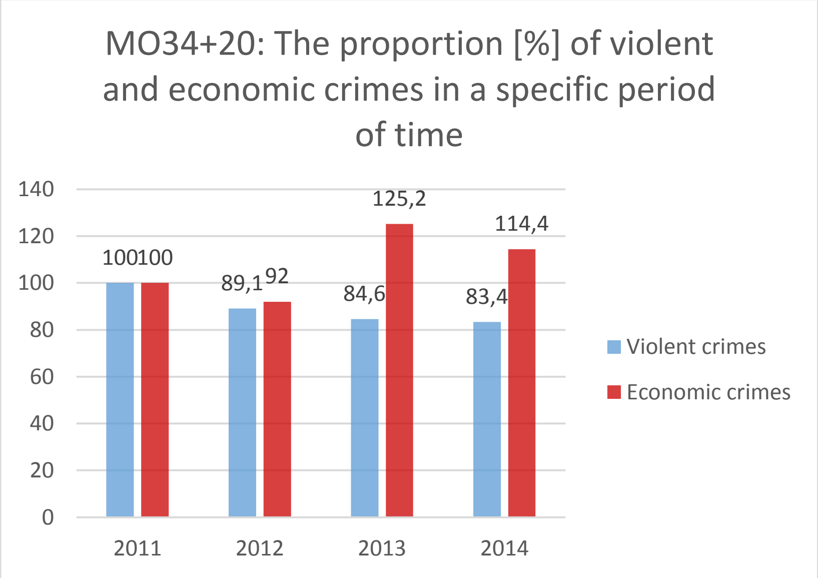
Graph 93: The number of detected crimes in a specific period of time



Graph 94: Proportional number of detected crimes in a specific period of time



Graph 95: The number of violent and economic crimes in a specific period of time



Graph 96: Proportional number of violent and economic crimes in a specific period of time

Information about the area of MO34 + 20 km are based on data in Annex 17.

Characteristics of the area of MO34 + 20 in terms of crime

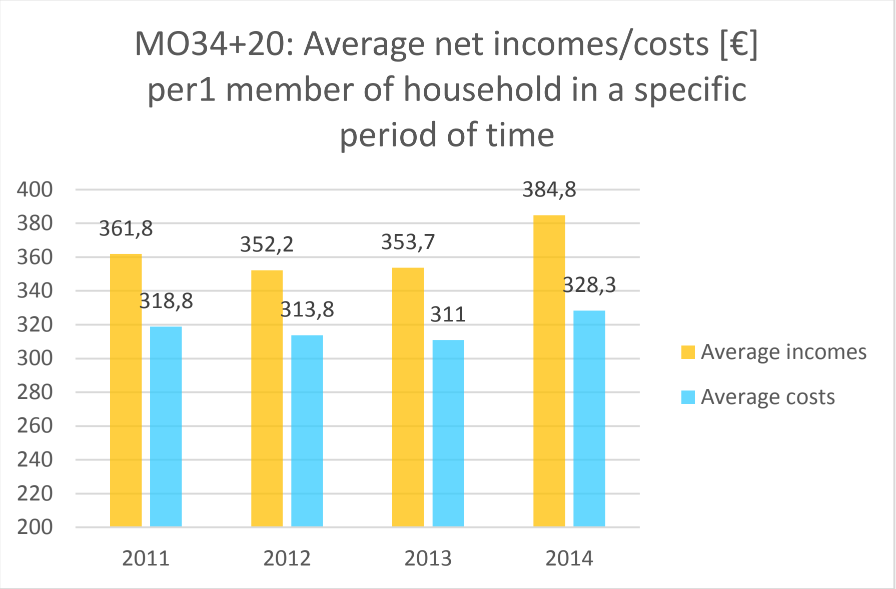
The total number of detected crimes has (except for 2013) in a specific period of time decreasing character. In 2014 this number decreased compared to 2011 by 3%.

The number of violent crime has a decreasing tendency throughout the specific period of time. In 2014 this number decreased compared to 2011 by 16.6%.

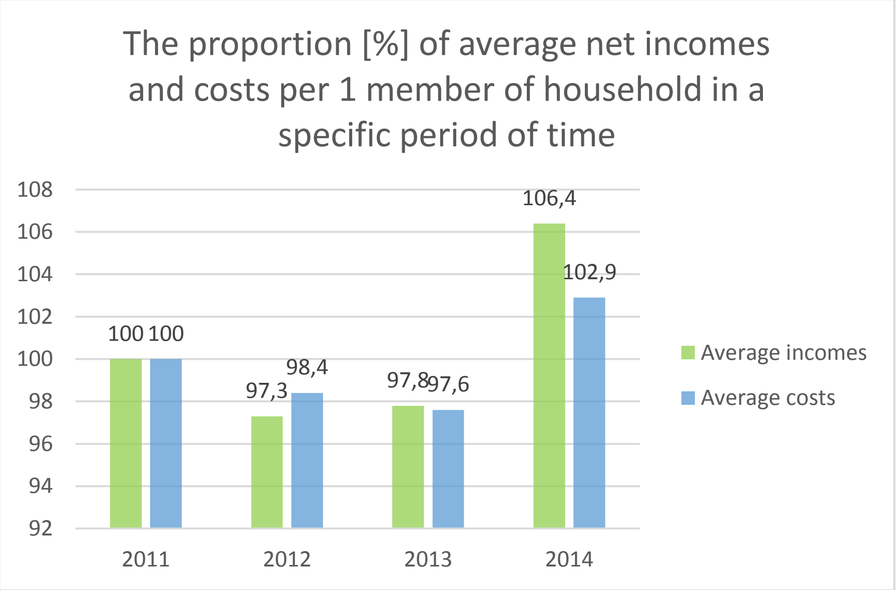
By contrast, the number of economic crimes (except for 2012) had an increasing character in the specific period of time. While in 2012 the number decreased compared to 2011 by 8%, in 2013 compared to 2011 the number increased by 25.2%. In 2014 the economic crimes fell compared to 2013 but the number was still higher by 14.4% than in 2011.

5.4 STANDARD OF LIVING

INFORMATION ON THE RATIO OF EARNINGS AND EXPENSES



Graph 97: Average net monthly earnings and average net costs [€] per one household member in a specific period of time



Graph 98: Proportional number of average net monthly earnings and net average costs per 1 household member in a specific period of time

Information about the earnings and expenses are based on data in Annex 13.

Characteristics of the living standard in the area of MO34 + 20 km in a specific period of time

The indicators in a specific time period point out the fact that between 2012 and 2013 the average incomes as well as the average costs per 1 household member lower than in 2011.

In 2012 there was a decrease in revenues compared to 2011 by 2.7% and in expenditure by 1.6%. The year 2013 is characterized by a slight increase in revenues and decrease in other expenses. In comparison to 2011 there was a decline of revenues by 2.2% in 2013 and a decrease in expenditures by 2.4%. The year 2014 is the "revival" of incomes but also expenditures. Revenues in 2014 increased compared to 2011 by 6.4% and expenses by 2.9%.

The impact of the "Completion of Units 3 and 4 of NPP Mochovce" to the average monthly incomes

The completion of SE-MO34 had and still has an impact on monthly revenues and expenditure of the population. However, it is very difficult to quantify the direct impact and to express it numerically. Available is only data on average wages of the workers at NPP Mochovce involved in the completion of SE-MO34. In this case, however, it is also difficult to quantify the exact value of the contribution to be paid for such an employee of SE-MO34, especially when they work alternately in SE-EMO12 and at the completion of SE-MO34, or for the contracting authorities. Moreover, the ratio of employees of the NPP Mochovce to the eployees of the supplier companies is low and the incomes of the employees of the NPP Mochovce do not significantly affect the income statistics in the area of MO34 + 20 km. The supplier companies are under no obligation to provide data on the income of employees and therefore these data are not available to the report.

Another factor which in the case of supplier organizations complicates the resolution of a direct impact on wages is the fact that it is impossible to determine how many workers and how long the supplier organizations work on the "Completion of Units 3 and 4 of NPP Mochovce" and possibly on other contracts in NPP Mochovce within or outside Nitra region and the like. Also the supplier companies are not required to disclose data about how many of their employees are from the territory of MO34 + 20 km and how many from outside of it. Concerning the above mentioned facts, it is impossible to quantify the direct and immediate effect of the completion of SE-MO34 on average wages of the residents in the area of MO34 + 20 km in a specific period of time. All available data is presented in its entirety.

5.5 LOSS OF THE TERRITORY (I.E. SOIL FUND)

The "Completion of Units 3 and 4 of NPP Mochovce" is carried out in an area that has already been captured before the construction of NPP Mochovce according to the original plan - a plan, which foresees the gradual, and continuous construction of all four units. In terms of the loss of territory it can be clearly stated that the "Completion of Units 3 and 4 of NPP Mochovce" does not require further engagement other than in the original intention of the captured area. From the "Completion of Units 3 and 4 of NPP Mochovce" no requirement resulted for the construction of transport communications, utilities, namely the completion of infrastructure. The entire infrastructure was built at the time of the original intention to build all four units of Mochovce. In terms of occupation of the territory it is to be noted that the "Completion of Units 3 and 4 of NPP Mochovce" has clearly a positive impact for the future of the territory. After completion of this activity it will be possible to gradually release those parts of the territory, which now serve as storage areas, administrative and production areas of contractor organizations and the like into the soil fund. The value of land is not affected by the "Completion of Units 3 and 4 of NPP Mochovce". The term "land valuation" means a financial qualification of the soil quality, which assesses the fertility by the amount of plant revenues. When evaluation of land is considered at two levels - the level of the land value (arable land and permanent grassland) regulated by the law and at the level of the market value. The value of land in the Slovak Republic is regulated by the Act no. 582/2004 Coll. of September 2004 - Law on local taxes and local fees for municipal waste and minor construction waste, as amended, in annex 1.

Annex no. 1 of the Act is the value of land determined as follows:

Annex No. 1 to Act No. 582/2004 Col. as amended by Act No. 465/2008 Col.				
The value of arable land (AL) and permanent grassland (PGL)				
District	**CA code**	**Cadastral area**	**Value [€/m^2]**	
			AL	**PGL**
402	838 152	Mochovce	0,3741	0,0245

Tab. no. 12: The value of arable and grassland in the cadastral area of Mochovce according to Act no. 465/2008 Coll.

The only change to the data in this table is the amendment by Act no. 465/2008 Coll. This change actually means only the conversion of national currency, namely the transition from SK to €. The second point of view is the so called level of the market value of the land. It is necessary to address two already ineffective (canceled) government regulations of the SR, Government Regulation no. 565/2004 Coll. amending and supplementing the Government Ordinance of the Slovak Republic no. 166/1994 Coll. on the categorization of the territory of the Slovak Republic.

According to Annex Government Regulation No. 166/1994 Coll.the territorial districts of MO34 + 20 km were classified as follows:

- Category I - territorial districts of the District Office Levice, Vrable, Zlate Moravce, Žarnovica,
- Category II - territorial district of the District Office Nitra,
- Category III – territorial district of the District Office Nové Zámky,

According to the Government Regulation No. 565/2004 Coll., which amended GR No. 166/1994 Coll., the territorial districts of MO34 + 20 km are classified as follows:

- Category I - territorial district of District office Levice,
- Category II - territorial district of District Office Nitra, Nové Zámky.

The GR of the SR no. 166 / 1994 Coll. was replaced by the Act no. 395/2011 Coll. and thus the GR No. 565/2004 Coll. was indirectly annulled. The explanatory report to the Act no. 395/2011 Coll. states that the modification of the latter regulations is superfluous. Perfectly legitimate becomes the following question: "Would land (and thus soils) in the immediate vicinity of a nuclear power plant with two operating nuclear units be more attractive than land in the immediate vicinity of a nuclear power plant with two operating nuclear units and two nuclear units under construction?" The answer is clear, certainly not. The thinking on the possible land buyers about its reduced suitability to grow crop is not correct, as evidenced by the facts from the environs of nuclear power, not only of NPP Mochovce. Crops were grown and are still grown in the vicinity of the nuclear power plant without any problems, as evidenced for example by the satellite image in the Annex 3 of this report.

Characteristics of the impact of the "Completion of Units 3 and 4 of NPP Mochovce" on the loss of territory (ie. Soil fund)

The "Completion of Units 3 and 4 of NPP Mochovce" is not the loss of territory (ie. land resources) in the vicinity of the nuclear power plant. Finished activities (outside the specific period set in the report) will create the possibility of the return of the areas used by the supplying organization back to the land fund (planting of greenery and landscaping).

5.6 CHANGE OR DETERIORATION / DEGRADATION OF THE NATURAL AND CRITICAL ENVIRONMENT (HABITAT)

The impact of the construction of nuclear power plant Mochovce on the loss of territory and its fragmentation was significant at the time of preparation and begin of construction.

At that time, the structure, relief of the natural surroundings was significantly influenced. The impact of this construction phase of EMO is assessed in the EIA studies for the construction of EMO and 1.2 EMO, EMO 3.4. In 2011 this activity was already completed and stabilized. In 2011 to 2014 nothing virtually changed on the created state. Considering the mentioned facts we are entitled to conclude that the construction of EMO3,4 in the years 2011 to 2014 had no traceable influence on the further fragmentation of the natural environment or the conservation area, or the flora and fauna of the surrounding natural environment.

5.7 REGULATION OF THE FLOW ON THE DOWN STREAM, REDUCTION, CHANGE AND/OR FRAGMENTATION OF THE COASTAL AND WATER ENVIRONMENT

The river Hron has together with Váh a unique position in terms of conservation of biodiversity, as it has all four fish zones. Therefore in their natural state they ensure the migration of fish and the intersection of trout, grayling, barbet and bream zones. The construction of dams and hydropower plants disrupts the natural flow in rivers and changes the nature of stream sections into slowing down the water flow, and changing the bottom substrates, depths, backlighting and the chemical and microbiological environment. Other important factors which in turn can be influenced by man are the water temperature and the oxygen content in the water.

The construction of dams and deforestation of riparian vegetation and terrain around the river are considered as the most significant activities affecting streams. Another significant intervention is the artificial deployment of non-native species of fish by human. Among the anthropomorphic effects it includes the impact of eutrophication of water due to floating of the phosphates and nitrates into the water.

The global impacts include the formation of acid rain and through them the influence of pH of surface waters.

The morphological development of Hron is predominantly affected by adjustments mainly by gradually reducing the flow path (cutting off meanders). By shortening the flow path the longitudinal gradient increased and thus the transport capacity of the flow increased as well. These processes are reflected in the gradual trimming of the riverbed and in the decrease of surface water and groundwater. In recent years, the morphological evolution of the river Hron was also influenced by the construction of small hydropower plants. These transverse engineering constructions impact the increasing of erosion of the riverbed under these objects and increase the intensity of clogging processes above the objects.

The impact of the "Completion of Units 3 and 4 of MO34" is in this respect minimal. In connection with the construction of EMO as a whole a building intervention was made on the watercourse of the river Hron in 1988 in the form of the construction of a large water reservoir Kozmálovce which serves as a water reservoir for the nuclear power plants. On the left side of the water reservoir a bio-corridor was built in the length of 326 m.

To the system of necessary water projects we can also include the small hydro power plants on the left side of the dam wall and the diversion structure for the channel Perec as well as the channel Perec itself which supplies water from the water reservoir and a pumping station located under the right side of the dam.

In 2011, the stream buffles were finished on the water reservoir, which provide flow acceleration and its guidance into the middle of the basin. The purpose was to prevent the flow of sediments and an efficient porterage of sediments from the basin.

At the time of construction and completion of EMO 3,4 in the period from 2011 to 2014 there was no longer a significant change of this impact. During this period there were no interferences into the water flow in connection with the construction of EMO 3,4.

If the "Completion of Units 3 and 4 of NPP Mochovce" had any effect on the flow in Hron (but we have sufficiently demonstrated that it does not), we would deal with the idea whether the action fulfilled its purpose in 2011 (as the reference year) and 2012-2014 in those elements of the component which are specified in the assignment.

The main purpose of water structure is:

a) Ensuring sufficient water for the Mochovce NPP i.e. Q_{max} =1,80 m^3/s with the security of 99% of water withdrawal. The average amount of the collected water is 1,5 m^3/s, i.e. 129 600 m^3/day, and 47 304 000 m^3/yr.
b) Ensuring the water withdrawal for the channel Perec through the diversion structure and small hydro power plant. This collection represents the minimum residual flow Q_{min} = 0,200 m^3/ s. Maximum withdrawal into Perecc in the growing season for industry and irrigation is 3,2 m^3/s, outside the growing season it is 1,2 m^3/ s.
c) Ensuring the minimum residual flow in Hron Q_{zos} = 6,6 m^3/s, with a 99% ensurance or other withdrawals for irrigation and industry with the safeguard rate of 95%.

d) Energy Recovery through small hydro power plants - hydroelectric power plant built on the left flank of the water-gate exploiting the potential energy of water to generate electricity.
e) Fish culture and sport fishing.
f) Recreation and water sports.

We would deal with the question how did the water reservoir Veľké Kozmálovce fulfill its purposes in a specific period of time and the points a. b. c. and possibly e.
As it has been written, it has sufficiently been demonstrated that the activity of "Completion of Units 3 and 4 of NPP Mochovce" has no significant impact on the Hron and therefore does not affect the component elements (VEC) which are specified in the assignment.

Protected fish species, species of European and national importance				
Species	**Level of threat**	**Protection (24/2003)**	**Requirements for the stream / Migration / Reproduction**	**Biotope / River zone**
Minnow riffle (Alburnoides bipunctatus)	LR:nt	Species of national interest	Rheophilous (with the flow) / Shorter strokes (up to 100km) / Open base fytolitifyl	Piedmont rivers / Barbel
Asp (Aspius aspius)	NE	Species of european interest	Rheophilous (with the flow) / Shorter strokes (up to 100km) / Open base litofil	Lowland streams, reservoirs, (Piedmont rivers) / Bream (Barbel)
Nordic barbel (Barbus barbus)	VU	Species of european interest	Rheophilous (with the flow) / Shorter strokes (up to 100km) / Open base litofil	Piedmont rivers / Barbel
Carpathian barbel (Barbus carpathicus)	VU	Species of european interest	Rheophilous (with the flow) / Shorter strokes (up to 100km) / Open base litofil	Piedmont rivers / Barbel
Danubian loach (Cobitis elongatoides)	LR:nt	Species of european interest - 4	Eurythopic (indifferent to the flow)/ inductile / open base, psamofil	Piedmont rivers, lowland streams, distributaries,
European bullhead (Cottus gobio)	NE	Species of european interest - 4	Rheophilous (with the flow) / inductile / harbouring, litofil	Piedmont rivers / Trout
Carpathian brook lamprey (Eudontomyzon danfordi)	CR	Species of european interest - 4	Rheophilous (with the flow)/ Shorter strokes (up to 100km) / Open base litofil	Piedmont rivers and streams / Trout Grayling, Barbel zone
Ukrainian brook lamprey (Eudontomyzon mariae)	CR	Species of european interest - 4	Rheophilous (with the flow)/ Shorter strokes (up to 100km) / Open base litofil	Piedmont rivers and streams / Trout Grayling Barbel zone
Vladykov's lamprey (Eudontomyzon vladykovi)	CR	Species of european interest - 4	Rheophilous (with the flow) / Shorter strokes (up to 100km) / Open base litofil	Piedmont rivers and streams / Grayling zone,
Balon's ruffe (Gymnocephalus baloni)	EN	Species of european interest - 4	Rheophilous (with the flow) / Shorter strokes (up to 100km) / Open base litofil	Lowland streams / Bream
Schraetzer (Gymnocephalus schraetser)	EN	Species of european interest	Rheophilous (with the flow) / Shorter strokes (up to 100km) / Open base litofil	Lowland streams / Bream
Hucho (Hucho hucho)	LR:cd	Species of european interest	Rheophilous (with the flow) / shorter strokes (up to 100km)/ harbouring, litofil	Piedmont rivers / Barbel (Grayling, trout)
European weather loach (Misgurnus fossilis)	CR	Species of european interest	Limnofilný (still and slightly running)/ inductile/ open base litofil	Lowland streams, distributaries / Bream

European bitterling (Rhodeus amarus)	LR:nt	Species of european interest	Limnofilný (still and slightly running)/ inductile/ Ostrakofil (in shell)	Lowland streams, distributaries, ponds, lakes / Bream
White-finned gudgeon (Gobio albipinnatus)	NE	Species of european interest	Eurytopný/ inductile / open base psamofil	Lowland streams, distributaries / Barbel, Bream
Kessler’s gudgeon (Gobio kesslerii)	CR	Species of european interest	Rheophilous (with the flow) / inductile / open base psamofil	Piedmont rivers/ Grayling, Barbel
Danubian longbarbel gudgeon (Gobio uranoscopus)	CR	Species of european interest	Rheophilous (with the flow) / inductile / open base psamofil	Piedmont rivers / Grayling, Barbel
Golden spined loach (Sabanejewia balcanica)	EN	Species of european interest	Rheophilous (with the flow) / inductile / open base fytofil)	Piedmont rivers and streams, lowland streams
Danube streber (Zingel streber)	CR	Species of european interest	Rheophilous (with the flow) / Shorter strokes (up to 100km)/ harbouring, litofil	Piedmont rivers, lowland streams / Barbel, Bream
Zingel (Zingel zingel)	CR	Species of european interest	Rheophilous (with the flow) / Shorter strokes (u to 100km)/ harbouring, litofil	Lowland streams / Bream

Tab. no. 13: Protected fish species, species of European and national importance

Classification according to the threat: CR - critically endangered, EN-endangered, VU – vulnerable, LR - less endangered, LR: NT - near threatened, LR: CD - dependent protection, LR: lc - least affected, DD - data gap, NE –not evaluated

In detail the issues of biodiversity of the river Hron is recorded in the special report Part B: "The report on the potential impact on aquatic biodiversity based on the hydrogeological characteristics during low flow of the river Hron."

5.8 ADDITIONAL IMPACT ON THE MORTALITY OF WILDLIFE

As in other aspects of the impact assessment of the "Completion of Units 3 and 4 of the NPP Mochovce" to the environment in a specific period of time it is true that a decisive influence had the start of the construction of Mochovce as a whole and the commissioning of the SE-EMO12 into operation. After 2009 there has been a notable lack of research papers and deriving data about the area of MO34 + 20 km and "lower" Hron - from Žarnovica. For these reasons, we present an informative overview of the number of wildlife and fish from the nationwide point of view and we can state that the area of MO34 + 20 km copies these nationwide trends in Slovakia.

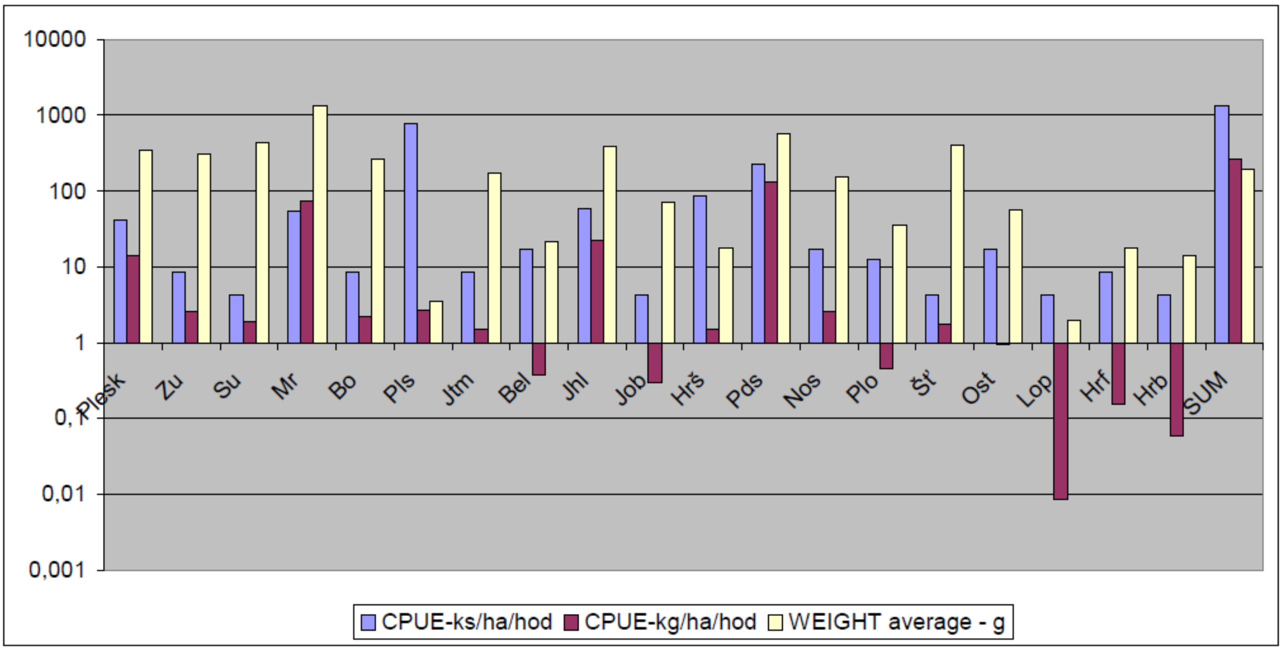
Of the main features that are available for a wider area of MO34 + 20 km are in terms of mortality in particular significant the following information:

Zone	Character of the riverbed	Ichtyofauna (main representants)	Occurence	Average width of the flow
Lowland – Bream zone	Sandy-clay	Abramis, Scardinius, Leuciscus, Perca, Gymnocephalus, Esox, Silurus, Stizostedion, Aspius, Tinca	Hron from Hronský Beňadik down	60-80 m

Tab. no. 14: Characteristics of the surface water in the lower section of the river Hron

Available statistical data on the occurrence of fish from Hronský Beňadik down:

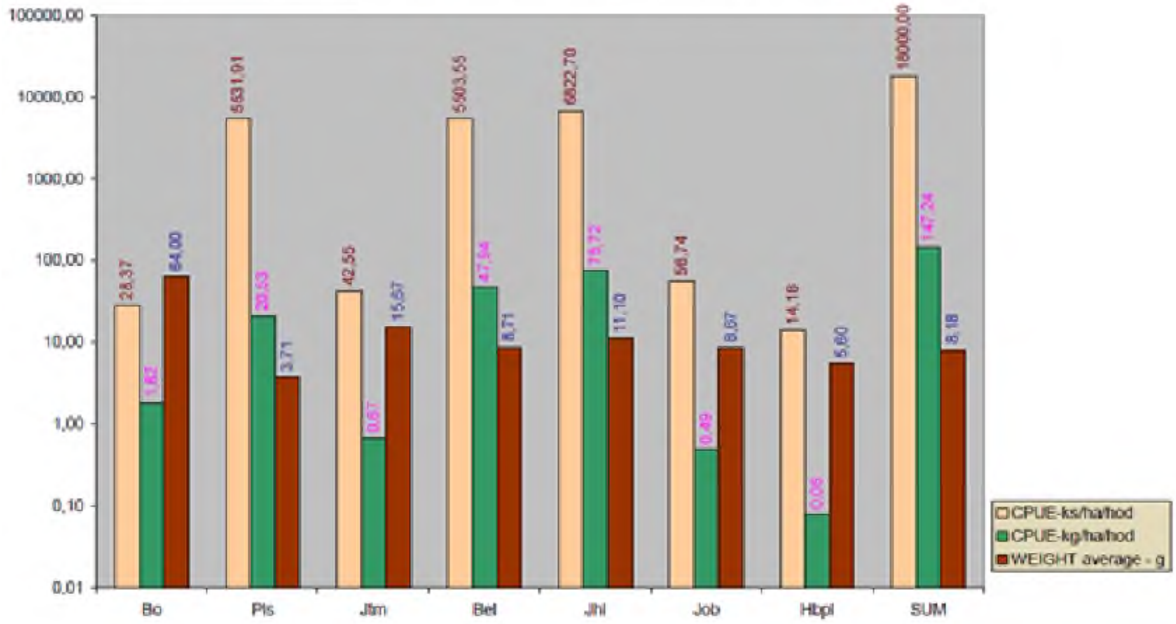
1. Veľké Kozmálovce



Graph 99: Fish presence in the water reservoir Veľké Kozmálovce

2. Kálnica

Quantitative indicators of ichtyofaun of river Hron under small hydroelectric power Kozmálovce



Použité skratky názvov rýb:

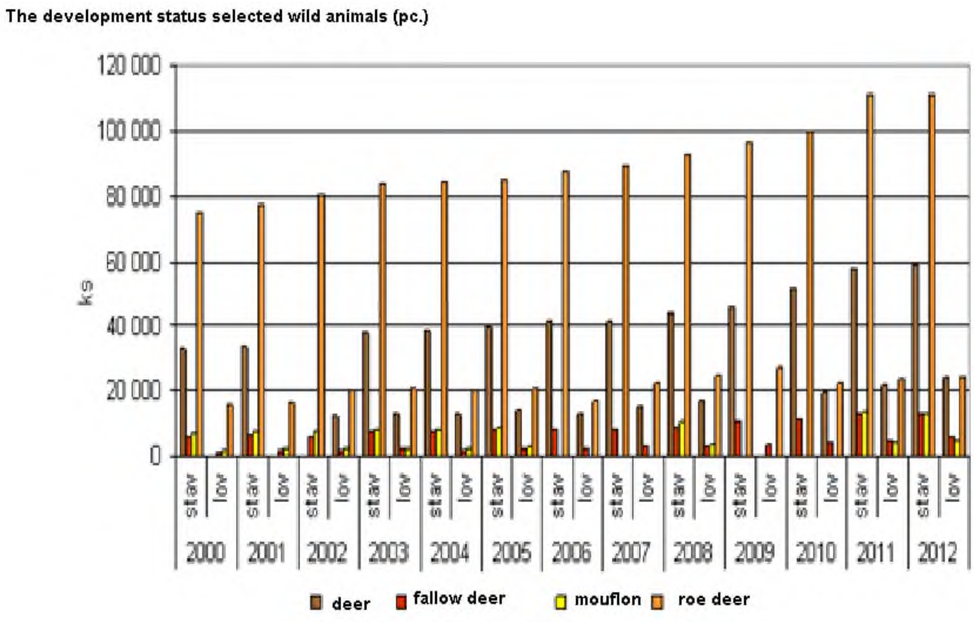
Bel	bleak	Belička európska	*Alburnus alburnus* (Linnaeus, 1758)
Bo	asp	Boleň dravý	*Aspius aspius* (Linnaeus, 1758)
Čer	European minnow	Čerebľa pestrá	*Phoxinus phoxinus (Linnaeus, 1758)*
Hbpl	whitefin gudgeon	Hrúz bieloplutvý	*Gobio albipinnatus* Lukaš, 1933
Hl	huchen	Hlavátka veľká	*Hucho hucho* (Linnaeus, 1758)
Hlb	bullhead	Hlaváč bieloplutvý	*Cottus gobio Linnaeus, 1758*
Hlp	Carpathian bullhead	Hlaváč pásoplutvý	*Cottus poecilopus Heckel, 1837*
Hrb	whitefin gudgeon	Hrúz bieloplutvý	*Gobio albipinnatus Lukaš, 1933*
Hrf	Danubian gudgeon	Hrúz fúzatý	*Gobio uranoscopus (Agassiz, 1828)*
Hrš	gudgeon	Hrúz škvrnitý	*Gobio gobio* (Linnaeus, 1758)
Jhl	chub	Jalec hlavatý	*Leuciscus cephalus (Linnaeus, 1758)*
Job	dace	Jalec maloústy	*Leuciscus leuciscus* (Linnaeus, 1758)
Jtm	ide	Jalec tmavý	*Leuciscus idus* (Linnaeus, 1758)
Kar	goldfish	Karas striebristý	*Carassius auratus* (Linnaeus, 1758)
Li	European grayling	Lipeň tymiánový	*Thymallus thymallus (Linnaeus, 1758)*
Lop	bitterling	Lopatka dúhová	*Rhodeus amarus (Bloch, 1782)*
Mih	Carpatian lamprey	Mihuľa potiská	*Eudontomyzon danfordi Regan, 1911*

Mr	barbel	Mrena severná	*Barbus barbus* (Linnaeus, 1758)
MrP	spotted barbel	Mrena Petianova	*Barbus peloponnesius (Valenciennes, 1842)*
Nos	zahrte	Nosáľ sťahovavý	*Vimba vimba* (Linnaeus, 1758)
Ost	European perch	Ostriež zelenkavý	*Perca fluviatilis Linnaeus, 1758*
Pd	rainbow trout	Pstruh dúhový	*Oncorhynchus mykiss (Walbaum, 1792)*
Pds	nase	Podustva severná	*Chondrostoma nasus (Linnaeus, 1758)*
Plesk	common bream	Pleskáč vysoký	*Abramis brama* (Linnaeus, 1758)
Plo	roach	Plotica červenooká	*Rutilus rutilus (Linnaeus, 1758)*
Pls	schneider	Ploska pásavá	*Alburnoides bipunctatus* (Bloch, 1782)
Pp	brown trout	Pstruh potočný	*Salmo trutta m. fario Linnaues, 1758*
Sli	stone loach	Slíž severný	*Barbatula barbatula (Linnaeus, 1758)*
Šť	northern pike	Šťuka severná	*Esox lucius* Linnaeus, 1758
Su	wels catfish	Sumec veľký	*Silurus glanis Linnaeus, 1758*
Zu	pike-perch	Zubáč veľkoústy	*Stizostedion lucioperca (Linnaeus, 1758)*

Graph 100: Quantitative indicators of ichtyofauna under the small hydro power plant Kálnica

The weight of fish (i.e. parameters CPUE [kg/ha/h] and the average WEIGHT [g]) is not significant in terms of mortality, the number of fish is associated with mortality.

In the following graph we can see that in general the number of wildlife grew in the SR in the specific period of time, and this development was also within the observed area. There is a clear documented increase in the number of wildlife, even to such an extent that it was necessary at the end of the specific period of time to approach to a regulation of the numbers by shooting. Spring stock (JKS) of ungulates was until 31.3.2012 slightly higher than in the previous year, respectively. it can be concluded the unwanted increase of JKS ungulates was stopped and the occurence of almost all animal species was stabilized. Despite this fact, however, there was an increase in damage caused by animals, especially in agriculture. There is a continuous drop of JKS small game. The occurrence of big carnivores was stabilized and their population has a positive trend. There is a recorded increase in beaver population in the water, while unfavorable development (reduction of stocks) is listed on the capercaillie and black grouse.



Graph 101: Occurrence and hunting of the wild

From the above stated data, it can be proved that the "Completion of Units 3 and 4 of NPP Mochovce" in the specific period of time had no direct or indirect impact on the development of mortality of the wildlife in the area of MO34 + 20 km.

5.9 SUMMARY OF THE IMPACT CONSIDERATION AND ASSESSMENT OF THE ACTIVITIES IN A SPECIFIC PERIOD OF TIME

The impact of the activity on the environmental and social component:

1. ADDITIONAL OPPORTUNITIES FOR EMPLOYMENT

Impact consideration: „braking down“the activities due to the necessary need to incorporate into the project documentation the so called “post-fukushima” improvements had a negative impact on the activity as such. This negative impact reflected in 2012 and had of course an impact also on the territory of MO34+20km. But this negative impact can not be seen as an effect caused by the "Completion of Units 3 and 4 of NPP Mochovce". In the following years, when the project documentation was revised and it was possible to continue with the activity, some noticeable increase in job opportunities in the employment in the area of MO34 + 20 km.

Impact assessment: With the exception of 2012 (see impact consideration) the "Completion of Units 3 and 4 of NPP Mochovce" in the area MO34 + 20 km in the above mentioned environmental and social components the impact is positive

Proposal of measures: not necessary

The impact of the activity on the environmental or social component:

2. FURTHER/ADDITIONAL POLLUTANTS OF THE ENVIRONMENT (AIR, WATER)

Impact consideration: The values of pollutants in the aquatic environment and air were assessed below the threshold. In terms of air pollution does EMO as a whole not belong to the biggest polluters in the Nitra region, the same applies to water discharges. Since MO34 units do not produce radioactive material, the consideration of impact is irrelevant.

Impact assessment: **no impact**

Proposal of measures: not necessary

The impact of the activity on the environmental or social component:

3. ADDITIONAL CASES OF DISEASES, ALCOHOL, DRUGS AND CRIME

Impact assessment: Additional cases of disease have been recorded, the morbidity of inhabitants of the territory MO34 + 20 km was not outside the morbidity of Slovakia. In the field of alcohol problems and drug a decrease can be reported in the specific areas and the impact of the activity was strongly positive. The number of violent crimes decreased in a specific period of time, the number of economic crimes increased. The total number of crimes decreased with the exception of 2013.

Impact assessment: The impact of the activity on the environmental and social components can be assessed as **negligible or slightly positive**

Proposal of measures: not necessary

The impact of the activity on the environmental or social component:

4. LOSS OF TERRITORY (RESP. SOIL FUND)

Impact consideration: For "Completion of Units 3 and 4 of NPP Mochovce" it was not necessary to take additional land.

Impact assessment: The impact of the activity on the environmental and social components can be evaluated as **without impact**

Proposal of measures: not necessary

The impact of the activity on the environmental or social component:

5. THE REGULATION OF THE FLOW ON DOWNSTREAM, DECREASE, CHANGE AND/OR FRAGMENTATION OF THE COASTAL AND AQAUTIC ENVIRONMENT

Impact consideration: In the specific period of time and area no significant changes were recorded. More detailed status is described in the report B:

V posudzovanom období a území neboli zaznamenané významné zmeny. Podrobnejšie je stav popísaný v práve B: "The report on the potential impact on aquatic biodiversity on the basis of hydrological parameters during low flow of the river Hron."

Impact assessment: **no impact**

Proposal of measures: not necessary

The impact of the activity on the environmental or social component:

6. CHANGE OR DETERIORATION/DEGRADATION OF THE NATURAL AND CRITICAL ENVIRONMENT (HABITAT)

Impact consideration: The specific period of time meant stabilization of the systems and areas designated for the protection of the natural environment and of flora and fauna as a part of the system of ecological stability. The result of the mentioned measures is a fact that deterioration was indicated.

Impact assessment: **negligible or slightly positive**

Proposal of measures: not necessary

The impact of the activity on the environmental or social component:

7. ADDITIONAL IMPACT ON THE MORTALITY OF THE WILDLIFE

Impact consideration: According to the available data relating to the defined territory and time period no statistically significant change occurred. These are long-term processes that can be reliably assessed in time zones over 10 years but mainly in relation to the operation of all four units.

Impact assessment: **no impact**

Proposal of measures: not necessary

SHORT IMPACT ASSESSMENT OF THE COMPLETION OF UNITS 3 AND 4 OF NPP MOCHOVCE IN A SPECIFIC PERIOD OF TIME AND TERRITORY

The presented report assesses the impact of the completion of units 3 and 4 of NPP Mochovce in terms of cumulative effects, and in terms of the assignment for the time period 2011 to 2014. The assessed area was in terms of the assignment set within 20 km around the NPP. The comparing and initial state was considered in terms of the assignment the year 2011.

In accordance with the assignment it can be stated that in the considered period no significant or negative impact of the completion of units 3 and 4 of NPP Mochovce was recorded. On the other hand, in socio-economic area, the completion has a potential to have a positive impact on employment and socio-economic development of the region.

From the environmental aspects we recommend in the future to focus on monitoring of the most sensitive element - environmetal component and it is the river Hron and cumulative impacts on the river after the start of operation of all four units at NPP Mochovce. This assessment is however not subject to this part of the reporting.

6 MAP, GRAPH AND OTHER VISUAL DOCUMENTATION / ANNEXES

Map, graph and other visual documentation is presented in the document: Annexes to the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment. This document containing annexes is an integral part of the report on the assessment of the cumulative effects of the "Completion of Units 3 and 4 of NPP Mochovce” on the environment.

7 ADDITIONAL INFORMATION ON THE REPORT

7.1 LIST OF SOURCES

[1] Report on the assessment of the proposed activity for considering the environmental impact according to Act no. 24/2006 Coll. Annex 11, provided by the contracting authority
[2] Decree No. 597/2002 Coll. SO SR issuing the statistical nomenclature of the regions, districts and municipalities, as amended
[3] Government Decree. No 166/1994 Coll. and its updates and changes by the government regulation No. 565/2004 Coll, Regulation repealed by Act No. 359/2011 Coll.
[4] DATAcube - interactive application containing statistical data and indicators of economic and socio-economic development processed in the data cubes (multidimensional tables). Available on the Internet
[5] Report on the state of the environment in the years 2011, 2012, 2013 and 2014 issued by the Ministry of Environment in collaboration with SEA. Available on the Internet
[6] Act No. 582/2004 Coll. on local taxes and local fees for municipal waste and minor construction waste, as amended
[7] International classification of diseases ICD-10-2013 Sk, codes with additional symbols. Available on the Internet
[8] Health Statistical Yearbook for 2011, 2012, 2013 and 2014 issued by the National Health Information Centre. Available on the Internet
[9] Yearbook of Transport, Posts and Telecommunications from 2011, 2012, 2013 and 2014. Available on the Internet
[10] Internation classification of diseases ICD-10. Available on the Internet
[11] Information provided to customers
File „Personálne údaje_Banku_apríl_2016“

8 PLACE AND DATE OF THE REPORT

Trnava, 23.6.2016 Ing. Ján Holec
Trenčín, 21.6. 2016 Ing. Ján Hricko

9 CONFIRMATION OF THE DATA ACCURACY

Evaluation of the Potential Impacts on Biodiversity, Based on the Hydrogeological Characteristics during Low Flow of the River Hron

ENEX trade, s.r.o. | Zlatovská 1962, 911 05 Trenčín, Slovakia | tel./fax: +421 32 642 09 09
www.enextrade.sk | e-mail: office@enextrade.sk | IČO: 45 600 198 | IČ DPH: SK 20 23 047 268
Zapísaná v Obchodnom registri Okresného súdu v Trenčíne, odd. Sro, vl.č.23121/R

LIST OF ABBREVIATIONS:

CIA	Cumulative Impact Assessment and Management
WWTP	Wastewater Treatment Plant
DEMI water	Demineralized water
EMO	Mochovce Nuclear Power Plant, Units 1, 2, 3, 4
EO	Population Equivalent
IAEA	International Atomic Energy Agency
IFC	International Finance Corporation
NPP	Nuclear Power Plant
REO	Regional Environment Office
ERML	Environment Radiation Monitoring Laboratory
MVE	Small Hydro Power Plant
NR SR	National Council of the Slovak Republic
GR	Government Regulation
ObÚ ŽP	Municipality Office of Environment
OHO	Organization of Radiation Response
OÚ	Municipality
rkm	River kilometre
NRWR	National Radioactive Waste Repository
SE, a.s	Slovak Power Plant, a joint stock company
SE-MO34	Mochovce Nuclear Power Plant, Units 3 and 4.
SE-EMO12	Mochovce Nuclear Power Plant, Units 1 and 2.
SR	Slovak Republic
SVP, šp.	Slovak Water Management Enterprise, State Enterprise
NW	Northwest
TDL	Thermoluminescent Dosimeters
TDS	Teledosimetric System
TVD	Significant Industrial Water
TVN	Insignificant Industrial Water
NRA	Nuclear Regulatory Authority
PHA	Public Health Authority
VD	Waterworks
VEC	Valued Environmental and Social Component
WENRA	West Nuclear Regulators' Association
ŽP	Environment

List of Images

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CONTENT

1 INTRODUCTION

Evaluating the potential impact on biodiversity, based on the hydrogeological characteristics during low flow of the river Hron is one part of the report on the assessment of EIA of units 3 and 4 of Mochovce NPP (VVER 4 x 440 MW; 3rd project). Part of the message is processed by IFC manuals and good experience in the industry to the private sector in emerging markets. The company ENEX trade, s.r.o. is the bearer for the report and plan of the assessment of cumulative impacts.

In the beginning of evaluation, attention is drawn to predictive hydrogeological assessment of the key parameters of the river Hron in the low flow after unit 3 and 4 of Mochovce NPP were commissioned. In the second part are the potential impacts assessed on aquatic biodiversity of the river Hron and in the final part the proposed measures are suggested (land planning, technical, technological, organizational and operational) for incorporation into the management system resulting from the impact assessment of the river Hron.

The report comprehensively recorded all data and documentation that was used when preparing a report. All available data on possible effects that may arise during the completion of units 3 and 4 of Mochovce NPP were used. For a complex assessment of all potential cumulative effects there was summed up and analysed the biggest possible extent of relevant input data on based of which potential cumulative effects of completion of units 3 and 4 of Mochovce NPP were defined.

2 BASIC INFORMATION ABOUT THE PROPONENT

Title: Slovenské elektrárne a.s., Units 3 and 4 of Mochovce NPP

Identification number (ICO): 35829052

Address: 935 39 Mochovce

Contacts:

1. **Mr. John Clark**, Project director SE, a.s. MO34,

   Units 3 and 4 of Mochovce NPP, 935 39 Mochovce,

2. **Mgr. Jozef Belaň, Manager of permits and licensing,**

   Units 3 and 4 of Mochovce NPP, 935 39 Mochovce,

Mochovce NPP complex is located in cadastre of villages Nový Tekov, Kalná nad Hronom and Mochovce, which was in connection with the construction of Mochovce NPP cancelled and administration was transferred under village Kalná nad Hronom). Administrative data are shown in Table 1 and the position of the plant in Fig. 1. As affected villages are considered these villages:

- In the district Levice: Nový Tekov (Marušová), Starý Tekov, Kalná nad Hronom, Veľký Ďur, Lipník (Tlmače) and Malé Kozmálovce,

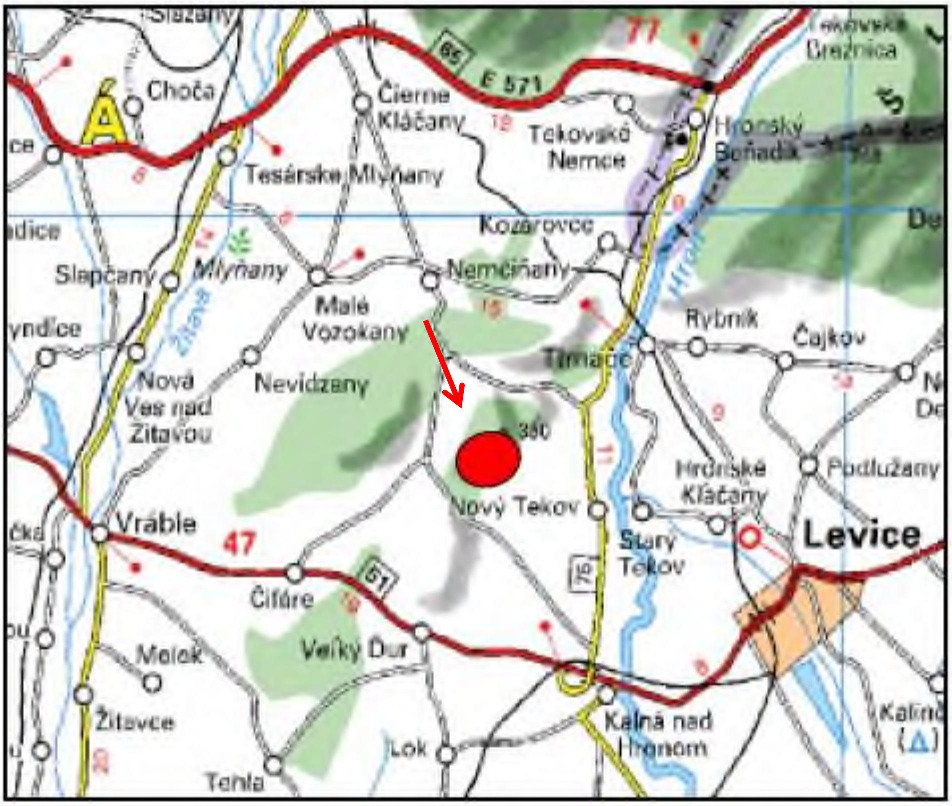
- In the district Zlaté Moravce: Nemčiňany,

- In the district Nitra: Čifáre.

Table 1: Administrative Data on the Studied Area

County name	Nitra Region
Code and the name of the district	402 Levice
Code and name of village	502413 Kalná nad Hronom
Number and name of cadastral area	838 152 Mochovce, Nový Tekov 842 931

Figure 1: Location of Mochovce NPP



3 Basic Data on the 3rd and the 4th Unit of Mochovce NPP

Title: Nuclear power plant Mochovce VVER 4 x 440 MW 3rd construction

Purpose: The purpose of the project is to commission and operate the 3rd and 4th unit of nuclear power plant Mochovce, already authorized for its completion, so as to produce the desired basic amount of electricity needed to cover the significant gap between demand and supply of the electricity network in Slovakia.

Username: Slovenské elektrárne, a.s. Bratislava, units 3 and 4 of Mochovce NPP, 935 39 Mochovce

Location: The actual area of Mochovce NPP units 3 and 4 is located in Central Europe in the south-eastern region of Slovakia near the western boundary of the district of Levice, in the vicinity of the power plant operated by SE-EMO12. SE-MO34 area lies on the southwestern edge of Kozmálovce hills (Kozmálovské vršky), mostly in the Hronská hills (Hronská pahorkatina). Altitude of area is between 200 to 250 meters. Coordinates of the centre of the protection zone SE-MO34 are:

- longitude 18 ° 27' 35''
- latitude 48 ° 15' 35''

In terms of territorial and administrative arrangement of Slovakia the area of SE-MO34 is located in the eastern part of the Nitra region, in the north-western corner of the district Levice, close to the boundary with the Nitra and Zlaté Moravce, approximately 12 km from the town of Levice, which is the largest city within a distance of 20 km from the plant. Other municipalities are Tlmače which is 7 km, Zlaté Moravce 14 km, Nitra 27 km and the outskirts of the capital of Slovakia, Bratislava, is located approximately 90 km west of SE-MO34, or approximately 120 km by public roads.

Units 3 and 4 of the power plant (SE-MO34) will have two individual operational nuclear units both containing separate nuclear and conventional parts. Both SE-MO34 units will be directly linked to the first two units, Unit 1 and 2 (SE-EMO12). In all four units of the complex can be used auxiliary operating systems.

The process of electricity generation in Mochovce NPP incorporates three principal heat transfer cycles:

- in the first cycle heat is derived from fuel used to produce steam: the part of the plant that performs this function is referred to as the Nuclear Steam Supply System;
- in the second cycle, the steam is used to drive turbines, which are connected to generators that produce electrical power: this section of the plant is referred to as Power Conversion System;
- in the third cycle, the remaining energy in the steam is taken by cooling: part of the plant associated with this process is called the Water-cooling system (or Heat rejection system).

Nuclear Steam Supply System of each unit is placed in the reactor building and has six cooling loops. Each loop consists of a hot leg with an isolation valve, a steam generator and a cold leg with a reactor main circulation pump and an isolation valve. The reactor main circulation pumps recycle pressurized water to remove heat from the reactor core. The pressurizer establishes and maintains the reactor coolant system pressure within the operational conditions and allows compensation for reactor coolant volume changes during operation. SGs are the interface between the nuclear system (primary circuit) and the steam system (secondary circuit). Each SG is a tubular evaporator of horizontal design.

The fuel in fuel assemblies is placed in the reactor pressure vessel (RPV), where chemically treated water runs through channels in the fuel assemblies and removes the heat generated by the fission reaction. The water average temperature at the exit from the reactor is about 297 °C (temperature increase through the reactor is about 29 °C).

The secondary circuit connects the nuclear steam supply system (NSSS) to the power conversion system. The steam generated in the six SGs is piped through 6 high pressure steam lines from the reactor building to the turbine hall. The turbine hall, shared by all four units, is oriented parallel to the reactor buildings. For each reactor unit two turbogenerators are used. For each unit the hall houses two turbo-generator sets with one high pressure and two low-pressure sections.

The exhausted steam condenses in the turbine’s main condenser, which is cooled by the circulating cooling water system. The condensate is then sent back to the SGs.

Efficiency Improvements of MO34 Units

To achieve higher performance on restorative units new components (turbogenerators, resp. some technological parts) are installed in the secondary circuit SE-MO34. The efficiency will be increased up to 31.7%, without any change in the primary circuit.

The reactor rated thermal power (1375 MWt) being equal, the electric gross power output will be 471 MWe (corresponding to 436 MWe net power output).

The most important improvements and their environmental benefits consist of:

- New turbines of higher efficiency and other optimizations in the secondary thermal cycle (leading to a decrease of the thermal discharge to the environment as a consequence of the decrease of the thermal power dissipated in the condenser);
- New titanium tubes in condensers (leading to higher performances of the component and hence to a lower steam pressure for the inlet water to condensers);
- New natural draft cooling tower package (leading to higher thermal performances of the component and hence to a lower inlet water temperature to condensers);
- New natural cooling tower drop retainers (leading to a decrease of the water consumption).

The general reduction of the thermal discharges (about 7%) into the environment can be estimated as the percent increase of the original efficiency (29.5%).

Moreover, the increase of the NPP efficiency (the electric generated energy being equal) will allow:

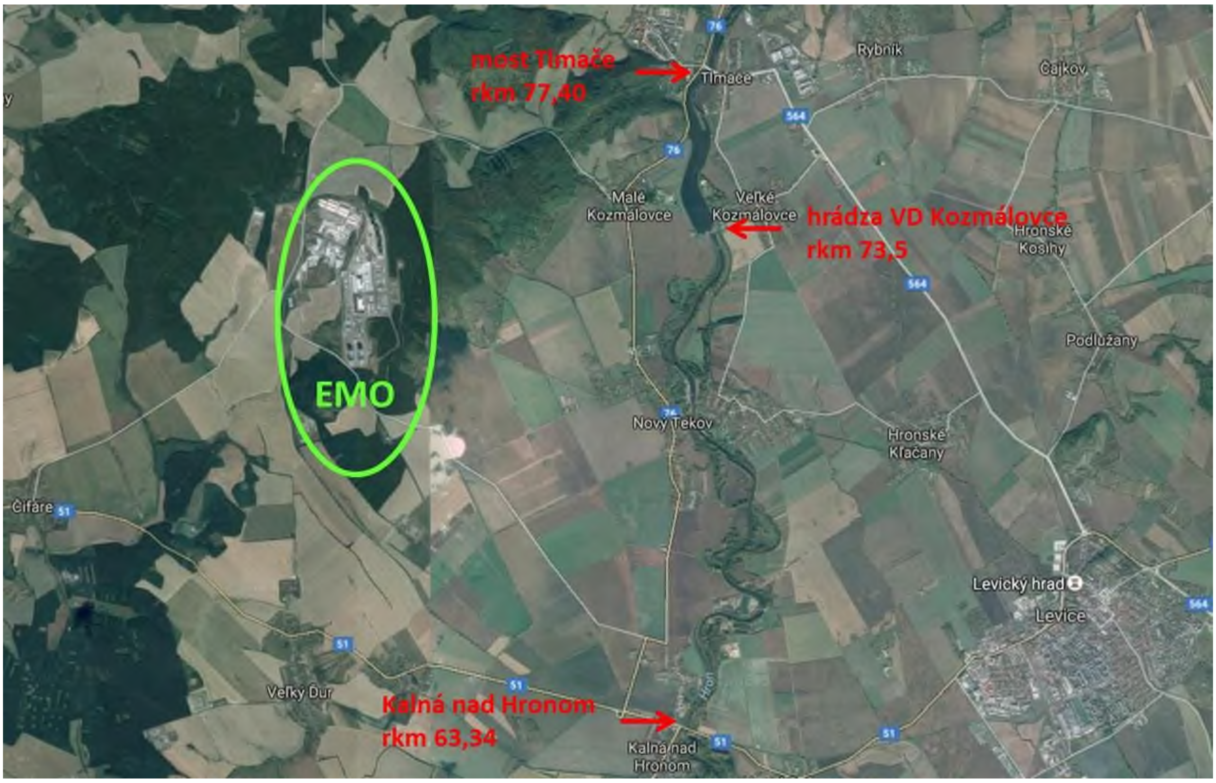
- an extension of the nuclear fuel life;
- a decrease of the production of radioactive waste;
- a decrease of the radioactive discharges.

4 Predictive Hydrogeological Assessment of the Key Parameters of the River Hron in the Low Flow after Units 3 and 4 of Mochovce NPP Were Commissioned

The chapter is divided into three parts. The first part deals with identifying and characterizing the relevant bodies of surface water and groundwater including indication of their status. In the second and the third chapter the attention is paid to data on inputs (Collected water), resp. outputs (waste water).

The area of interest is defined under the relevant section of the Hron, from the bridge Tlmače (77.40 rkm) through the dam VD Veľké Kozmálovce (73.50 rkm) to Kalná nad Hronom (63.34 rkm).

Figure 2: Definition of the Area of Interest



The impact of the "Completion of Units 3 and 4 of Mochovce NPP" to the environment in this report is processed in the following time series:

1. As the comparative base (reference level) serves input data for the restricted area to the date December 31, 2011.

2. Evaluated, analysed and compared to the reference level data in the time range from January 1, 2012 to December 31, 2014.

4.1 The Characteristics of the Relevant Bodies of Surface-Water and Groundwater

Mochovce nuclear power station is located in the Podunajská pahorkatina (Podunajské Hills) on the southwest margin of Štiavnické vrchy (Štiavnica Hills) with main recipient that is river Hron.

Basic altitude of power plant is 242.30 m above sea level. The Mochovce nuclear power plant area belongs to the part of the Hron River basin (eastern part - the operational area, operational buildings SE-EMO12, process water) and partly to the Váh River Basin (western part of the service area). Telínsky stream, which passes through the protection zone of Mochovce nuclear power station, is part of the basin of the Váh River.

Surface-Water

The Veľké Kozmálovce reservoir is formed by a dam situated 73.500 km from source of River Hron. The main purpose of the building is to provide sufficient water for the Mochovce nuclear power plant. The reservoir has a storage capacity (with difference of surface from 175.0 to 171.5 meters above sea level) 1.998449 million m^3. Total controllable capacity of reservoir (at an elevation of surface 175.0 m above sea level) is 3.230155 million m^3. Constant Capacity of reservoir (at an elevation of 171.5 m above sea level) is 0.585990 million m^3. Flooded areas (at an elevation of 175.0 m above sea level) are 0.63 km^2. Flooded areas (at an elevation of 171.5 m above sea level) are 0.383 km^2. The minimum sanitary flow into the Hron is set MQ = 6.6 $m^3.s^{-1}$ and into channel Perec MQ = 0.2 $m^3.s^{-1}$. Offtakes from the reservoir VD Veľké Kozmálovce to the Perec have impact on the balance sheet of the Hron after reintroduction back into the Hron over Kamenín profile - there is evaluated tensed or passive status.

For the purpose of this report, this report is based on manipulation order, which was issued in November 2006 with validity until 2016. In terms of Operational regulation of VD Veľké Kozmálovce it is allowed to manipulate with waste water due to the following terms:

Minimum balance sheet flow on the river Hron MQ = 6.6 $m^3.s^{-1}$

Q_{364} = 8.7 $m^3.s^{-1}$

Q_{355} = 12.3 $m^3.s^{-1}$

Permitted donations for EMO (all 4 units):

Qmax = 1.8 $m^3.s^{-1}$

Q = 1.5 $m^3.s^{-1}$ (i.e. 129,600 m^3/ day, 47,304,000 m^3/year)

Quotas of surface:

Min. operational level	171.50 m above sea level
Max. operational level	175.00 m above sea level
Min. permitted	175.50 m above sea level
Safe level	172.00 m above sea level

Hydrologic conditions (By manipulation order of Kozmálovce VD)

Water catchment area	4,015.67 km^2
Long-term average flow rate	51.58$m^3.s^{-1}$
Average annual runoff	1,626.6 mil. m^3
Average annual rainfall	907mm

The river Hron is the source and recipient of industrial and cooling water for Mochovce NPP (operational facility EMO12 SE and site SE-MO34), also for active water. These waters are collected by special sewage and then after usage, they are moved into discharge facility object, and after monitoring discharged into the recipient Hron. Sewage, rain water and water from hygienic loops are measured and also pass through the WWTP before runoff.

Rainwater from the entire area of EMO12-SE and SE-MO34 is drained into the recipient Hron. Sewage and rainwater from the auxiliary operational premises and warehouses SE-MO34, as well as sludge waters are after sampling inspection released in the recipient Telínsky stream, which belongs to the basin of the river Vah.

All kinds of waste water flows out of the NPP trough 5,800 m long waste pipes to surface flow of Hron in 73.45 rkm.

Permitted limit values of discharged wastewater pollution are defined in Government Regulation of SR No. 269/2010 Coll. which establishes requirements to achieve good water status.

The permitted amounts of discharged water were established by Decision No. 2007/00029 dated January 25, 2007 and its subsequent modifications (Decision No. 2012/250 dated June 4, 2012, Decision No. 1893/2013/1961 dated May 16, 2013, Decision No. OU-NR-PSMN-2014/006610 dated January 8, 2014 and the Decision No. OU-NR-PSMN-2014/034076 dated August 11, 2014, which were valid until December 31, 2015). In the light of these Decisions were valid permitted amounts of discharged waste water described in Tables 2, 3 and 4.

Table 2: Limit Values for Waste Water Discharged from EMO

Indicator	Permitted limit concentration [mg/l excluding pH and T]	Permitted balance values [t/year]
pH	**6.0-9.0**	**-**
COD_{Cr}	**35**	**210**
NL	**40**	**240**
RL_{550}	**1000**	**6,000**
RL_{105}	**1500**	**9000**
Hydrazine	**0.5**	**3**
NEL	**0.5**	**3**
Active Cl	**0.1**	**0.6**
AOX	**0.2**	**1.2**
BOD_5	**12**	**90**
SO_4^{2}	**690**	**4,140**
$N\text{-}NH_4$	**1.5^{*}**	**9**
$N\text{-}NO_3^{-}$	**16^{**}**	**96**
$P_{tot.}$	**1.00**	**6**
Cl^{-}	**100**	**600**

T [^{0}C]	**30**	**-**

** At the time of waste water discharges from neutralization tanks of 3.0 mg/l.*
*** May be exceeded 5 times a year to a value of 22 mg/l.*

Table 3: Permitted Amount of Discharged Waste Water in the Operation of 2 Units SE-EMO12

Q_{avg} (l/s)	Q_{max} (l/s)	Q (m^3/day)	Q (m^3/year)
190.0	195.0	16,500	6,000,000

Table 4: Permitted Amount of Discharged Waste Water in the Operation of 4 Units EMO

Q_{avg} (l/s)	Q_{max} (l/s)	Q (m^3/day)	Q (m^3/year)
383.6	386.6	33,000	12,000,000

HPP on the River Hron in the Restricted Area

In the area of interest on the river Hron there are 4 small hydropower plants. Directly on VD Veľké Kozmálovce dam MVE Veľké Kozmálovce is built, where water discharged is measured from VD Veľké Kozmálovce to Hron. In 70.665 rkm is Nový Tekov MVE, further in 66.5 rkm is Kalná MVE 1 and in 63.62 rkm Kalná 2 MVE.

All the MVE affect the natural flow of the river Hron bed in the restricted area for this report.

Groundwater

Hydrogeological conditions of the area of interest depend on the geological tectonic formation, morphological and climatic conditions of Hron uplands and Hron floodplain.

The alluvial sediments of the Quaternary, with their good porosity, contain the most productive aquifers. The thickness of the gravels and sands in the alluvial valley of the river Hron to the south of Slovenská brána reaches 20 m.

According to the water management balance in the region exploitable groundwater resources in the amount of 897 $l.s^{-1}$ were established. More than half of this usable quantity 466 $l.s^{-1}$) has been documented in the northern part of the region between Tlmače and Kalná nad Hronom. Collection of groundwater from this location was around 48 $l.s^{-1}$ where water sources are located on the right (Nový Tekov - Kalná nad Hronom) and left side of the Hron (Tlmače, Veľké Kozmálovce, Hronské Kľačany). Currently, resources are not used, they serve as a backup.

Aggregates fluvial sediments of Hron are stored in a cone structure (Kozmálovská depression) form a continuous confined waterbed with interzone transmittance, which is vertically bounded by a semi-permeable ground cover layer and the impermeable Neogene clays. As a whole, these fluvial sediments are permeable strong enough ($K = 1.10^{-4} - 1.10^{-3}$ ms^{-1}).

Direct contact of gravel and sandy gravel sediment with the Hron is a condition for hydraulic connection of groundwater with the surface water of the Hron. Groundwater recharge is dominantly bound by bank infiltration from the recipient. For various heights of the surface and groundwater levels in the area of interest, it is not excluded an alternating drainage and recharge of groundwater by surface water flow in relation to precipitation, which results in seasonal variation of the water level of surface watercourses. The groundwater level is free to slightly tense and it is located at a depth of about 1.5 to 6.0 meters below the ground surface. In the area of used water wells, the level is incised ranging below the 10 m [1].

4.2 Data on Inputs

4.2.1 Surface Water Abstractions for Technological Purposes

Water for technological purposes of HPP is extracted from the reservoir Veľké Kozmálovce on the river Hron. At the entrance of the pumping station, water passes through the coarse rakes, fine rakes and then, the water is transported by eight installed pumps into water tank 2 x 6000 m^3 permit issued by the municipal of environment in Banská Bystrica No. 1094/2/177/405.1/M-93 dated 6.7.1993 (unlimited validity). The performance of each pump is 600 $l.s^{-1}$. Water is transported through steel pipe with diameter 2x1200 mm into the water reservoir with a volume of 2x6000 m^3 at an altitude of 252 m above sea level. Flow entering the reservoir is measured. The water level in the tanks is controlled by an automatic starting/stopping of pumps. From the tanks, water gravitationally fills water treatment system, cooling water system, demineralised water production and other industrial systems.

Rightful permission for waste water manipulation is delivered to all four units of Mochovce NPP:

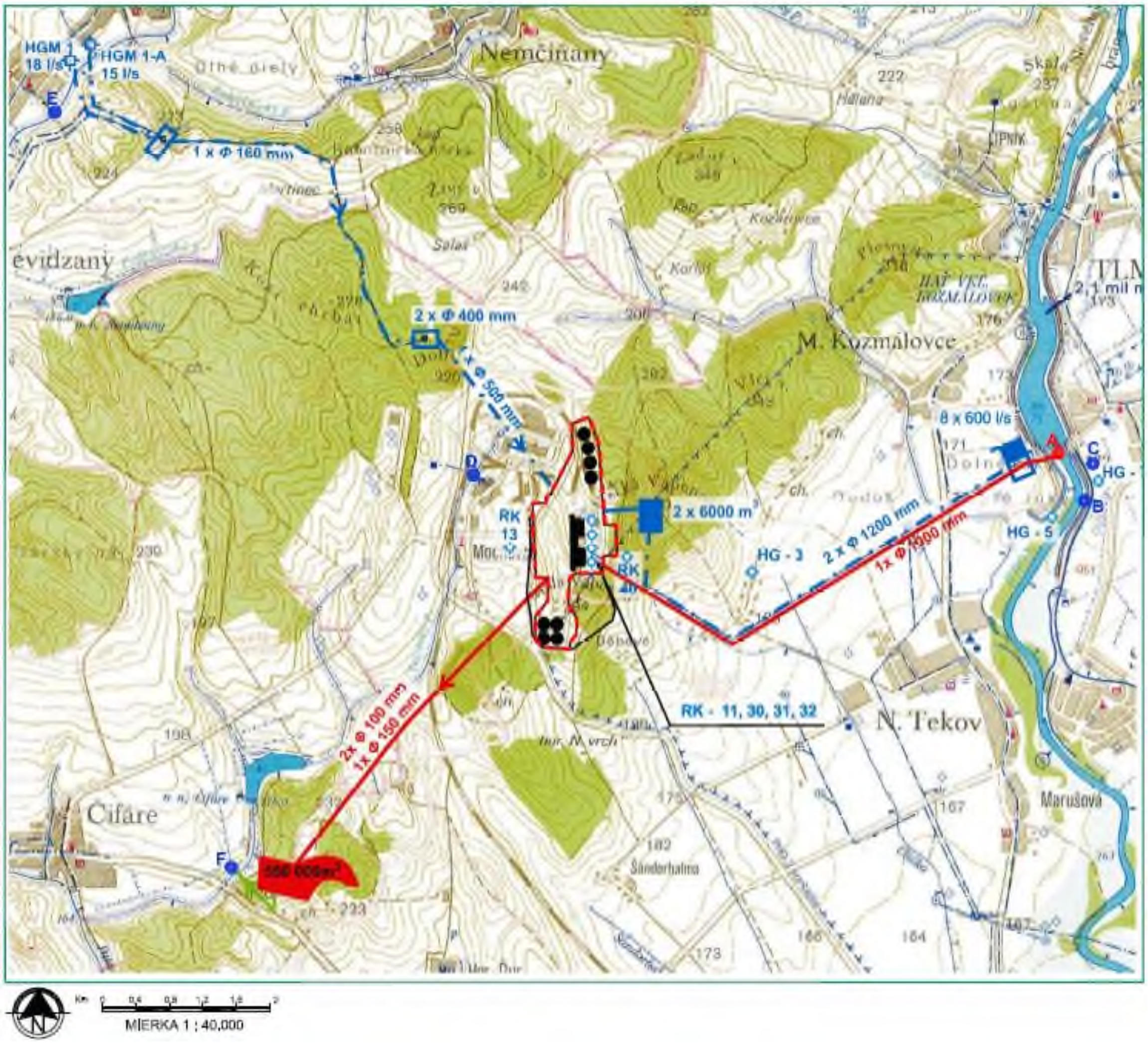
- for Collection of surface water - it was published by the municipality of environment in Banská Bystrica No.1094/2/177/405.1/M-93, dated 6.7.1993 for average consumption of 1.5 $m^3.s^{-1}$, which is 47,304,000 $m^3.year^{-1}$ with the maximum permitted offtake of 1.8 $m^3.s^{-1}$.

Permits for offtake of surface water from the river Hron is incorporated in Operational regulation for the dam Veľké Kozmálovce, approved by the municipality of environment in Nitra in November 2006 and is valid until 2016.

The cycle of the process water is shown in Fig. 3.

Figure 3:

Hydrographic Map, Water Resources and Discharges and Process Water Cycle in EMO



LEGENDA

jadrová elektráreň Mochovce
upravený vodný tok
nadzemné závlahové potrubie
melioračný kanál
kanalizačná stoka, odpad
smer toku
kilometráž tokov odvodená z mapy
kilometráž tokov so zameraným pozdĺžnym profilom (každý platy km číslovaný)
HG - 7 vybraný hydrogeologický a iný vrt s evidovanými údajmi o podzemnej vode
objekt základnej pozorovacej siete podzemných vôd (SHMÚ) - v kvartérnych sedimentoch
vodárensky využívaný objekt podzemných vôd (vrt, studňa)

čerpacia stanica
zemný vodojem
čistiareň vody
úprava vody
hlavné vodovodné potrubie
hranica chránenej krajinnej oblasti; chráneného územia
rozvodnica podrobných povodí
zrážkomerná stanica s ombrografom
meteorologické stanice s výparometrom
Ochranná hrádza
A výpusť
A - za vodnou nádržou na rieke Hron pod haťou
C odberné miesta
B - na rieke Hron pod vodnou nádržou
C - záložný vodný zdroj na rieke Hron pre suché obdobie
D - výpusť do Telinského potoka z čistiarne splaškových odpadových vôd z MO34
E - odvedenie odpadovej vody z čistiarne pitnej vody do toku Širočina
F - odvedenie drenážnej vody z Čifárskeho kalového poľa do Telinského potoka

Calculation of Water Demand for the EMO Units 1 and 2

For the calculation of water demand of SE-EMO12 was based on data of water consumption at 100% performance of SE-EMO12 (installed capacity 440 MW) and at 107% performance SE-EMO12 (installed capacity 470 MW) [2]. The demand for water was calculated from hourly average consumption of water as well as the hourly and maximum water consumption. The annual calculation was based on the annual number of operating hours of SE-EMO12 = 7875 h/year.

Basic parameters under which the water consumption were calculated for SEEMO12 were:

Average temperature =	10.4 °C
The average ambient relative humidity =	72%
Atmospheric pressure =	981 mbar

For the calculation of hourly peaks we took into account the following parameters:

Average temperature =	37.4°C
The average ambient relative humidity =	35%
Atmospheric pressure =	981 mbar

To the demand of water required for SE-EMO12 entered data from TVD, TVN, and production of demineralized and raw water. The concrete quantities are given in Table No.5

Table 5: Hourly Water Demand for EMO12

The demand of water for SE-EMO12 at 100% performance				
Locality of demand for water	**Diameter m^3/ h**	**max m^3/ h**	**Subtotal Diameter m^3/ h**	**Subtotal Max m^3/ h**
TVD	84.00	126.00	**2,492.58**	**2,814.08**
TVN	2,336.80	2,586.30		
DEMI water	59.58	89.58		
Raw water	12.20	12.20		
The demand of water for SE-EMO12 at 107% power				
Locality of demand for water	**Diameter m^3/ h**	**max m^3/ h**	**Annual consumption Diameter m^3/ h**	**Annual consumption Max m^3/ h**
TVD	84.00	126.00	**2,656.16**	**2,995.12**
TVN	2,500.38	2,767.34		
DEMI water	59.58	89.58		
Raw water	12.20	12.20		

From the data in Table 5 annual demand of removed water from the river Hron for SE-EMO12 was calculated and is listed in the Table 6.

Table 6: Annual Water Consumption of SE-EMO12

The annual water consumption ofSE-EMO12 - m^3/year				
	Diameter m^3/year	Diameter m^3/ s	**Limit of Decision 1094/2/177 /405.1/93-M** (the quantity rightful for all 4 units EMO)	
EMO12 100%	19,629,067	0.6924	1.5 m^3/s	47,304,000 m^3/year
EMO12 107%	20,917,260	0.7378	1.8 m^3/s	

The maximum daily water consumption for SE-EMO12 at 100% usage = 0.78 $m^3.s^{-1}$.

The maximum daily water consumption for SE-EMO12 at 107% power = 0.83 $m^3.s^{-1}$.

Calculation of Water Consumption for SE-MO34

When evaluating the water demand for SE-MO34 was took into account information and data from SE-EMO12 on total water pumped from the river Hron. In addition, the variations of the operating conditions for water demand of current operations EMO12 SE and SE-MO34 [2] were taken into account. Data on water consumption of all 4 units of the

Mochovce NPP and planned scenarios of operation of all four units mentioned in this study, were based on the latest available analysis of water demand, which was up-to-date at the time of processing of the study.

The demand of water for the operation of all four units EMO was envisaged by water consumption in SE-MO12 operation at 100%, respectively 107% performance and water consumption in operation SE-MO34 in the performance of 100%.

For question on water demand water for consumption by wastewater treatment plants in the area of SE-MO34 also enters into the calculation.

Calculations of the water demand for MO3, 4 are based on data in Table 7.

Table 7: Hourly Water Demand for the SE-MO34

The use of water-MO34 at 100% power				
Locality of demand for water	**Diameter m^3/h**	**max m^3/h**	**Subtotal Diameter m^3/h**	**Subtotal Max m^3/h**
TVD	71.84	84.52	**2,621.36**	**3,380.52**
TVN	2,458.82	2,177.30		
DEMI water	77.38	105.38		
Raw water	12.20	12.20		
WWTP.	1.12	1.12		

From the data in Table 7 was calculated the annual demand of water Collected from the river Hron for SE-MO34 that is listed in the Table 8

Table 8: Annual Water Consumption of SE-MO34

The annual water consumption of SE-EMO12 - m^3/year				
	Diameter m^3/year	Diameter m^3/ s	**Limit of Decision 1094/2/177 /405.1/93-M** (amounts rightful for all 4 blocks EMO)	
SE-MO34 100%	20,643,210	0.728	1.5 m^3/s	47,304,000 m^3/year

The maximum daily water consumption for SE-MO34 at 100% performance = 0.94 $m^3.s^{-1}$.

Calculation of Water Demand for the Operation of all Four Units EMO

For demand of removed water from the river Hron there are contemplated two possible scenarios for concurrent operation of SE-EMO12 and SE-MO34. At the current operation of all four units it is not expected that there could be a maximum demand of TVN system and TVD system at the same time. Maximum hourly water demand is calculated in the case of unforeseen events in the TVD system.

For the simultaneous operation of all four units the following scenarios is considered.

Table 9: Planned Scenarios for Simultaneous Operation of all Four Units of EMO

The demand of Hron water for EMO1,2,3,4			
Scenario		**Average**	**MAX**
SE-MO34 100% SE-EMO12 100%	m^3/s	1.42	1.72
SE-MO34 100% SE-EMO12 107%	m^3/s	1.47	1.77

From the calculations and scenarios of operation above, follow the annual demand of water Collected from the river Hron, listed in Table 10.

Table 10: Estimated Annual Demand of Hron Water to Operate EMO 1, 2, 3, 4

ANNUAL WATER DEMAND		
Scenario		**Annual total**
EMO34 100% EMO12 100%	m^3/year	40,272,275.41
EMO34 100% EMO12 107%	m^3/year	41,560,436.41

Valid Decision No. 1094/2/177/405.1/M-93 dated July 6, 1993 (without restrictions on the validity) authorizing the average consumption of water from the Hron for all 4 units of EMO 1.5 m^3/s and maximum Collected amount of 1.8 m^3/s. The maximum allowable annual amount of water Collected from the river Hron 47,304,000 m^3/ year, has sufficient reserves for used scenarios, respectively for the increase of the performance units 3, 4.

The volume of water in the water reservoir V. Kozmálovce will be sufficient for water demands for the operation of 4 units.

Water Consumption of SE-EMO12 and SE-MO34 in the Reporting Period for this Report

Consumption of process and cooling water taken from the river Hron for the demands of SE-EMO12 and also the completion of SE-MO34 in the reporting period are presented in Table 11

Table 11: Annual Consumption Hron Water in the Period 2010-2014

	The consumption of industrial and cooling water [m^3]
2010	21,012,188
2011	22,956,812
2012	23,003,000
2013	22,491,000
2014	22,921,000

From Table 9 it is clearly shown that during the construction of SE-MO34 in 2012-2014 there was not increased demand for the consumption of process water from the river Hron. SE-MO34 completion did not affect mode of abstracted process water and therefore either mode of handling water in the river Hron.

Potential Additional Water Demands for Regional Development

According to information received from the municipality of environment in Levice, department of water protection, based on the known carried out works and activities under consideration in the region additional demands of abstraction of water for other purposes are not considered:

- Levice industrial park has its own source of drinking water and also service water,
- Levice combined cycle (CHP unit) has its own source of process water - two drilled wells,
- the need for irrigation is decreasing due to the collapse of agricultural mass production.

4.2.2 Collection of Groundwater for Drinking and Service Purposes

For drinking and service purposes is used groundwater extracted from two artesian wells in Červený Hrádok, HMG-1 and HMG-2, owned by SE, a.s. and about 8 km from the Mochovce NPP. The maximum allowed flow rate is 18 l/s^{-1} for HMG-1 and 15 $l.s^{-1}$ for HMG-2. Another source of drinking water is water from Kalná nad Hronom. Currently the wells at Červený Hrádok provides sufficient drinking water for the Mochovce NPP. Groundwater Collection is governed by conditions set out in Decision No.910/2/201/403.1/M-92 dated 9.10.1992 (unlimited validity). Groundwater Collection in the given period from these wells was in amounts shown in the Table 12.

The difference between the amounts of Collected and produced drinking water in the drinking water treatment plant presents demand of water for captive use and for washing of filters.

Table 12: Groundwater Abstraction in the Period 2010-2014

year	HGM1 [m^3]	HGM2 [m^3]	The total amount of Collected drinking water [m^3]	Production of drinking water after treatment at gas station [m^3]
2010	150,180	5,530	155,710	139,453
2011	150,450	3,630	154,080	139328
2012	137,285	13,830	151,115	138,188
2013	127,210	18,770	145,980	135,486
2014	143,380	14,040	157,420	147,399

Consumption of drinking water in the years 2010 to 2014 is listed in Table No. 13.

Table 13: Consumption of Drinking Water for the Years 2010 to 2014

Year	The consumption of drinking water in SE-MO12 [m^3]	The consumption of drinking water in SE-MO34 [m^3]
2010	110,915	28,538
2011	101,833	37,495
2012	100,707	37,481
2013	104,910	30,576
2014	106,330	41,069

Consumption of drinking water in SE-EMO12 and SE-MO34 remains at approximately the same level. Minor fluctuations in the amount of consumption copy the change in the number of employees at the Mochovce NPP and are also related to the number of contractor organizations working on the construction of units 3 and 4.

After units 3 and 4 of the Mochovce NPP came into operation, we assume that consumption of drinking water will drop, because of reducing the number of employees of contractor organizations who work for the completion of SE-MO34. Permitted offtake from wells in Červený Hrádok is not exceeded even after the SE-MO34 will be commissioned.

4.3 Data on Outputs

4.3.1 Waste Water

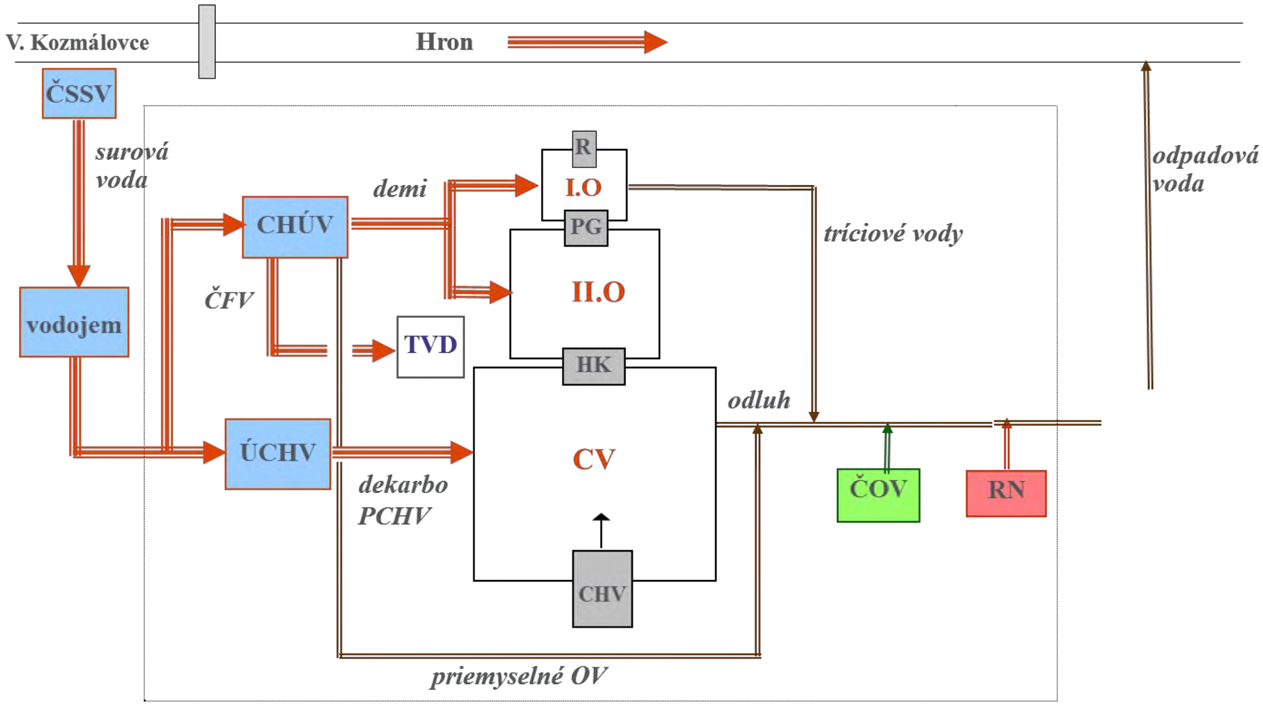
Waste water from the Mochovce NPP is discharged into:

- recipient Hron through the associated object of measurement of waste water from technology, wastewater treatment plant SE-EMO12 and storm sewers from around the Mochovce NPP;
- recipient Telínsky stream receiving water from WWTP SE-EMO34, water management (waste water) through pond in Čifáre and waste water runoff from parking lot of SE-EMO12;
- recipient Širočina from the process of the treatment of drinking water (waste water) from sources of Červený Hrádok.

The main share of waste water discharged into the Hron is waste water from technology (cooling water) from SE-MO12.

The water cycle throughout the Mochovce NPP is schematically shown in Fig. 4.

Figure 4: The Cycle of Process Water at Mochovce NPP



The legend: CV *- Circulation water* ***CFV*** *- Filtered water clarification,* ***WWTP*** *- Waste water treatment plant* ***ČSSV*** *- Raw water pumping station,* ***HK*** *- main capacitor,* ***CHÚV*** *- Chemical treatment of water,* ***CHV*** *- Cooling towers,* ***OV*** *- waste water,* ***PG*** *- steam generator,* ***PCHV*** *- Additional cooling water,* ***R*** *- reactor* ***RN*** *- retention tank,* ***TVD*** *- significant technical water,* ***ÚCHV*** *- cooling water management*

The waste water discharged from the Mochovce NPP into the Hron meets the requirements of Slovak Government Regulation No. 269/2010 Coll. laying down requirements to achieve good water status and requirements of Decision No. 2007/00029 including its amendments and Decisions of PHA of SR No. 000ZPZ/6773/2011 and 000ZPZ/7042/2012:

- waste water of technology EMO (all 4 units),
- rain water (all 4 units);
- waste water (all 4 units except for the auxiliary operational area and stores of SE-MO34).

Government regulation No. 269/2010 Coll. laying down requirements to achieve good water status provides the following water quality parameters in radioactivity indicator. Under Decision of regional authority for environment in Nitra No. 2007/00029 dated January 25, 2007 (valid until December 31, 2015) the Mochovce NPP were determined emission limits in the flow of the indicators listed in Table No. 14:

Table 14: Permitted Emission Limits in Discharged Waters

INDICATOR	Limit NV 269/2010 Coll.	Limit - Decision No. 2007/00029
Gross alpha activity	0.5 Bq/l	0.5 Bq/l
Gross beta activity	1.0 Bq/l	1.0 Bq/l
Radium 226	0.2 Bq/l	0.2 Bq/l
Tritium	1,000 Bq/l	1,000 Bq/l
Natural uranium	50 µg/l	-
Strontium	1.0 Bq/l	-
Caesium	0.5 Bq/l	-

Public Health Authority of SR, in its Decision number OOZPŽ/6773/2011 dated October 20, 2011 issued a permit for the release of radioactive materials arising from the operation of units 1 and 2 of Mochovce NPP, plant under administrative control their release into the atmosphere and into the Hron river.

The allowed amount of waste water discharged into the Hron river from Mochovce NPP valid for units 2 and 4 at Mochovce NPP is set in the Decision of the Regional authority for environment in Nitra No. 2007/00029 dated January 25, 2007 and the Decision No. 2010/00729 dated June 12, 2010 (valid until December 31, 2015) - allowed amount is set out in Section 4.1 of this report.

Discharge of waste water from the pond Čifáre to Telínsky stream is governed by the Decisions of Regional authority for the environment in Nitra No. 2003/002664 dated May, 11, 2003, 2004/00408 dated July 22, 2004 and OU-NR-OSZP2-2014/004645 dated April 9, 2014.

Discharge of waste water from water treatment Červený Hrádok into the flow Širočina follows the Decisions of Regional department for environment in Nitra No. 2003/015777 dated October 29, 2003, 2010/00077 dated January 25, 2010 and OU-NR-OSZP2-2015/002356. Limit amount of discharged water is 10 000 m^3/year.

Summary of amount of waste water discharged from the Mochovce NPP is given in the following Table.

Table 15: Waste Water Discharged into the Hron River from Mochovce 2010-2014

Year	The total amount of discharged waste water [m^3]	The amount of discharged industrial waste water [m^3]	The amount of treated sewage [m^3]	Annual allowable limits of discharged water [m^3]
2010	5,426,855	5,315,940	110,915	6,000,000
2011	5,679,231	5,577,398	101,833	6,000,000
2012	5,628,735	5,528,028	100,707	6,000,000
2013	4,874,075	4,769,165	104,910	6,000,000
2014	5,733,029	3,419,271	106,330	6,000,000

4.3.2 Qualitative Indicators of Discharged Waste Water

4.3.2.1 Waste Water Discharged into the Hron River - the Quality and Balance of Pollution

The values of the indicators of waste water discharged into the Hron River were laid down in Decision of water authority No. 2007/00029 dated January 25, 2007 and the Decision No. 2010/00729 dated December 6, 2010, valid until December 31, 2015, in which there are defined concentration and balance values of produced pollution.

A. Chemical Indicators

Emission limits are results of measurements of 24 hour decanted samples from the object of measurement of waste water. Comparison of qualitative and balance indicators of pollution discharged into the Hron River with limits in 2014 is shown in Tab. 16.

Table 16: Comparison of Qualitative Indicators of Pollution Discharged into the Hron with Limits in 2010-2014

	Permitted limit conc. [mg/l - except for pH and T]	Average concentration mg/l				
		2010	2011	2012	2013	2014
COD_{Cr}	35	16.88	14.04	17.52	21.95	21.19
$N\text{-}NH_4$	1.5*	0.2934	0.145	0.227	0.2733	0.3097
Cl^-	100	29.33	36.71	52.32	50.581	31.45
BOD_5	12	1.8	2.58	2.79	3.57	2.4166
NEL	0.5	<0.1	<0.1	<0.1	<0.1	<0.1
RL_{105}	1500	829.54	890.959	913.78	848.94	694.388
RL_{550}	1000	645.35	709.41	721.53	668.29	545.71
$P_{tot.}$	1	0.361	0.382	0.288	0.171	0.163
NL	40	12.342	11.659	<11.07	<10.62	10.1837
SO_4^{2}	690	270.382	331.155	332.64	309.88	248.05
Hydrazine	0.5	0.0225	<0.02	<0.0216	<0.0242	0.0279
Active Cl	0.1	0.0525	<0.05	<0.064	<0.062	0.05375
AOX	0.2	<0.05	<0.05	<0.05	<0.0525	<0.05
$N\text{-}NO_3^-$	16**	7.9762	9.136	8.191	8.609	6.8948
T [^{0}C]	30***	18.182	19.58	18.66	18.25	18.12
pH	6.0 - 9.0	8.769	8.763	7.765	8.76	8.556

** At the time of waste water discharges from neutralization tank of 3.0 mg/l.*

*** May be exceeded 5 times a year to a value of 22 mg/l. Analyses in particular indicators are according to an existing Decision carried out 48 times a year with exception of BOD_5, hydrazine - 12 times a year, and AOX, NEL, active chlorine - 4 times a year. Pollution Collected from the Hron River is analysed in raw water 8 times.*

**** The temperature of the water Collected from Hron water is not measured.*

Permitted levels of pollution discharged into the Hron from operation NPP were not exceeded during the reporting period.

In summer, when extended periods of high temperature air, it leads to overheating Hron water. To comply with the limit of the temperature of discharged water in offtake facility is controlled by the temperature regime. In the prescribed accredited analysis the temperature of discharged waste water was not exceeded.

Table 17: Comparison of Balance Indicators of Pollution Discharged into the Hron River with Limits in 2010-2014

Chemical parameter	**Permitted balance values of pollution discharged into the river Hron [w/year]**	**2010**	**2011**	**2012**	**2013**	**2014**
COD_{Cr}	210	91.61	79.736	98.62	106.99	121.482
$N\text{-}NH_4$	9	1.59	0.823	1.278	1.332	1.776
Cl^-	600	159.170	208.485	294.495	246.536	180.304
BOD_5	90	9.768	14.652	15.704	17.4	13.85
NEL	3	0.543	0.568	0.619	0.487	0.573
RL_{105}	9000	4501.793	5,059.96	5,143.42	4,137.797	3,980.947
RL_{550}	6,000	3,502.221	4,028.9	4,061.3	3,257.3	3,128.571
$P_{tot.}$	6	1.959	2.169	1.62	0.832	0.934
NL	240	66.978	66.214	62.31	51.74	58.38
SO_4^{2}	4,140	1,467.324	1,880.7	1,872.34	1,510.378	1,422.078
Hydrazine	3	0.122	0.114	0.122	0.118	0.16
Active chlorine	0.6	0.285	0.284	0.36	0.302	0.308
AOX	1.2	0.271	0.284	0.281	0.256	0.287
$N\text{-}NO_3^-$	96	43.286	51.885	46.105	41.96	39.53

Given balance values are calculated in the total volume of water Collected from Hron.

Basic chemical values of waste water are monitored by continuous analysers, which are located in the associated area of waste water. Monitored values are as follows: reaction of water, pH, sulphates, ammoniac nitrogen, nitric nitrogen, and chemical oxygen demand - CODcr, conductivity, and temperature. The values are transmitted to the management system in the object of Extraction and storage of chemicals from which is discharged from the neutralization of waste water controlled. Level limits are automatically used for the discharge of these waters. Exceeding the limit concentration has for implication the automatic cessation of waste water discharges. According to the parameters of continuous measurements the amount of waste water discharged is controlled by cooperation of operational support and chemical control.

By monitoring of values for quality and balance of discharged water is proved not to exceed the permitted limit values.

The values of the indicators of waste water discharged into the Hron River were compared through years. Development of balance values of chemical indicators of waste water discharged into the Hron for the period 2010/2011 and 2012-2014 is given in Tab. 18.

Table 18: Development of Balance Values of Chemical Indicators of Waste Water Discharged into the Hron for the Period 2010-2014 in t.year-1

Chemical parameter	Limit value	2010/2011 average	2012 - 2014 average
COD_{Cr}	**210**	85.673	109.030
$N\text{-}NH_4$	**9**	1.2065	1.462
Cl^-	**600**	183.8275	240.445
BOD_5	**90**	12.21	15.651
NEL	**3**	0.5555	0.559
RL_{105}	**9000**	4,780.8765	4,420.721
RL_{550}	**6,000**	3,765.5605	3,482.390
$P_{tot.}$	**6**	2.064	1.128
NL	**240**	66.596	57.476
SO_4^{2}	**4,140**	1,674.012	1,601.586
Hydrazine	**3**	0.118	0.133
Active chlorine	**0.6**	0.2845	0.323
AOX	**1.2**	0.2775	0.274
$N\text{-}NO_3^-$	**96**	47.5855	42.531

The development of the value of increasing the concentration has significant **upward trend** parameters:

The chemical oxygen demand COD_{Cr} - an increase of 27.3% is caused by average temperature increase of circulating cooling water. Significant influence has the increasing average temperature, which contributes to a deterioration of heat transferred on cooling towers. Checking the value of this parameter is the method of treatment waters by biocidal products.

Chloride Cl^- - an increase of 30.8% has a similar cause as that of sulphates, but at the same time it is caused by the increase of chlorides concentration in the raw water of Hron as a result of chemical sending after opening of road R1. Elimination of increase is in managing of leaching, and change of the concentration in the waste water during the winter months from a concentration of 100 $mg.l^{-1}$ to 150 $mg.l^{-1}$.

From the development of the values of lowering concentrations **significant decrease** have parameters:

Halogenated organic compounds AOX - a decrease of 64.1% has a reason in the change of the chemical substances for treatment of the circulating cooling water, which are used with chemicals containing less chlorine.

For the following period in terms of affecting the environment, development of concentration values of chemical parameters in waste water and trends of consumption of raw Hron water will continue to be monitored.

B. Radiation indicators in discharged water

Authorization for the release of radioactive liquids from the device under normal operating conditions is established by the Decision of the Public Health Authority of the Slovak Republic No. 000ZPZ/6773/2011 dated October 20, 2011 and Decision No. 000ZPZ/7042/2012 dated October 23, 2012.

This Decision lays down the conditions for operation SE-EMO12 for the release of radioactive materials that arise from the operation of units 1 and 2 Mochovce NPP, plant under administrative control by their release into the atmosphere and into the river Hron.

Public Health Authority determined that the basic radiological limits for radiation exposure around the nuclear facility caused by radioactive substances released into the atmosphere and surface waters in the operation of nuclear power plants SE-EMO, the effective dose of 50 μSv of representative person per calendar year.

The loosing of radioactive substances by releasing is limited under the following conditions:

a) activity of radionuclides emitted in air per calendar year does not exceed the standard values for:

i) a mixture of radioisotopes of noble gases 4.1×10^{15} Bq,

ii) iodine radioisotope - ^{131}I (sum of gaseous and aerosol forms) 6.7×10^{10} Bq,

iii) a mixture of radioisotopes with duration of conversion more than 8 days in aerosols except for ^{131}I 1.7×10^{11} Bq,

b) activity of radionuclides discharged in waste water per calendar year does not exceed guide values for:

i) tritium 1.2×10^{13} Bq,

ii) other radionuclides (except tritium) 1.1×10^{9} Bq.

Regional authority for environment in Nitra, department of the environmental compartment, as the competent authority of state water management in its Decision number 2007/00029 dated January 25, 2007 authorized the discharge of waste water from the Mochovce NPP to the surface flow of Hron. The Decision sets out not to exceed the emission limits in the flow in indicators of gross volume alpha activity of 0.5 Bq/l, gross volume beta activity of 1.0 Bq/l, radium 226 0.2 Bq/l and tritium 1,000 Bq/l. The measurement of these indicators (4 times a year) will be in the rkm 63.7 km (road bridge

Kalná nad Hronom). The validity of this authorization was extended by Decision No. 2010/00729 dated December 6, 2010 to December 31, 2015.

The volume of low level water discharged from the Mochovce NPP represents less than 1% of the total volume of water discharged and they are released exclusively to Hron River.

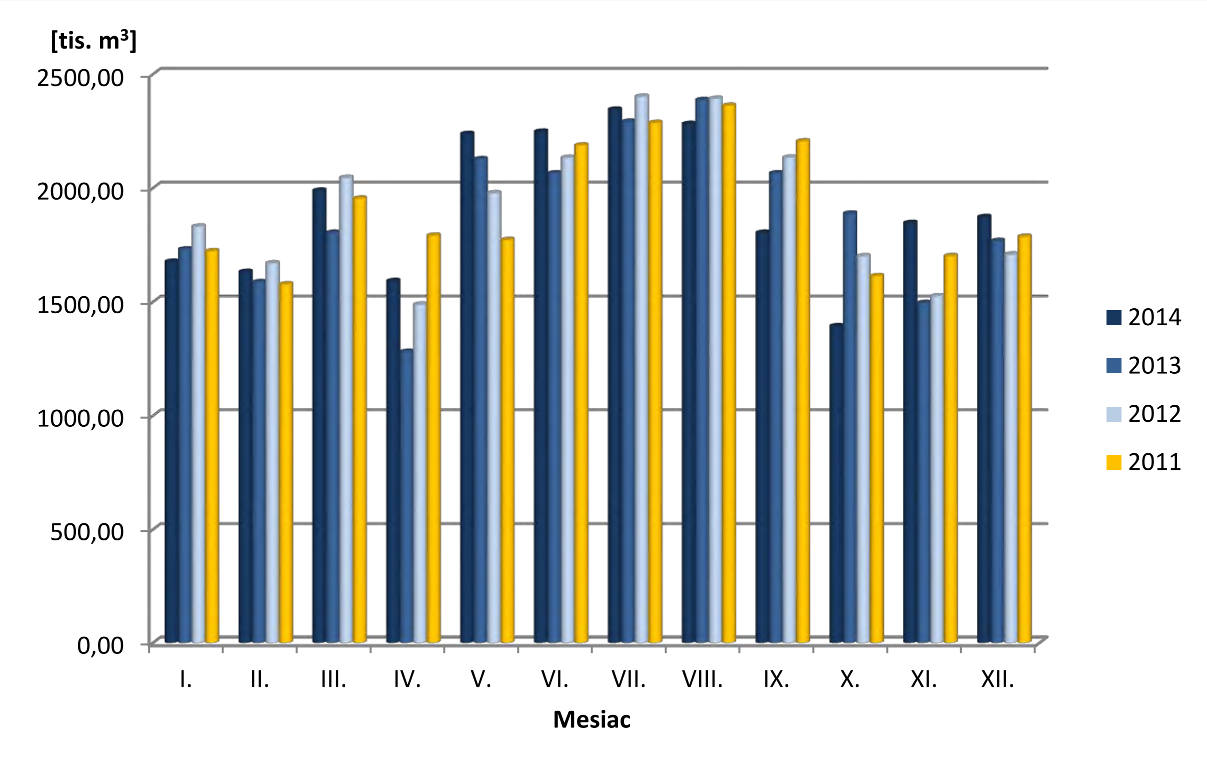
Discharge of tritium water is managed in terms of the GD No. 269/2010 Coll., so that the requirements of that GD are met. The concentration of tritium in the river and groundwater wells near the stream is monitored regularly. The reference point for sampling for EIA of Mochovce NPP, is the river kilometre 63.7 km road bridge Kalná nad Hronom. A reference point for assessing the EIA of the Mochovce NPP, is the river kilometre 63.7 km road bridge Kalná nad Hronom [3]. At this same point the Public Health Authority carries out independent control, takes reference samples during the period for completion of SE-MO34, results of measurements did not exceed the permitted levels specified by Decision of the PHA.

4.4 Measurements of Previous Periods on Low Flow, the Impact, Inputs and Outputs of the Mochovce NPP

Water consumption from the river Hron is connected with the outside air temperature. The highest demand for water is during the summer months. On the basis of the amounts of collected water, also in the hottest months (July and August) the maximum amounts of water samples were taken at the level of up to 0.89 m^3/ s which is less than 50% of the permitted limit for collection of water under the current license of state authority (chap. 4.2.1.). It is also similar in terms of average collections, where collected amounts of water are also below the 50% of the permitted limit.

It follows from above that during the reporting period there was not a case of lack of water in the Hron River for the operational demands of the Mochovce NPP.

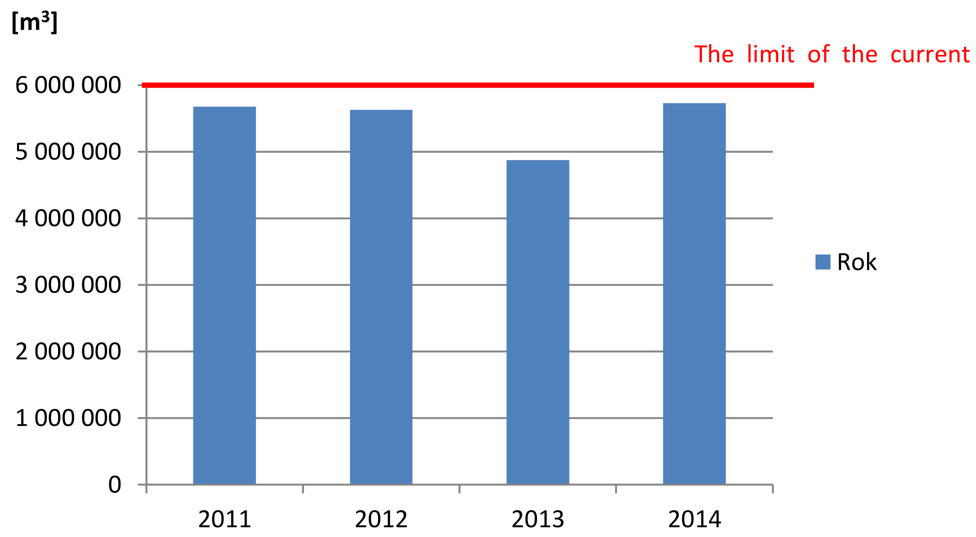
Figure 5: Consumption of Industrial Water and Cooling Water in Thousands m^3



During the reporting period the limits of process water samples collected from the Hron River were not exceeded and even waste water discharged into the Hron River.

In terms of waste water discharged into the Hron, in the reporting period the permitted limits for amounts of water discharged were not exceeded. Into the recipient Hron rainwater was discharged from area of the Mochovce NPP. To the process waters discharged from SE-EMO12 process water from SE-MO34 was added and into the recipient was being lead out by the discharge object. Also qualitative values of the discharged water met all limit conditions that were established by a valid Decision. Transparent representation of discharged waste water from the Mochovce NPP is shown in Fig. 6.

Figure 6: The Amount of Waste Water Discharged into the Hron River from Mochovce NPP



In summer, June - August 2012 occurred due to high temperatures of atmosphere an increase in the instantaneous values of wastewater in the object of discharge over the 30°C. Subsequently, actions were taken to reduce the temperature of object of discharge in the action plan, which consisted of managing the temperature of discharged waste water. In the prescribed accredited analysis the temperature of discharged waste water was not exceeded.

Mochovce NPP meets all requirements of Slovak and European legislation as well as the conditions laid down in the various Decisions of government bodies. Slovak legislation often contains more stringent requirements than those set out in European regulations. SE, a.s. introduced and certified integrated management system of quality management, environment and security according to international standards ISO 9001, ISO 14001 and OHSAS 18,000.

5 Assessment of the Potential Impact on Aquatic Biodiversity of the River Hron

5.1 Baseline

5.1.1 Geomorphological Conditions

The area in the vicinity of the Mochovce nuclear power plant presents different topographical and geomorphologic characteristics. Basic topographical structures are as follows:

- Alluvial plains of rivers Hron and Žitava
- Right bank terrace of the river Hron.
- Žitava Upland, Hron Upland and Ipeľ Upland.
- Connecting areas between communities Rybník - Nová Dedina and Čifáre - Olichov.
- Southern part of Štiavnické vrchy, top part of Veľký Inovec and Kozmálovské vŕšky
- Pohronský Inovec about Krivá and the northern part of Štiavnické vrchy.

Basic topographical structures are as follows:

- Alluvial plains and plains along the rivers Hron and Žitava,
- Undulating plain on the right bank terrace of the river Hron,
- Hilly lowland valleys Žitava, Hron and Ipeľ
- Uplands of Kozmálovské vŕšky,
- Not-karst plains in the southern part of Štiavnické vrchy
- Uplands in the northern part of Štiavnické vrchy and Pohronský Inovec.

Morphological development of the river Hron is predominantly affected by adjustments, mainly by gradually reducing the flow path (cutting off meanders). After shortening the flow the longitudinal gradient has increased and thus the transport capacity of the flow. These processes are reflected in the gradual trimming of the riverbed and decrease of surface and groundwater. In recent years, morphological development of the river Hron has been also influenced by the construction of small hydropower plants. These transverse engineering structures influence the increasing erosion of the riverbed under these objects and also increase the intensity of the processes of sedimentation in the areas ahead of objects.

Starting operation of SE-MO34 is closely linked to the operation of SE-EMO12 and it does not expect any additional impact on geomorphological conditions in the area after the start of operation of units 3 and 4 of Mochovce NPP.

5.1.2 Climatic Conditions

Characteristics of climatic conditions are given by the position of Slovakia in Central Europe, the topography of the Western Carpathian Mountains and the Alps with the prevailing atmospheric circulation in the Western direction.

From climatic and geological perspective the area of Mochovce belongs to the lowland climate, mostly warm, dry or moderately dry, with mild temperature inversion.

Mochovce area is among the warmest areas in Slovakia. The average annual air temperature here reaches up to 9.4 °C (in January -2.2 °C and in July 20 °C), the annual rainfall average is of 628 mm and there is about 2100 hours of sunlight. The annual rainfall average of the entire area is lower (100-150 mm). The annual average number of summer days is 67 and the annual average of frost days is 96 (weather station Nový Tekov). The annual average number of snow days is about 40.

In the period 1994-2013, the average annual temperature ranged from 7.16 to 8.94 °C, the coldest month of the year was January. The minimum average temperature in January was -3.7 °C; the maximum average temperature in August was 20.1 °C. The absolute maximum temperatures ranged from 32.8 to 37.4 °C and the range of absolute minimum temperatures was of - 12.5 to 17.6 °C.

Since 1994 the air temperature has ranged from -19.8 °C to 27.9 °C, the maximum daily temperature was measured on July 22, 2010 (27.9 °C) and the minimum daily temperature on January 12, 2003 (-19, 8 °C). Year 1994 was the warmest with an average annual temperature of 8.94 °C, and 1997 was the coldest with an average annual temperature up to 6.68 °C.

Table 19: Typical Temperatures (°C) in the Years 2009-2013

Year	July	January	Average
2009	22.2	-16	7.9
2010	27.9	-14	7.7
2011	24.2	-15.5	7.7
2012	25.4	-16	7.42
2013	26.4	-8.1	7.9
2014	22.4	-3.1	11.9

(Source: SES, 2014)

The bulk of precipitations in the affected area is vertical. Their annual total average is between 550-600 mm. In the area of the Central Slovakian Highlands, which is located north of the affected area the rainfall is approximately 100 mm higher. June is usually the richest rainfall month; the smallest number of precipitation is usually in July. The maximum annual rainfall since 1994 was measured in 2010 in total of 970.30 mm (minimum annual rainfall was measured in 2003 in total of 319.6 mm). The maximum monthly rainfall was recorded in August 2001 in total of 201 mm. The maximum daily rainfall was recorded on February 15, 2012 in total of 110.5 mm.

Table 20: Monthly Rainfall from the Mochovce Station 2009-2014

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Year
2009	43.4	50.1	53.8	3.5	45.3	46.1	32	44	22	86.1	54.6	116.8	597.7
2010	108.1	51.2	26.4	64.2	108.1	118.8	114.4	134.9	80.5	30.4	87.4	48.9	970.3
2011	21.3	7.9	50.9	17.1	61.8	90.9	95.7	16	2.8	25.5	0	40.6	430.5
2012	63	167.3	0.9	45.7	5	62.6	121.5	3.2	34.2	96.7	37	48.1	685.2
2013	73	77.2	104.4	23	82.6	61.1	1.1	47.5	64.7	10.5	82.7	14.9	642.7
2014	173	262	51	108	252	82	203	211	269	144	112	253	2125

Since June 2009 has been the highest average precipitation month and April has been the month with the smallest rainfall average. The maximum monthly rainfall 269 mm was recorded in September 2014, and the minimum - no rainfall in November 2011.

5.1.3 Conditions of the Banks

In the monitored area the Hron is strongly influenced by anthropogenic activities. From the bridge in Tlmače through VD Veľké Kozmálovce (water work) to the MVE Tekov (small hydropower plant) the riverbed is partially adapted and secured from both sides. In section of the riverbed not affected by the construction of HPP (from HPP Nový Tekov to the swelling river in HPP Kalná 1) or by more significant flood control, Hron flows in its natural riverbed greatly affected by meandering.

In those sections sporadic maintenance is carried out. It consists mainly of bank stabilization mostly with stone pavement and with quarry stone. In the section of the river from 69.50 to 71.30 rkm there were built levees with the aim to protect the villages of Starý Tekov and Nový Tekov. Under the VD Veľké Kozmálovce, 1.5 km of riverbed is regulated and there are levees on both banks in the length of 0.9 km.

In the area between VD Veľké Kozmálovce and railway bridge Tlmače safeguards were implemented and built together with water work, i.e. adjustment of the banks and of the dam to the quota of 175.00 m a.s.l. in the length of 1.6 km, sealing of the dam and subsoil in the length of 0.7 km, purification of the riverbed and guidance of the streamline in the length of 0.52 km, adjustments of adjacent areas by raising the terrains of depression.

The banks in said section are paved mainly with trees with strong horizontal and vertical roots and low-wood typical for trees in wetlands.

The flood protection is continuously carried out on the river Hron and it is provided by the SVP, š.p. which is also related to the maintenance of riparian vegetation, to their removal to maintain the flow capacity of the riverbed.

5.1.4 Small Hydropower Plants

Small hydropower plants operate at flows as barriers that interrupt the water flow, deteriorate water quality, block the movement of sediments and nutrients of the river, increase eutrophication, change the environment of fish and other wildlife. Reservoirs slow down and widen the river, thereby causing its heating. Damming the river by small hydropower plant causes physical and chemical changes of the river flow, of sediments and water quality, which may negatively affect sections of the river flow, groundwater and surface water, aquatic fauna, nature and also lead to lower self-purification ability of the river to the disposal of waste water.

MVE Tekov whose construction was completed in 2013 has the biggest impact on the flow of the river Hron in the monitored area. The swelling of the river Hron for the needs of MVE is causing the elevation of levels of ground water around it. As part of the prevention, minimization and elimination of potential negative effects arising from the implementation and operation of MVE Tekov, Slovenské elektrárne and operator of MVE Tekov agreed to monitor water quality in selected wells and, if necessary, take further joint measures to prevent potential negative impacts due to the operation of MVE.

One of the measures was to build underground sealing wall to prevent seepage of water from the former underground stream of the Hron near the village of Nový Tekov. Another measure was a drainage canal on the right bank of the river Hron to drain seepage from the dam, which empties back to the Hron under the dam wall. Another measure by the operator to avoid the sedimentations of radionuclides around the small hydropower plant was rinsing the reservoir of MVE Nový Tekov.

In the studied area of the river Hron, in addition to the water gate in Veľké Kozmálovce there are another two small hydropower plants (MVE Kalná 1 and MVE Kalná 2). With the establishment of these small hydropower plants the banks of the river were also adapted from above the level of MVEs to the level of the river swelling which is used by MVEs. On other parts of the monitored section of the river Hron adjustments of local character were built providing protection to the urban areas, to agricultural land, or stabilizing the riverbed.

5.1.5 Hydrology

Mochovce NPP is located in Danubian Upland on the southwestern edge of the Štiavnické vrchy. The nuclear power plant belongs for the lesser part (western) to the basin of the river Váh, and for the most part (eastern) to the Hron River basin. The Telinský potok is a stream which flows directly through the zone of protection around the nuclear power plant and it belongs to the basin of the river Váh. The Malokozmálovský potok, stream in the northeast of the area, intermittent stream Ulička (between Malá Vápenná and Veľká Vápenná) and its left nameless tributary (between Veľká Vápenná and Vlčí vrch) on the eastern edge lie on the other side of the drainage divide and belong to the basin of the river Hron.

5.1.5.1 The Hron River Basin

Run-off regime types of the Hron River occur from temporary snow in mountain areas to rain-snow in the upland-lowland area. The Hron rises in Gemer region in Slovenské rudohorie at a height of 934 m a.s.l. and flows into the Danube near Štúrovo of 103 m a.s.l. In the section which has its end in Veľké Kozmálovce the lowest point is of 171 m a.s.l. The drainage area of the river is 5465 km. Flow length of the river to its mouth is of 279.5 km, total altitude difference (gradient) is of 831 m, average slope is J = 2.9 ‰, but it is not evenly distributed along the length. The length of the valley to the profile of Veľké Kozmálovce is of 205 km, its fall out is of 763 m, slope is J = 3.7 ‰. The average long-term rainfall in the Veľké Kozmálovce profile is 948 mm, at the mouth of Hron it is 869 mm.

The flooding in the Hron drainage area prevails in the spring (February to April) when creating flow waves from melting snow or mixed types of flow waves formed by melting snow and rain. The annual occurrence of culminating water flows in the months of February to April is up to 55% of the annual occurrence of these culminations. Spring flow waves usually have a larger volume, while summer (rain) waves have less volume and larger culminating flow, which, however, on long rains may not be the case. The most significant flow waves in the culmination and the volume of rain occurred in the autumn months.

Summary of long-term hydrological data on the Hron River - Brehy profile are listed in the Table 21.

Table 21: Hydrological Data on the Hron River - Brehy Profile

Flow	:	Hron
Profile	:	Brehy (93.9 river km, gauging station)
Hydrological number of river basin	:	4-23-04-110
Drainage area	:	3821.38 km^2
Long-term average overflow	:	46.82 $m^3.s^{-1}$

M-daily flows (Q_{Md}) in $M^3.s^{-1}$							
M	30	90	180	270	330	355	364
Q_{Md}	110	55,32	30.20	18.70	14.10	11.61	8.900

N-maximum year flow ($Q_{max.N}$) in $M^3.s^{-1}$							
N	1	2	5	10	20	50	100
$Q_{max.N}$	310	410	560	680	790	960	1100

5.1.5.2 VD Veľké Kozmálovce

For the needs of EMO VD Veľké Kozmálovce was built, it was commissioned in 1988. It is used mainly for collection of process water from the Hron for EMO, the supply of water to the channel Peretz, irrigation, operation of small hydropower plant, recreation, sport and fishing. More details about the VD Veľké Kozmálovce is set out below.

Hydroelectric project VD Veľké Kozmálovce was commissioned according to the designed parameters that are part of the Operational regulation VD Veľké Kozmálovce, approved by Nitra Regional Office, Department of the Environment. Based on specified criteria it is listed as hydroelectric project of 2nd category.

Summary of hydrological conditions of the river Hron in the profile of weir VD Veľké Kozmálovce are listed in the Table 22.

Table 22: Hydrology VD Veľké Kozmálovce

River km		73.5
Drainage area	km^2	4 015.67
The average annual temperature	°C	10.6
Average annual rainfall	mm	907
Q_{365}(The average daily flow rate reached or exceeded on average during 365 days a year)	m^3/s	9.233
Q_{355}(The average daily flow rate reached or exceeded on average during 355 days a year)	m^3/s	12.33
Q_{100}(The average daily flow rate reached or exceeded on average during 100 days a year)	m^3/s	1550
Quota of the maximum operating level	MASL	175
Quota of the minimum operating level	MASL	171.5
The total volume of the reservoir	mil. m^3	3.23
Reservoir volume to max. operating level	mil. m^3	2.6
Flooded area of the reservoir	ha	68
The bottom of the reservoir	MASL	167

In May 2004 the level of VD Veľké Kozmálovce was reduced to 172.10 m a.s.l. Once at this level, the assumptions that hydroelectric structure is largely clogged with sediments were confirmed.

Table 23: Characteristic Levels in the Reservoir

Year	Maximum MASL	Minimum MASL	Average MASL
2010	175.01	173.71	174.88
2011	175.00	172.69	173.62
2012	175.04	172.71	174.22
2013	175.01	173.49	174.63
2014	175.00	172.80	-

While the level is reduced the construction works are carried out, the construction of lateral traps to prevent sedimentation and improving the effectiveness of flushing of the reservoir. The reservoir and its mud silts are being cleaned. All this work is provided by SVP, š.p. the administrator of the VD Veľké Kozmálovce.

The water in the reservoir reaches the highest temperatures in the summer from July to September. The maximum water temperature in the monitored period was 27 °C.

To ensure the supply of process water for the nuclear power plant the condition of the reservoir water structure and especially extent and manner of sedimentation has a decisive influence.

The reservoir ongoing intensive erosion-sedimentation processes result in relatively rapid loss of disposable volume of the reservoir. This was found during the monitoring of cross-sections of the reservoir at different time levels. For these reasons, SVP, š.p. as an administrator provides measures to reduce sedimentation processes. In particular, the mechanical removal of silt from the bottom of the reservoir, construction of projects to guide sedimentation and concentration flow, cleaning of the reservoir, the implementation of measures to capture objects on the bottom of the reservoir.

The latest available data on the quantity of water in the reservoir are listed in the Table 24.

Table 24: Volume of Water in the Reservoir Veľké Kozmálovce at Different Level

The level in the reservoir	Level (MASL)	Volume of water in 2001 (mil. m^3)	Volume of water in 2004 (mil. m^3)	Volume of water in 2006 (mil. m^3)
Min. for operating	171.50	0.101	0.151	-*
Max. for operating	175.00	1.666	1.773	-*
Max. permitted	175.50	1.995	2.113	1.979

** No data*

A comparison of the volumes of the reservoir in 2001 and 2004 shows that the volume increased in 2004. This was due to removal of sediments in the years 2001-2004 from the sampling area of the Mochovce NPP and under the road bridge Tlmače. The projected capacity of the reservoir VD Veľké Kozmálovce is listed in Table 25.

Table 25: Projected Capacity of the Reservoir VD Veľké Kozmálovce

The level in the reservoir	Level (MASL)	The projected capacity of the reservoir mil. m^3
Min. for operating	171.50	0.585
Max. for operating	175.00	2.584
Max. permitted	175.50	3.230

When the water levels are low, the construction Works are being done. The new guidance system was created to prevent sedimentation and improve the cleaning processes.

Water sampling for EMO is provided by pumping station and intake structure on the right embankment of the reservoir. The handling of water is procured by administrator ČS - EMO. Volume curve and the flooded area curve of the reservoir are shown in Figure 7 and 8.

Figure 7: VD Veľké Kozmálovce - Volume Curve

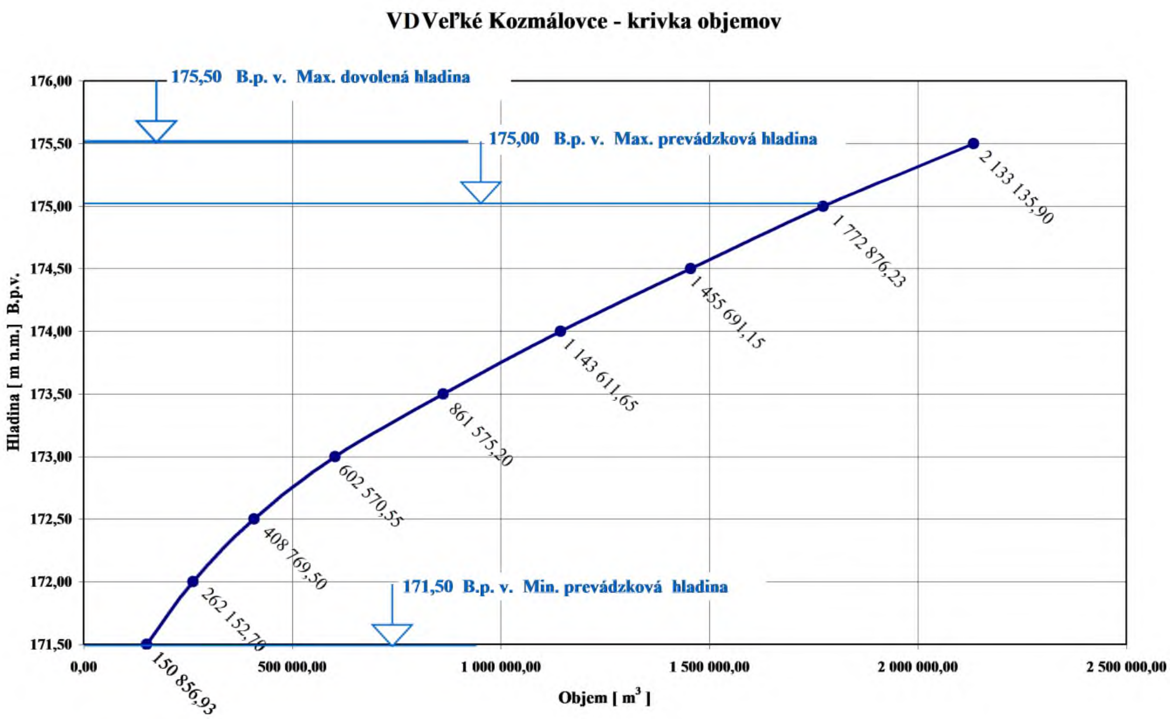
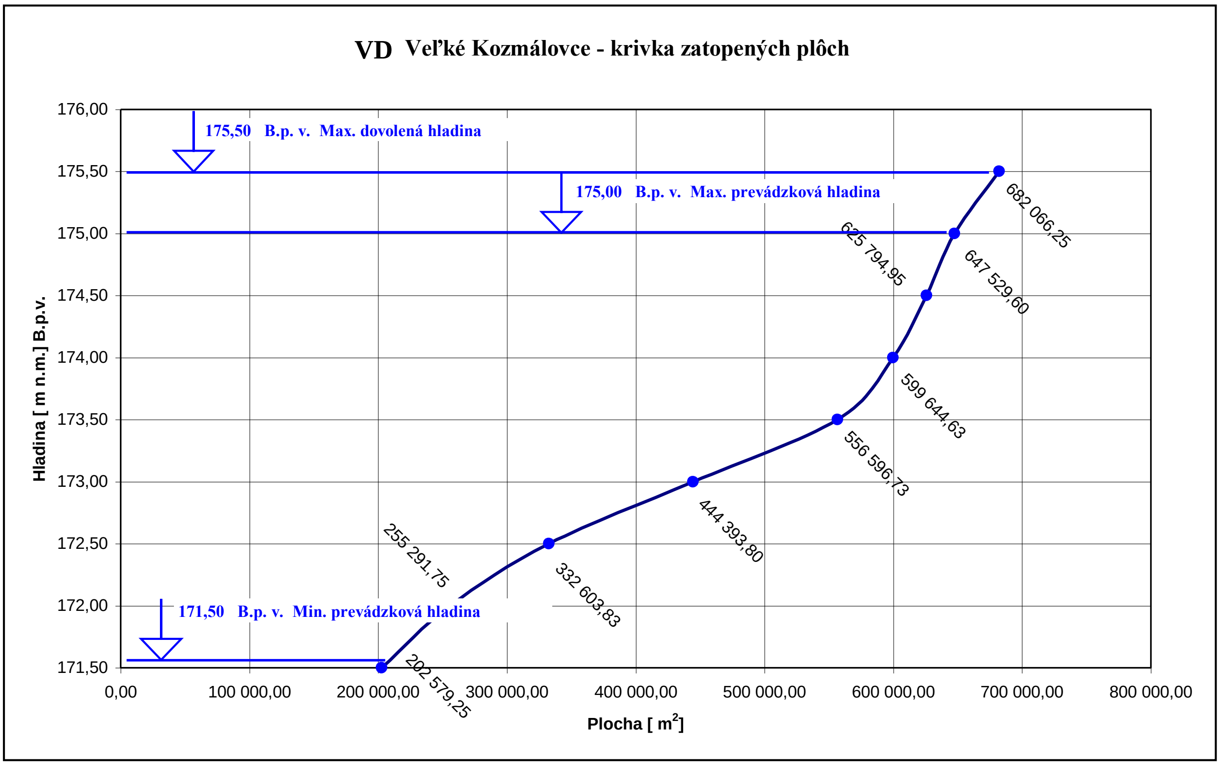


Figure 8: VD Veľké Kozmálovce - Flooded Area Curve



Due to clogging of the reservoir VD Veľké Kozmálovce with sediments, the usable volume between quotas 172.3 m and 174.75 m (usually kept level) 1,230,000 m^3 is monitored and it is used to calculate the coverage of the deficit of VD V. Kozmálovce.

The Pumping Station Compound for the Needs of EMO

The pumping station compound for EMO is a separate building water structure, whose owner and administrator is SE a.s. NPP Mochovce. It consists of two concrete buildings placed in right embankment of the reservoir at 0.170 to 0.212 km. [4]:

- The minimum operating level 171.5 m a.s.l.
- The maximum operating level 175.0 m a.s.l.
- The maximum permitted level 175.5 m a.s.l.
- Safe level 172.0 m a.s.l.
- Quotas of the bottom edge of intake 170.5 m a.s.l.

In pumping station compound in a radius of 50 m it is recommended to keep the quota of the bottom on the maximum height of 169.0 m a.s.l., which would be about 1.5 m lower than the quota of the bottom edge of the compound [5].

5.1.6 Hydrogeological Conditions

Knowledge of the hydrogeological conditions of the EMO area, north, west and east of the region are relatively small. In the EMO exploration works were indeed made in the past, but mostly for the purpose of determining the geological engineering characteristics for the needs of the construction of EMO. The Hron Upland can be described in hydrogeological terms only on the basis of investigation work performed in the framework of the construction of the RAW repository, which lies to the NW of the NPP and the construction of its monitoring system. This work can be used to describe the hydrogeological conditions as below described.

Water in the quaternary layers does not form a continuous aquifer. It is however not possible to eliminate atmospheric rainfall accumulating in periods of increased rainfall mainly where the loamy surface covers clayey underlying rock. Taking into consideration the low permeability of the quaternary loams and the morphology of the terrain, most of the rainfall runs off by surface drainage and accumulates on the surface in terrain depressions. From the point of view of the impact of the NPP on its surroundings the main significance is placed on the groundwater in the Neocene sediment. The main aquifer (in the area of the RAW repository) is a layer of fine-grained to silty Sarmatian sandstone, contained in Quaternary sediments. This aquifer is unconfined. According to the data, the rate of groundwater flow in this collector is the fastest and the infiltration of rainfall is more likely to appear. For evaluating the impact of penetration of waste water into groundwater are the most important data on the extent of the underground drainage, speed and direction of groundwater flow and the porosity and permeability of each layer. These are difficult to determinate based on the work done for EMO, the data are known only from investigation performed in the area of the RAW repository.

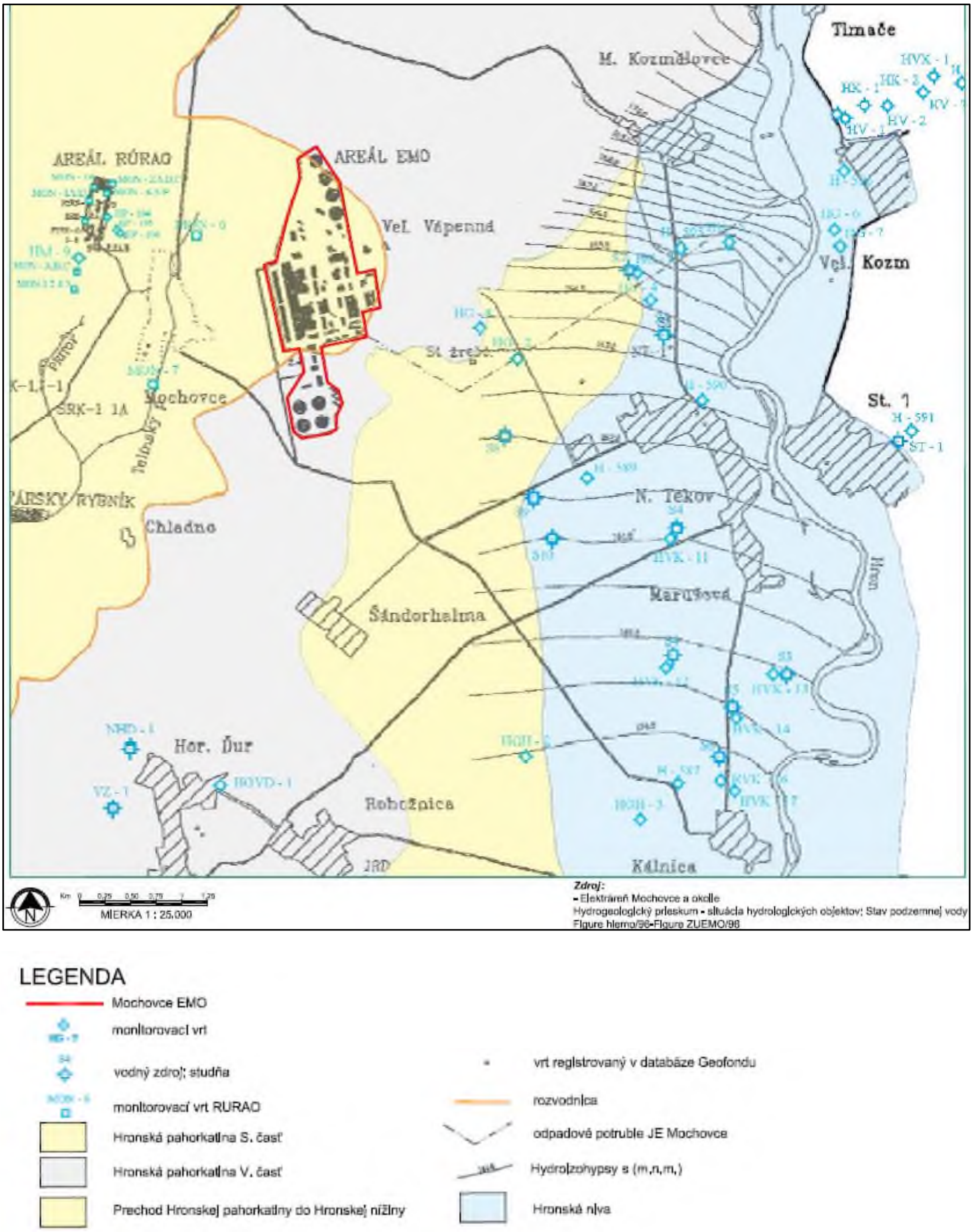
Quaternary fluvial sediments of the Hron create a suitable environment for the flow and accumulation of unconfined groundwater. The entire right bank of the Hron floodplain in the surroundings of Nový Tekov has hydrogeologically favourable conditions. Direct contact of silty and sandy gravel sediment with the recipient is a condition for hydraulic connection of groundwater with the surface water of the Hron. Groundwater recharge is bound by bank infiltration from the recipient. For various heights of the surface and groundwater levels in the given part of the area of interest, it is not possible to eliminate the case of variable drainage and recharge of groundwater by surface water flow in relation to rainfall activity, which results in seasonal variation of the water level of surface watercourses.

On the basis of the investigation of the area, the knowledge on geological, hydrogeological and tectonic conditions in the area of interest, and the use of older investigation wells for the control of groundwater at the NPP and the surroundings it is possible to highlight that the hydrogeological conditions and hydraulic characteristics of the Hron floodplain and adjacent areas are only known from earlier work implemented in the field. Infiltration to the groundwater in the NPP area is monitored using the designed wells RK-11, RK-12, RK-13, RK-30, RK-31,RK-32, RK-33. Infiltration to the groundwater in the surrounding area is monitored using the designed wells HG1 to HG8, EM1 to EM13 and EM14 to EM34 near MVE Nový Tekov.

Strata of Quaternary sediments are characterized by their good porosity and the presence of groundwater without continuous levels, largely made up only from a temporary accumulation without hydrogeological significance. Permeability of sediments is directionally variable, locally very different.

Specialized hydrogeological map is shown in Figure 9.

Figure 9: Specialized Hydrogeological Map



5.1.7 Water Management Protected Areas and Protection Zones of Water Sources

Protection zones of groundwater of 2nd class are located:

- in the alluvial valley of the Hron within the line connecting Levice, Podlužany, Čajkov, Tlmače, Nový Tekov, Mochovce NPP, Kalná nad Hronom and Levice;
- west of the locality of Jur nad Hronom;
- south of the locality of Zlaté Moravce in the foothills of Pohronský Inovec;
- around Čierne Kľačany, from Koliňanský vrch up to Zoborské vrchy.

According to the information given by the environmental department in Levice the water resource at Nový Tekov is currently not used. According to the information from the water utilities company ZsVAK (South Slovakia water and sewerage) in Levice and ZsVAK in Nitra all of the water resource protection zones remain valid in their original measurements for strategic reasons.

In the wider surroundings of the NPP (up to 40 km) there are the following mineral and thermal springs and geothermal wells.

- Mineral springs: Santovka;
- Thermal springs: Margita and Ilona;
- Geothermal wells (boreholes): Podhájska well is widely used; Horný Oháj and Pohranice wells are not used at present.

Starting operation of SE-MO34 will not affect water management regime in protected areas.

5.1.8 Level of Contamination of Surface Water and Groundwater

Surface waters quality in the area is potentially affected by discharges of polluted or insufficiently cleaned municipal water, as well as by the washing of agrochemical substances from surrounding fields. Surface water may contain higher concentrations of chemical elements and compounds such as trace elements (Pb, Zn, Cd, As, Hg), nitrogen compounds (ammonium, ammonia, nitrate), chloride (Cl^-) and other.

Groundwater influenced by the river Hron is potentially contaminated with trace elements (Pb, Zn, Cd, As, Hg), nitrogen compounds or other indicators. Groundwater bounded to neovolcanites is relatively clean.

Discharge of waste water from urban agglomerations with population of more than 10,000 Brezno, Banská Bystrica, Detva, Zvolen, Žiar nad Hronom.

Major industrial and other pollution sources are ZLH, a. s. - Zlieváreň Hronec; Železiarne Podbrezová, a. s.; Petrochema, a. s., Dubová; Biotika, a. s., Slovenská Lupča; SHP Harmanec, a. s.; PPS Group, a. s., Detva; ZSNP, a. s., Žiar nad Hronom; Izomat, a. s., Nová Baňa.

The Hron gets polluted also from diffuse contamination from agriculture and areas without canalization.

The middle and lower section of the river Hron are in average ecological condition and also in poor chemical condition. The main pollutants in the category of chemical condition are phthalates (DEHP) - the most commonly used plasticizers and lead (Pb). The majority of water bodies in the river basin (73.0%) are in good or very good ecological condition, only 27.0% of water bodies in the basin are in less than good condition. [6]

The most significant polluter of surface waters in the drainage area of the river Hron includes municipal sewage, agricultural production and local industry. Waste water from the area of Mochovce NPP empties in the Hron River. Waste water from the locality of Levice with its own industry and services is captured by tributaries Podlužianka, Šikenica and Perec. In the lower section of the Hron the water quality belongs to 2nd and 3rd class based on the indicators in the group oxygen regime (A). Based on the group of basic physical and chemical indicators of water quality the lower section of the Hron belongs to 1st - 2nd class. Water quality in the group of nutrients (C) remains in 5th class due to the content of organic nitrogen. In the group of biological indicators (D) the quality of water corresponds to 2nd and 3rd class and in the group of microbiological indicators amount of coli-form bacteria corresponds to 4th and 5th class. [7]

5.1.9 Characteristics of Existing External Sources of Contamination of the River Hron

Surface Water

Surface water quality is assessed pursuant to Government Regulation No. 269/2010 Coll., Annex No. 1, laying down the requirements to achieve good water status.

Water quality in the Hron is influenced by the discharging of the waste water from municipal and industrial sources of contamination (main sources), but also combined with other negative factors in the form of diffuse pollution. The river becomes more and more contaminated as it is getting bigger and longer. Watching the indicator $N\text{-}NO_2$ in the monitoring station contributes the most to the assessment of non-compliance with the requirements of water quality. The saprobic index of biosestone is also used with the same purpose. In addition a discrepancy in the indicator COD_{cr} was found in the monitoring points Hron - Žarnovica, Hron - Brehy and Hron - Kozárovce. Water quality at the lower section of the Hron is also affected by the discharges from municipal WWTP from the town Levice, it is caused by Podlužianka, a nutrient-polluted tributary of the Hron [8].

Groundwater

The area of interest is in quaternary formations; groundwaters with good porosity of the Quaternary sediments in the Hron drainage area. There are mainly alluvial and terrace gravels, sandy gravels, sands, proluvial sediments of stratigraphic classification in Pleistocene - Holocene. In hydro-geological terms, good porosity is one of the key features. The average aquifers thickness range is <10 m. General direction of groundwater flow is more or less parallel with the course of the main stream. The basic chemistry of groundwater in the anion portion is formed by HCO_3^- ions, in cation portion it is dominated by Ca^2 , there are also present Mg^2 ions. According to Palmer - Gazdová classification, in the quaternary department groundwater passes from the basic strong $Ca\text{-}HCO_3$ type to the basic lacklustre $Mg\text{-}HCO_3$ type and to transient Ca-Cl type.

The groundwater quality assessment is carried out pursuant to law No. 364/2004 on water. Quality of the groundwater intended for drinking purposes is assessed pursuant to

Government Regulation No. 496/2010 Coll., which amends the Order of the Slovak Republic Government No. 354/2006 Coll., laying down requirements for water intended for human consumption and controlling of quality of water intended for human consumption. That groundwater are affected by anthropogenic activities particularly in the agglomerations as Banská Bystrica and Žiar nad Hronom. Groundwater quality is affected by negative oxide-reducing environmental conditions, which results in elevated concentrations of total Fe and Mn. Near the area of interest, groundwater quality was monitored in 2012 in Veľké Kozmálovce, concentration of nitrates was above the limit and there was found perchlorethylene from the group of volatile aliphatic hydrocarbons [9]

5.1.10 Basic Data on the Project, which may Lead to Change of the Physical Characteristics of a Surface Water Bodies or Change of Groundwater Levels in the Area of Interest

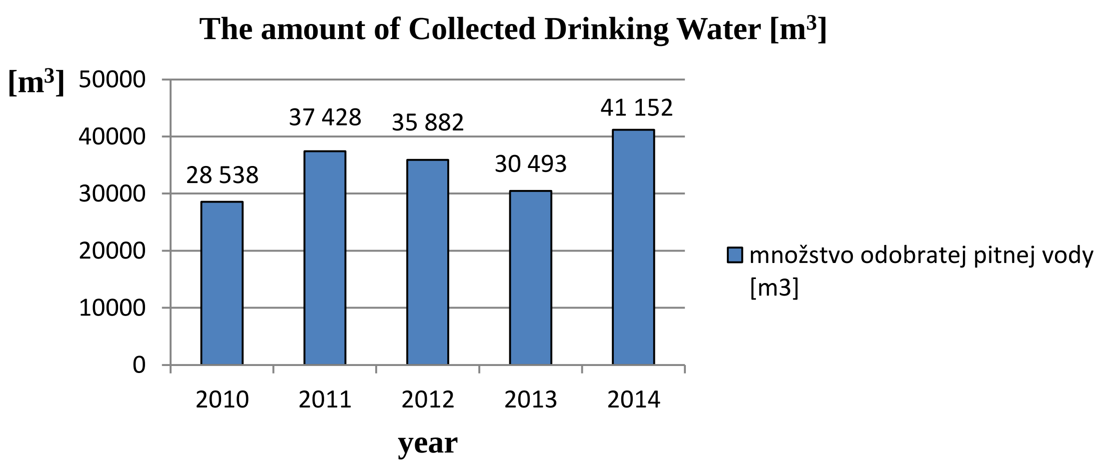
Operation of Water Sources

Water consumption in the years 2010 to 2014 is listed in the Table 26 and graphically in Figure 10.

Table 26: Drinking Water Consumption in Years 2010-2014SE-MO34

	2010	2011	2012	2013	2014
amount of collected drinking water [m^3]	28 538	37 428	35 882	30 493	41 152

Figure 10: The Amount of Collected Drinking Water



Increasing the amount of drinking water consumption between 2011 and 2014 is related to increasing human resources of SE-MO34 and of supply staff. After starting the operation of SE-MO34 and stabilizing the amount of employees, the amount of collected drinking water for the needs of SE-MO34 should be reduced. The reduction would occur mainly due to a significant reduction in the number of employees of supplier organizations working in completing the NPP.

Discharge of Treated Wastewater

During the operation of units 3 and 4 of NPP Mochovce the wastewater comes from technologies that are mixed with technology waters from units 1 and 2 before discharge. The stormwater discharges from the area of the NPP Mochovce are done in the same fashion. By the time these waters are discharged, due to the monitoring they comply with the applicable regulations (Section 4.3.2).

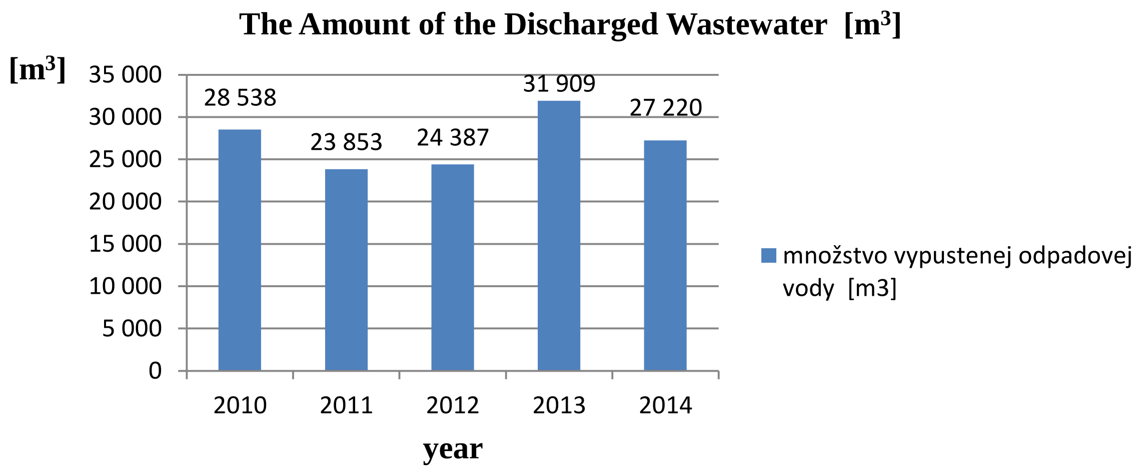
Wastewater from the WWTP MO3,4 is discharged into the Telinský potok. The amount of discharged treated wastewater for 2010-2014 is listed in the Table 27 and graphically in Figure 9.

Table 27: The Amount of Discharged Treated Wastewater for 2010-2014

	2010	**2011**	**2012**	**2013**	**2014**
the amount of discharged treated waste water [m^3]	28538	23853	24387	31909	27220

According to the applicable regulation the maximum permitted amount of discharged wastewater is 110,000 m^3.

Figure 11: The Amount of the Discharged Wastewater



The volume of discharged treated wastewater is related to the amount of water collected and consumed. The difference between collected water and discharged wastewater amounts to the water usage needed for the completion of works on SE-MO34.

The amount of discharged treated wastewater in 2013 was influenced by excessive atmospheric rainfall that caused inlets of rainwater into the sewage system through sewage hatches or directly into the tanks of WWTP.

The rates of indicators of the treated wastewater into the Telinský potok and number of samples are set out in the regulation of Regional Environmental Office in Nitra No. 2004/00619 of November 2, 2004 and in the amendment of this regulation (Regional Environmental Office in Nitra No. 2010/00747 of December 1, 2010).

Water quality in the river Hron is regularly monitored. In addition to control samples that are provided by workers of NPP Mochovce, independent state organizations (ÚVZ, state water management, SVP, š.p.) also monitor surface and groundwater. Permitted limits in the waters are respected.

5.2 Assessment of the Expected Impact on Aquatic Biodiversity of the River Hron

The needed water for the operation of units 3 and 4 of the Mochovce NPP will be managed by existing water management decisions. The decision issued by the Regional Environmental Office in Banská Bystrica No. 1094/2/177 / 405.1 / M-93 dated July 6, 1993 is valid for the operation of all four units. It establishes the permitted limits for the collection of the surface water. According to recent analyses of water needed for the operation of all four units at Mochovce NPP [2] set out in section 4.2.1. it indicates that the amounts of water Collected from the Hron will also be sufficient for the operation of all four units at Mochovce NPP. Ensuring sufficient Collection of the water needed in Mochovce NPP is also governed by the Operational regulation for VD Veľké Kozmálovce. According to the Operational regulation for the dam, to ensure sufficient water for the needs of the Mochovce NPP is a priority for VD Veľké Kozmálovce subject to a minimum balance sheet flow in the river Hron (section 4.1.)

In case of the break of supply of water from the Hron, for extra cooling of reactors at the NPP a sufficient amount of water is secured for the reliable and safe shut-down even without immediate supply of water from the dam Veľké Kozmálovce. The construction project of units 3 and 4 at NPP was prepared with that alternative in mind, and therefore the project was extended to include a separate water management building 400/1 - 05 "Dry riser" that connects pools of cooling towers with fan towers and in the case of lack of water for cooling it is possible to push water from pools of cooling tower through "Dry riser" into the ventilation towers.

Based on the known regimes and the need to collect certain amount of water from the Hron, for the operation of all four units at Mochovce NPP sufficient water is secured in accordance with local water management regulations. The need for water from the river Hron for operating purposes of four units at Mochovce NPP was already taken into consideration at the first authorization of water consumption.

In terms of impact on environment, starting operation of the units 3 and 4 will not affect the existing climatic characteristics in the study area.

As is clear from the calculation of water needs for operation of unit 4 at NPP Mochovce and also from the expected characteristics of the discharged wastewater, for commissioning of unit 3 and 4 the quality parameters should remain at the same level as it is in operation of SE-EMO12.

Under extreme weather conditions (extreme wind, extreme snow, extreme temperatures and extreme torrential rain), NPP site is seamless in terms of determining the parameters for the application of methods for assessment of climatic factors in accordance with STN 73 0035 [11].

The activity of radionuclides in environmental samples is generally very low. Mainly due to the high-volume sampler (with an air flow greater than 200 m^3/ H), current practices allow to reliably determine the activity ^{137}Cs in the air at the units MBq / m^3 in one week sampling period.

The occurrence of radioactivity in individual environmental components and selected links in the food chain has been studied around Mochovce NPP within the pre-operational monitoring continuously since 1979 until commissioning the plant in the year 1998 and 1999. Radioactivity in the investigated area was measured as part of the natural radioactivity (potassium ^{40}The radionuclides of uranium and thorium decay series) where the activity was noted ^{137}Cs coming from the Chernobyl fallout. Pre-operational monitoring and statistical evaluation has revealed no pronounced radiological anomalies. It should not change after commissioning SE-MO34 [11].

To determine whether the effect of the operation of SE-EMO12 and SE-MO34 on aquatic biota is likely, concentrations of key relevant chemicals in the environment situated downstream of the river Hron was estimated and they were compared with reference values proposed in the Canadian Water Quality Guidelines for the Protection of Aquatic life. Canadian guideline was chosen based on the experience of the company Golder Associates in processing the assessment of environmental impact in this area.

As a result of its environmental action the following key parameters are particularly taken into account: hydrazine; residual chlorine; $N\text{-}NO_3$; $N\text{-}NH_4$.

To determine the concentrations of the chemicals due to the operation of MO34, which are present in the downstream area of the Hron, the following data were used:

- chemical background water quality of the river Hron upstream of the discharge;
- maximum, minimum and average flow in the river Hron below the reservoir;

- chemical concentrations in the current effluent and the total effluent with the four units (EMO12 and MO34);
- current discharge flow rate and total effluent with the four units (EMO12 and MO34);
- water quality guidelines for the protection of aquatic life.

In the Table 28 there are listed the chemical concentrations of considered parameters in the Hron, water samples were collected upstream of the discharge point and in EMO12 discharge water.

Table 28: Measured Concentration of Chemicals of Concerns in River Hron and Discharge Water Samples.

Parameter	**Units**	**River Hron Water**	**Discharged water**
$N\text{-}NH_4$	$mg.l^{-1}$	0.109	0.46
$N\text{-}NO_3^-$	$mg.l^{-1}$	1.38	7.63
residual Chlorine	$mg.l^{-1}$	<0.05	<0.05
hydrazine	$mg.l^{-1}$	<0.2	<0.2

The indicated values show that hydrazine and residual chlorine do not present a substantial increment in the measured concentrations in the upstream samples and in the discharged samples. Considering that from operation of MO34 the discharged concentrations of the parameters of interest will be approximately the same of the ones coming from the operation of EMO12, hydrazine and residual chlorine have not been considered for the estimation of likely effects on the aquatic biota.

For the estimation of concentrations of chemicals mentioned above, the dilution factors of discharged water have been calculated, considering that the discharge low rate of 4 units will be approximately double compared to the discharge due to the operation of two units.

In order to calculate the dilution factor for discharge water, the average, maximum and minimum flow of river Hron below the reservoir, reported in the Table 29 have been considered and referred to the effective discharged flow rate for 2 units and estimated discharge flow rate for 4 units.

The river Hron flow rates have been chosen in order to take into consideration the most conservative hypotheses.

Table 29: River Hron Flow Rates (Gauging Station Veľké Kozmálovce - River km 73.10)

Profile	***Long-term average flow rate ($m^3.s^{-1}$)***	***1-year max flow rate ($m^3.s^{-1}$)***	***100-year min flow rate ($m^3.s^{-1}$)***
V. Kozmálovce-Hron	47.16	320	7.78

Table 30: Effective Discharged Flow Rate for 2 Units and Estimated Discharge Flow Rate for 4 Units

	Discharged flow rate ($m^3.s^{-1}$)
Effective value for EMO12 in 2005	0.16
Estimated EMO12+MO34	0.32

The dilution factor for two and four units in case of average, minimum and maximum flow rate of river Hron are reported in Table 31.

Table 31: The Dilution Factor

	SE.EMO12	**EMO**
Long-term average flow rate	294.75	147.38
1-yearly max flow rate	2 000.00	1 000.00
100-year min flow rate	48.63	24.31

On the basis of the calculated dilution factor, it has been possible to estimate the concentrations of the considered chemicals in the downstream environment of river Hron.

The estimated values for the considered chemicals are lower compared with reference values suggested by the Canadian Water Quality Guidelines for the Protection of Aquatic Life. [10]

5.3 Anticipated Impacts on the River Hron after Commissioning Units 3 and 4

As the validity of the regulation on wastewater discharges from the NPP Mochovce into the Hron No. 2007/00029 dated January 25, 2007 including its modifications, has been limited until December 31, 2015, District Office in Nitra issued at the request of SE, a.s. EMO new decision No. OU-NR.OSZP2-2015 / 043433 of December 29, 2015. This regulation lays down conditions for the discharge of wastewater for the Mochovce NPP.

Table 32: Amount of Discharged Wastewater:

1. operation of two units at Mochovce NPP			
Q_{avg} (L / s)	Q_{max} (L / s)	Q_{avg} (m^3/day)	Q_{year} (m^3/year)
222.0	330.0	19 200	7 millions
2. operation of three units at Mochovce NPP			
320.0	440.0	27 400	10 millions
3. operation of four units at Mochovce NPP			
415.0	550.0	35 600	13 millions

Table 33: Limit Values of Discharged Wastewater Discharged Pursuant to NV 269/2010 Coll.

Indicator	**Permitted limit concentration [mg/ l excluding pH and T]**	**Permitted balance values [t/ year] Q_{year} = 7 mil. m^3**	**Permitted balance values [t/ year] Q_{year} = 10 mil. m^3**	**Permitted balance values [t/ year] Q_{year} = 13 mil. m^3**
pH	6.0-9.0	-	-	-
COD_{cr}	405	280	400	520
NL	40	280	400	520
RL_{550}	1000	7000	10 000	13 000
RL_{105}	1500	10 500	15 000	19 500
Hydrazine	0.5	3.5	5.0	6.5
NEL	0.5	3.5	5.0	6.5
AOX	0.2	1.4	2.0	2.6
BOD_5	12	85	120	155
SO_4^{2-}	690	4850	6900	9000
$N\text{-}NH_4$	3.0*	21	30.0	40.0
$N\text{-}NO_3^-$	16**	110	160	200
$P_{tot.}$	1.00	7.0	10.0	13.0
Cl^-	100***	820	1200	1520
active cl	Watch without limit****			
T [^{0}C]*****	30	-	-	

** At the time of wastewater discharge from neutralization tanks 4.5 mg / l.*
*** May be exceeded 5 times a year to a value of 22 mg / l.*
**** In winter, the concentration permitted value is p = 150 mg / l*
***** monitoring 4x at point samples*
****** In the months from June to September at extreme air temperatures of max. 35 °C*

New regulation increases the permitted amount of discharged wastewater and also increases the limit values for discharged wastewater in accordance with NV 269/2010 Coll.

In terms of radioactivity, starting operation of units 3 and 4 the discharged water would be of the same quality, so no new regulation provided water quality indicators in the radioactivity indicators, the rates stayed the same as in the regulation No. 2007/00029 dated January 25, 2007.

Impact on Water Collection from the Hron River

Permitted amount of discharged water for NPP will suffice long term; this is based on the calculations for water necessary for the operation of four units at Mochovce NPP in chapter 4.2.1.

During the monitoring there has been no period that would indicate an insufficient amount of water in VD Veľké Kozmálovce for the needs of the operation of four units at Mochovce NPP. Qualitative parameters of discharged wastewater into the Hron should not be affected after the commissioning of 3 and 4 of Mochovce NPP, since water is reused in the production process and before discharge it is mixed with water from the technology of the SE-EMO12. This water meets the requirements of the applicable decision. After starting the operation of units 3 and 4 the quality parameters of discharged process water should remain at similar to current levels.

6 Measures Proposed for Inclusion in the Management System Resulting from the Impact Assessment of the River Hron

In connection with the above activities, measures for inclusion in the management system resulting from the impact assessment of the river Hron will be proposed. It will be mainly about land use planning measures (e.g. the need for harmonization with the land use planning documentation, recommendation for amendments to the existing land use planning documentation, etc.), technical measures (e.g. change of technology, raw materials, construction schedule, reclamation of emergency surveys), technological measures and organizational and operational measures.

6.1 Physical-Planning Measures

The radiation dose targets for an individual of the population due to radioactive releases from the NPP during normal/abnormal operation for siting of the nuclear facility, shall not exceed the maximum dose allowed by Ordinance of the Government No 345/2006 on basic safety requirements for health protection of workers and population against the ionizing radiation and is consistent with the decision of the Public Health Authority for the current site of the NPP Mochovce. The use of dose constraint (250 μSv/year) is fully according with ICRP recommendations and the objectives of European Community Directive 96/29.

The exclusion area (Protection Zone) for Mochovce NPP was determined by Decree of Region Health Officer No. H-IV-2370/79 from 15.10.1979; it is a zone in which permanent residence is prohibited. The average distance of exclusion area boundary to Mochovce NPP is about 3 km.

6.2 Technical Measures

In terms of ensuring sufficient water from VD Veľké Kozmálovce intended for the Mochovce NPP, it is necessary to ensure regular cleaning of reservoir sediment and maintain the volume of the reservoir according to the design parameters. SVP, š.p. continuously provides cleaning of sedimentation in the reservoir to increase the disposable tank volume and also introduces technical measures to prevent sedimentation. In spaces of VD Veľké Kozmálovce additional guidance system was built in order to exclude or reduce sedimentation and improve the cleaning of the reservoir. Cleaning of the reservoir is performed regularly during elevated water levels. New guidance system ensures streamline is in the middle of the reservoir and it prevents the sedimentation in the surface water collecting areas. During the cleaning it enables a larger pickup speed that makes carrying away the sediments more effective. In total there are 12 new guidance canals. All of them are connected to the tanks and extended obliquely toward the centre of the reservoir. Besides providing the guidance to the flow in the area of NPP, canals 0 and 1 also provide protection to the actual collecting structure due to their connection to both banks, they limit the access to sediments to maximum, particularly during increased water flow [12].

This work is regularly carried out by SVP, š.p., especially at a reduced level in the reservoir. Reducing the level in the reservoir is carried out in collaboration between SVP, š.p. and SE, a.s. It is reduced during planned shutdowns and repairs of technology equipment.

To maintain good condition of VD Veľké Kozmálovce in terms of the available volume of water, SVP, š.p. must monitor regularly the sedimentation in the reservoir and inform SE with its results.

6.3 Technological Measures

SE-MO34 is an "evolutionary project", like all the so-called generation III reactors, it is based on proven and firmly consolidated technologies of currently operating nuclear power plants and it introduces significant security and performance upgrades, it is implementing lessons learned from operating experience to ensure compliance with the latest international safety requirements and practices, with a strong emphasis on maintaining proven design to minimize technological risks.

Mochovce 3-4 is a new project, significantly improved compared to the reference power plant Mochovce 1-2 (VVER 440 / V213), on which is based, and also compared to other nuclear installations of VVER 440 type currently operating in the EU. It covers all recognized international security issues. It meets or exceeds all current relevant international safety requirements (IAEA, WENRA) and is comparable with nuclear power plants that are currently under construction around the world.

Efficiency Improvements of MO34 Units

Due to higher performance reached by new components (turbogenerators and other technological parts) that will be installed in MO34 secondary circuit, for each unit, the efficiency will be increased up to 31,7%, without any change in the primary circuit. The reactor rated thermal power (1375 MWt) being equal, the electric gross power output will be 471 MWe (corresponding to 436 MWe net power output).

The most important improvements and their environmental benefits consist of:

- New turbines of higher efficiency and other optimizations in the secondary thermal cycle (leading to a decrease of the thermal discharge to the environment as a consequence of the decrease of the thermal power dissipated in the condenser);
- New titanium tubes in condensers (leading to higher performances of the component and hence to a lower steam pressure for the inlet water to condensers);
- New natural draft cooling tower package (leading to higher thermal performances of the component and hence to a lower inlet water temperature to condensers);
- New natural cooling tower drop retainers (leading to a decrease of the water consumption).

The general reduction of the thermal discharges (about 7%) into the environment can be estimated as the percent increase of the original efficiency (29.5%).

Moreover, the increase of the NPP efficiency (the electric generated energy being equal) will allow:

- an extension of the nuclear fuel life;
- a decrease of the production of radioactive waste;
- a decrease of the radioactive discharges.

6.4 Organizational and Operational Measures

6.4.1 Measures during Normal Operation

An external laboratory of radiation control was built in Levice (ELoRC Levice) in connection with the adopted radiation protection measures of the Mochovce NPP to monitor the radioactivity of the environment in the surroundings of the Mochovce NPP. It began its activities in 1986, about the time of the Chernobyl accident, with the aim of obtaining the data prior to the NPP being commissioned. Currently, ELoRC Levice performs monitoring of radioactivity of elements of the environment in connection with the operation of EMO12, for the purpose of monitoring the influence of the operation of EMO12 on the surroundings. Because of the approved monitoring programme for the surroundings of the Mochovce NPP and the implementation of the programme, it may be stated that ELoRC Levice performs monitoring of the surroundings for all four units – EMO12 and MO34 under construction - within the fulfilment of the monitoring programme.

In addition, each year a Report on Controlling Radioactivity in the Surroundings of SE-EMO is issued. It presents results of the monitoring of the impact of the NPP operation on particular elements of the environment. The report is prepared by the department of ELoRC and TDS. The report contains also the Programme of monitoring in the surroundings of NPP for particular year, and all the results of monitoring (of direct measurement of radiation characteristics in the field, and the results obtained based on samples of air, soil, water and food chain (feedstuff, milk, agricultural products etc.) from the territory within 20 km from the plant and its laboratory results in ELoRC Levice).

In line with the monitoring plan for radiation control of the NPP Mochovce-0 PLN / 0006 surroundings, the NPP controls the radiological influences on the environment and population. Monitoring is focused on documenting that radiological influences, i.e. exposure of population and concentration of isotopes from emission, are lower than limits set in Appendix No 3 of the Slovak Republic Government Decree No 345/2006 Coll. on main safety requirements of health protection and public protection from ionizing radiation (and limits set by the Nuclear Regulatory Authority of the Slovak Republic), and that these impacts are as low as reasonably achievable –ALARA.

The present monitoring results of operation in surrounding of EMO12 allow the assessment of likely environmental impacts and constitute a basis for the assessment of future likely impacts of MO34 when it will be operating.

In the surroundings of the Mochovce NPP, 15 stable dosimetry stations (SDS) are located. The stations continually take aerosol particles by means of the absorption on filters. In addition, they contain polyethylene tank to collect the fall (both, dry and wet together) and also cartridges equipped with thermoluminiscent dosimeters (TLD) on protuberantarms. Environmental radiation monitoring covers the territory within approximately 15 km from the plant.

In the surroundings of the Mochovce NPP, 24 monitoring stations of teledosimetry system (TDS) are located. They monitor online the input of the gamma radiation, 5 station monitor volume activity of aerosols and radioactive iodine.

TDS measuring stations are shown in Figure 12. Their location is in two circuits. The 1st circuit of the NPP is made up of 16 monitoring stations of type 1 and 3 stations of type 3. The measuring station of the system on the 1st circuit is made up of a freestanding pillar. The 2nd circuit approximately 3-15 km from the NPP is made up of 21 control measuring points on which there are 16 monitoring stations of type 2 and 5 of type 3. Each measurement station is made up of a freestanding building.

Figure 12: Placement of Stations TDS in the Surroundings of the Mochovce NPP

TDS, Mochovce (3x), Levice, Tlmače, Z. Moravce, Vráble, Mochovce - dedina

TDS - Nemčiňany, V. Vozokany, M. Vozokany, Č. Hrádok, Tajná, Čifáre, Tehla, V. Ďur, Kalná, H. Seč, N. Tekov, V. Kozmálovce, M. Kozmálovce Kozárovce

The purpose of the first circuit is to provide data on the size of any possible release and the data is used for decision making for the first prognosis of the impact of a nuclear accident on the NPP and its surroundings, or it can help to determine whether there has been a release of radionuclides to the air and to provide information on it. The aim of the second TDS circuit is to provide information on the actual radiation situation in selected settlements close to the NPP with larger populations.

The main components of TDS stations are:

- TDS type 1- gamma radiation dose rate monitor;
- TDS type 2 - gamma radiation dose rate monitor, sampler for captured aerosol and iodine activity;
- TDS type 3 - gamma radiation dose rate monitor, aerosol and iodine monitor.

The monitored radiological values are:

- dose rate of gamma radiation;
- volume activity of aerosols;
- volume activity of radioactive iodine.

6.4.2 Measures in Case of Accidents - Emergency Plans

The design, project execution and operation of nuclear power plants ensure that the likelihood of an accident resulting in significant radiation exposures to workers and members of the public is very small. Nevertheless, it is still necessary to prepare suitable emergency procedures, means and equipment –an integral part of emergency response for all levels of accidents. The existence of a proper emergency plan is a standard practice – it is a prerequisite for licensing process resulting in granting a licence for operation of the nuclear installation.

The legal requirements on emergency preparedness come from ActNo.541/2004 Coll. on Peaceful Utilization of Nuclear Energy, Act No. 355/2007Coll., Act No. 444/2006 Coll. on Civil Protection of Population and Ministerial Order No. 345/2006 Coll.

The UJD Decree No. 55/2006 on Details in Emergency Planning in Case of Accident describes the main principles and details for emergency planning and preparedness of operators, as well as of state and municipal authorities located outside the plant (off-site authorities).

In accordance with the above acts, the operating organization, regulatory bodies and public authorities shall cooperate to prepare emergency plans. The major tasks of emergency planning and preparedness are as follow:

- to decrease the risk of accident or emergency, or to reduce their consequences;
- to prevent serious direct health damage (death, etc.); and;
- to decrease the probability of possible later health damage (e.g. cancer) as far as it is reasonably achievable.

Emergency preparedness is a complex of activities aimed at fulfilling all measures necessary to protect employees and other persons, if risk of accident or release of radioactive materials is possible. It includes establishment of emergency plans, training system, correct procedures and exercises for individuals, authorities and organizations to perform activities which have to be fulfilled according to On-site Emergency Plan (OEP) and Off-site Emergency plans – Plans for Population Protection in the threatened area. Accordingly, preparation and precise activities of EMO personnel shall be ensured if it comes to significant emissions of radioactive materials into the working environment and surroundings and it is necessary to take measures to protect human health in the area of the nuclear facility, as well as health of inhabitants in the surroundings of the nuclear facility.

Plant Manager is responsible for maintaining emergency preparedness in accordance with the requirements stated in legislation.

6.4.2.1 Off-Site Emergency Plan

The National Emergency Plan in case of Nuclear or Radiation Accident describes activities, links of individual units of national emergency response organization. It provides a balance of forces, sources and means necessary for an effective response. It specifies the links to IAEA and cooperation with neighbouring countries in accordance with bilateral and international agreements.

The “Plan of Population Protection in case of Radiation Accident in Nuclear Power Facilities” (JEZ) is the document based on which the off-site emergency response is managed. The plans were prepared by Emergency Control Departments of County Councils in Nitra and Banská Bystrica in accordance with the Act No. 541/2004 Coll. on Peaceful Utilization of Nuclear Energy, UJD Decree No. 55/2006 on Details in Emergency Planning in Case of Accident, Act No. 444/2006 Coll. on Civil Protection of Population and Ministerial Order No.345/2006 Coll.

Off-site Emergency Response Organization is provided at two levels:

- National level - the Safety Committee of SR and the Central Emergency Headquarters of SR are the control and coordination bodies for events during which population and environment are in danger. They provide uniform preparedness and efficient realization of measures for protection as well as actions during a radiation event considering both the public and economy in the territory of the Slovak Republic. The Safety Committee is established by the Government of the Slovak Republic.
- Regional level - emergency commissions are established at district and municipal councils. They are coordinated by the emergency commissions of county councils in Nitra and Banská Bystrica. The commissions are responsible for ”planning measures according to the relevant region”. Plans of Public Protection are approved by the Ministry of the Interior of the Slovak Republic and assessed by the Nuclear Regulatory Authority (UJD).

6.4.2.2 On-Site Emergency Plan

The basic documentation is “On-site Emergency Plan” putting emphasis on emergency events related to radiological hazard to the personnel within the territory of nuclear facility and is linked to the Plans of Public Protection in the surroundings of nuclear facility. The On-site Emergency Plan shall include measures in case of emergency events involving combination of non-nuclear and nuclear hazards in accordance with UJD Decree No. 55/2006 using also the IAEA documents TEC-DOC 955 and the updated document IAEA TECDOC953. The On-site Emergency Plan came into force after being approved by the Nuclear Regulatory Authority of the Slovak Republic (UJD) and positively appraised by the Ministry of Foreign Affairs of the Slovak Republic. The On-site Emergency Plan was coordinated with the off -site Emergency Plans – i.e. with the Plans of Public Protection.

SE-MO34 prepared for the construction period, in accordance with the Act No.541/2004 Coll. on Peaceful Utilization of Nuclear Energy and UJD Decree No. 55/2006 Coll., the Preliminary On-site Emergency Plan approved by UJD Decision No. 272/2007 of August 14, 2007. The Preliminary On-site Emergency Plan follows the EMO On-site Emergency Plan approved for the Units 1&2 that are in operation. The SE-MO34 plant created an emergency team of the plant managing and coordinating activities which follow from the Preliminary On-site Emergency Plan in the territory of SE-MO34 plant in accordance with the instructions of ERO SE EMO (On-site Emergency Response Organization).

On-site Emergency Response Organization (ERO) is establishment and arrangement of departments and personnel in licence holder´s organizational structure in such mutual links with the appropriate state and municipal authorities that ensure performance of actions necessary to prevent accidents in nuclear facilities or to mitigate and remove the consequences.

6.4.2.3 Emergency Events Classification System

In compliance with UJD Decree No. 55/2006 Coll. the events are classified in accordance with their possible severity and radiation consequences in three degrees:

1st degree - ”the alert state”. It is a state in which fulfilment of safety functions is jeopardized or damaged, safety barriers are damaged or not functioning, there is a danger of radioactive material release or radioactive material was released that can lead or leads to impermissible irradiation of persons in civil buildings of the nuclear facility and in case of unfavourable development of the situation there is a danger of radioactive material release outside the civil buildings of the nuclear facility.

2nd degree - ”on-site emergency”. It is a state that can lead or leads to radioactive material release outside of civil buildings of the nuclear facility and on its territory.

3rd Degree - ”Off-site emergency / General Emergency”. It is a state that can lead or leads to serious radioactive material release to surroundings of the nuclear facility.

The detailed procedures are included in the documentation intended for ERO, which set scope, accountability and procedures of emergency preparedness.

In conformity with legislation in force and specific regulations, the local or state bodies and organizations are established to safeguard protection of the population within a 20 km radius from the point of accident in accordance with the Plans of Population Protection. An integral part of the On-site Emergency Plan is determination of external bodies and organizations that in case of an accident provide assistance for NPP during emergency response based on a contract. Each of the organizations has their own equipment and fully trained employees.

6.4.2.4 Protective Measures

Priorities of protection during an emergency are defined as follows:

1) Protection of the plant personnel and persons legally moving on NPP territory;

2) Protection of reactor unit, avert core melting and mitigation of the consequences;

3) Protection of population living in the plant surroundings;

4) Protection of environment.

6.4.3 Scope and Principal Elements of the Follow-up Program

The scope of any follow-up program should be focused on providing information needed to verify EIA predictions and mitigation effectiveness, particularly as related to likely effects carried into the significance determination step in the assessment process.

Follow-up studies and monitoring should be focused on specific effect hypotheses. This would allow results to be evaluated and any appropriate corrective action to be taken in a timely manner.

Two phases of follow-up studies/monitoring are proposed as follows:

- Pre-operational phase; and
- Operation Phase.

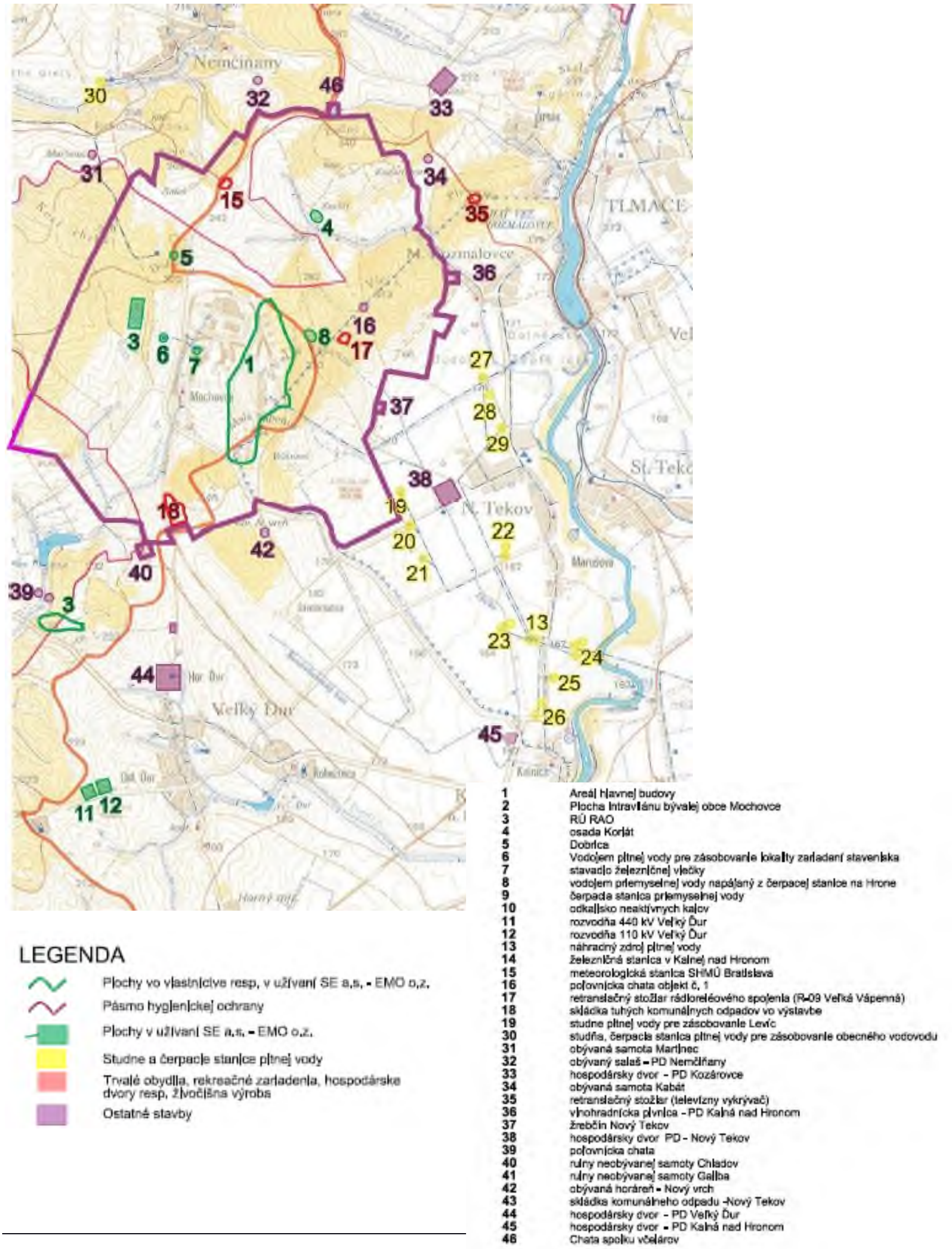
Pre-operational studies/monitoring would be intended to supplement or confirm the existing information used to define project improvements and mitigation measures. This would improve the basis for subsequent comparison with follow-up studies/monitoring carried out after MO34 is commissioned.

Other specific studies could be initiated before the operating activities (i.e. Radio-ecological analysis). These studies are intended to provide environmental information which, together with the existing information could be used to improve the Operational phase monitoring.

Operational phase studies/monitoring would be initiated simultaneously with the commissioning of unit 3 and 4. They would be intended to provide environmental information which, together with the pre-commissioning baseline information, could be used to determine actual effects and provide a basis for determining the validity of the EIA predictions, the effectiveness of the implemented measures, and whether any additional or new mitigation measures are required.

7 DIAGRAMS, MAPS AND OTHER VISUAL DOCUMENTATION

Figure 13: Protection Zone



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9 PLACE AND DATE OF THE REPORT

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....

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Plan of additional measurings of the impact on the ecosystem with special focus on the river Hron

List of abbreviations:

CIA	Cumulative Impact Assessment and Management
CRCS	Centralized system of radiation control
EBO	Nuclear Power Plant Jaslovské Bohunice
EIA	Environmental Impact Assessment
EMO	Nuclear Power Plant Mochovce (units 1, 2, 3, 4)
ESIA	Indicator of incremental impact
FS KRAO	Final processing of liquid radioactive waste
HPGe	High purity germanium
IFC	International finance corporation
NPP	Nuclear Power Plant
LM	Laboratory Measurements
LRKO	Laboratórium radiačnej kontroly okolia (Environmental Radiation Monitoring Laboratory
MVE	Small hydro power plant
NR SR	National Council of the Slovak Republic
OK	Drainage channel
PPDE	Power of the areal dose equivalent
QA	Quality Assurance
QC	Quality Control
RÚ RaO	National Radioactive Waste Repository
RÚVZ	Regional Public Health Authority
SE MO12	Slovenské elektrárne, a.s. operated units 1. and 2. of Mochovce
SE MO34	Slovenské elektrárne, a.s. completion of untis 3. and 4 of Mochovce
SDS	Stable dosimetry station
TDS	Teledosimetric system
TLD	Thermoluminescent dosimeters
ÚJD SR	Nuclear Regulatory Authority of the SR
ÚVZ SR	Public Health Authority of the SR
VEC	Valued Environmental and Social Component
VÚJE	Výskumný ústav jadrových elektrární

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Content

1 INTRODUCTION

The economic activities of European countries in the second half of the 20th century recorded in a large increase of particularly industrial activities – new technologies and industries were introduced and developed including nuclear power industry. There was also the intensification of agricultural activities, particularly in using chemicals in crop production and concentration on livestock production. This development, in addition to some of the positive factors also had negative effects on the ecological balance in nature and gradually threatened the quality of the three basic components of the environment - air, water and soil.

Scientific and research institutions in almost all countries have been forced to react to this development by providing protective measures depending on natural conditions and related issues, which became dominant in the country. Generally there has been a problem in the interface between water and soil in different contexts.

In the Slovak Republic threats to water quality and pollution caused by industrial and agricultural activities became dominant in the early seventies.

For the EU member states the **Directive 2000/60/EC of the European Community and the Council of October 23, 2000** establishing a framework for community action in the field of water policy became bounding. Its aim is to achieve "good state of surface water and groundwater" in each river basin of the waterways in the member states.

The severity of the Directive 2000/60/EC was also documented by the Slovak Government, when it approved the **"Strategy for the implementation of the Water Framework Directive"** (hereinafter WFD) by its Resolution No. 46 of January 21, 2004. The Directive was prepared by the Ministry of Environment precisely following the instructions and requirements of the European Community and Council with deadlines to ensure "good status" gradually until 2015.

The aims of the approved "Strategies for implementing the WFD" in the SR state that the basis for all required evaluations of interrelated tasks "on natural formations," "heavily modified" and "artificial" (e.g. Tanks), the results will be obtained within the new monitoring programs. Literally the "strategy" states that their implementation according to the established EU requirements will require significant expansion of the existing program of monitoring systems by new elements and prescribed parameters. Subsequently for these bodies environmental objectives and proposed measures must be developed to achieve "good status" for each river basin waterways in the member states of the Union. The Slovak Republic is divided, according to the geological, geomorphological and hydrological proportion, into 11 sub-basins of main streams relevant to two seas, namely: in the north to the Baltic and in the southeast to the Black Sea.

The Slovak Republic has been a full member state of the European Community since May 1, 2004, and therefore must fully implement the requirements of the Directive No. 2000/60/EC.

The key steps include:

- Knowing the current state of the surface and ground water,
- Analysis of pressures and impacts of human activities on the water bodies.
- Draft of the management plan activities of the river basins.

To address these challenges, it is necessary and important to monitor the substances with a potential risk to the environment and human health. It is especially important if the Directive 2000/60/EC and consequently the "Strategy for the WFD implementation" implies a sequence of events of the implemented corrective actions within the specified time periods.

The fulfillment of these requirements includes also the **formulation and realization of the plan of the additional measurements of the nuclear complex Mochovce impacts on the ecosystem with special focus on the river Hron.** Hron is the main affected basin and its waterway, along with the atmosphere, is the most sensitive aspect, through which the potential effects can occur. If the new, complementary monitoring should also affect the complex impact on the ecosystem, we must also consider the terms such as ecological stability and biodiversity. The comprehensively conceived object of the supplementary monitoring requires tools and technologies to encompass not only the different data from different partial effects, but must also be able to provide a basis for consideration of their interactions and impacts on the entire monitored ecosystem.

The plan of additional measurings of the impact on the ecosystem with special focus on the river Hron is one of the reports to assess the cumulative effects of the completion of Units 3 and 4 of NPP Mochovce (VVER 4 x 440 MW; 3rd project) on the environment. The reports are processed according to the IFC manual and good industrial practice in the private sector on emerging markets. The company ENEX trade, Ltd is the bearer of the role to complete the report and the plan of the assessment of cumulative impacts.

At the beginning of the assessment, it was necessary to identify the environmental attributes that are considered important for the designing of the plan of additional measuring of the impact on the ecosystem with special focus on the river Hron. Within the specified range as **input data were considered the effects of 2012-2014**. The first part the attention is given to the monitoring plan during the operation of Units 1 and 2 and the completion of Units 3 and 4 of NPP Mochovce. The second part is focused on the draft of the monitoring plan for commissioning of Units 3 and 4 of NPP Mochovce. The customer demanded to deal with the impacts in the area within a radius of about 20 km from NPP Mochovce.

The report comprehensively records all data and documentation that was used when preparing the report. The report uses all available data on the possible impacts that may arise during the completion of units 3 and 4 of NPP Mochovce. For a comprehensive assessment of all potential cumulative effects the biggest possible extent of relevant input data was summarized and analyzed. On their basis the potential cumulative effects on the completion of Units 3 and 4 of NPP Mochovce were defined. At the same time the results of the measurements of operating Units 1 and 2 of NPP Mochovce were used as a guide.

2 THE MONITORING PLAN DURING OPERATION OF UNITS 1 AND 2 AND COMPLETION OF UNITS 3 AND 4 OF NPP MOCHOVCE

Monitoring is currently controlled by the regulation "Radiation Monitoring Plan in the vicinity of the NPP Mochovce (0-PLN / 0006)", which describes monitoring around NPP Mochovce within a radius of 20 km from the plant. 24 stations of the teledosimetric system and 15 stable dosimetry stations monitor the gamma radiation dose rate, volume activity of aerosol, volume activity of radioactive iodine dose and additional information about the state of the technology. The monitoring system for the whole area of Mochovce was designed to include Units 3 and 4, and will be gradually put into operation.

Monitoring and control of radioactive discharges from the NPP Mochovce into the environment as well as monitoring of the environment around the NPP Mochovce is secured by the Slovak legislation, permits of the national supervisory authorities, in accordance with international recommendations and implemented in accordance with applicable regulations. **The conditions for monitoring of the environment are given by:**

- Legislation:

- Act No. 364/2004 Col. on waters and on the amendment of Act No. 372/1990 Col. on misdemeanors, as amended,
- Government decree of SR No. 269/2010 Col., laying down the requirements to achieve good water status,
- Regulation of the Ministry of Health of the SR No. 524/2007 Col., laying down the details of the Radiation Monitoring Network,
- Act NR SR No. 355/2007 on the protection, support and development of public health and on amendments to certain laws,
- Slovak Government Regulation No. 345/2006 Col. on basic safety requirements for health protection of workers and population from ionizing radiation,

- Decisions of supervisory authorities:

- The decision of the Public Health Authority of SR No. OOZPŽ/6773/2011 from 20.10.2011 and the statement of the Public Health Authority of SR No. OOZPŽ/8842/2013 from 12.12.2013,
- The decision of the Public Health Authority of SR No. OOZPŽ/7042/2012 from 23.10.2012,

- The decision of the Regional Environmental Office Nitra No. 2007/00029 from 25.1.2007, which was extended to 31.12.2015 pursuant to Decision No. 2010/00729 from 6.12.2010 and amended pursuant to Decision No. 1893/2013/1961 from 16.5.2013,

- Applicable regulations:

- SE/MNA-172.01, Radiation protection,
- SE/PGR-16/2012, Restructuring of the company from 2013-2014,
- 0-TP/8433 Measurement and permission to discharge liquid discharges,
- 0-PLN/0006 Radiation Monitoring Plan in the vicinity of the NPP Mochovce,

- International recommendations:

- IAEA SSS No. RS-G-1.8 Environmental and source monitoring for purposes of radiation protection, Vienna, 2005,
- IAEA SRS No. 64 Programs and systems for source and environmental radiation monitoring, Vienna, 2010,
- Environmental Radiological Monitoring – Technical Guidance Note 2, EA, 2010.

Monitoring is designed to meet the following **objectives**:

- Evaluate the dose (as an indicator of the implementation of measures),
- Assess the full radiological impact on the environment,
- Provide the public and the shareholders with information on radiological impact on the NPP on the environment,
- Ensure quality control,
- Assess long-term trends,
- Observe/respect international obligations,
- Detect abnormal leakage and unauthorized discharges,
- Monitor the behavior of radionuclides in the environment.

2.1 Identify environmental attributes

Project environmental indicators for surface water and groundwater have been identified for the operational phase of the project for non-radiological and radiological criteria. The probable impacts of normal operation on hydrology and groundwater are related to:

- Loss of heat,
- Quality of surface water and groundwater,
- Conditions of aquatic biotopes,
- Radioactive emissions.

2.1.1 Non radiological parameters

The results of the indicators on VEC (human health and population, river Hron and other sources of water and aquatic species) are assessed in the local and regional area. Tab. 1 contains the evaluation criteria used to assess the possible impacts on hydrology and groundwater.

Table 1: Criteria used to assess the probable impacts on hydrology and environment

Surface water and groundwater	**Evaluation criteria**
Water temperature	- Government Regulation of SR No. 269/2010 Col. (sets limits for permissible temperature of rivers)
Change of surface water quality	- Liquid discharges are monitored regularly to meet the specified limits of the Government Regulation of SR No. 269/2010 Col.
Conditions of aquatic biotopes	- Professional expertise

The comparison of qualitative and balance sheet indicators of pollution discharged into the river Hron with limits in 2004 is listed in Tab. 2.

Table 2: Comparison of qualitative and balance sheet indicators of pollution discharged into the river Hron with limits in 2014 (source: Report on the environment in MO34 in 2014. Slovenské Elektrárne, a.s.)

Indicator	Average concentration ($mg.l^{-1}$)	Permitted limit concentration ($mg.l^{-1}$) except for pH and T	Achieved balance values of pollution discharged into the river Hron ($t.year^{-1}$)	Permitted balance values ($t.year^{-1}$)
$CHSK_{Cr}$	21,19	35	121,482	210
$N\text{-}NH_4$	0,3097	1,5*	1,776	9
Cl^-	31,45	100	180,304	600

Indicator	Average concentration ($mg.l^{-1}$)	Permitted limit concentration ($mg.l^{-1}$) except for pH and T	Achieved balance values of pollution discharged into the river Hron ($t.year^{-1}$)	Permitted balance values ($t.year^{-1}$)
BSK_5	2,4166	12	13,85	90
NEL	<0,1	0,5	0,573	3
RL_{105}	694,388	1500	3980,947	9000
RL_{550}	545,71	1000	3128,571	6000
$P_{celk.}$	0,1630	1,00	0,934	6
T [^{0}C]	18,12	30	-	-
NL	10,1837	40	*58,38*	240
SO_4^{2-}	248,05	690	*1422,078*	4140
pH	8,556	6,0-9,0	-	-
Hydrazine	0,0279	0,5	*0,160*	3
Active Cl	0,05375	0,1	*0,308*	0,6
AOX	<0,05	0,2	*0,2867*	1,2
$N\text{-}NO_3^-$	6,8948	16**	*39,53*	96

Explanation:

** At the time of waste water discharges from neutralization tanks 3,0 $mg.l^{-1}$.*

*** With the possibility to exceed 5 x a year up to the value 22 $mg.l^{-1}$.*

The analyses in particular indicators are according to the valid decision are performed 48x a year except for BSK_5, hydrazine – 12x a year and AOX, NEL, active chlorine – 4x a year. The given balance values are calculated in the total volume of water collected from the river Hron. The permitted limits of pollution discharged into the river Hron from the operation of NPP in 2014 were not exceeded.

The development of the concentration values of chemical indicators of waste water discharged into the river Hron in the period of 2010 – 2014 is listed in Tab. 3.

Table 3: Development of the concertation values of chemical indicators of waste water discharged into the river Hron in $mg.l^{-1}$ in the period of 2010 – 2014

Chemical parameters	Limit values	2010	2011	2012	2013	2014
$CHSK_{Cr}$	35	16,88	14,04	17,52	21,95	21,19
$N\text{-}NH_4$	1,5	0,2934	0,145	0,227	0,2733	0,3097
Cl^-	100	29,33	36,71	52,32	50,581	31,45
BSK_5	12	1,8	2,58	2,79	3,57	2,4166
NEL	0,5	<0,1	<0,1	0,11	<0,1	<0,1
RL_{105}	1500	829,54	890,959	913,78	848,94	694,388
RL_{550}	1000	645,35	709,41	721,53	668,29	545,71
$P_{celk.}$	1,00	0,361	0,382	0,288	0,171	0,1630
T [^{0}C]	30	18,182	19,58	18,66	18,25	18,12
NL	40	12,342	11,659	11,07	10,62	10,1837
SO_4^{2-}	690	270,382	331,155	332,64	309,88	248,05
pH	6,0-9,0	8,769	8,763	8,765	8,76	8,556
Hydrazine	0,5	0,0225	<0,02	0,0216	0,0242	0,0279

Active chlorine	0,1	0,0525	<0,05	0,064	0,062	0,05375
AOX	0,2	<0,05	<0,05	<0,05	0,0525	<0,05
$N\text{-}NO_3^-$	16	7,9762	9,136	8,191	8,609	6,8948

The development of balance values of chemical indicators of waste water discharged into the river Hron in the period of 2010 – 2014 is listed in Tab. 4.

Table 4: Development of balance values of chemical indicators of waste water discharged into the river Hron in the period of 2010 – 2014 v (t.year^{-1})

Chemical parameter	Limit values	2010	2011	2012	2013	2014
$CHSK_{Cr}$	210	91,61	79,736	98,62	106,99	121,482
$N\text{-}NH_4$	9	1,59	0,823	1,278	1,332	1,776
Cl^-	600	159,170	208,485	294,495	246,536	180,304
BSK_5	90	9,768	14,652	15,704	17,4	13,85
NEL	3	0,543	0,568	0,619	0,487	0,573
RL_{105}	9000	4501,793	5059,96	5143,42	4137,797	3980,947
RL_{550}	6000	3502,221	4028,90	4061,30	3257,3	3128,571
$P_{CELK.}$	6	1,959	2,169	1,62	0,832	0,934
NL	240	66,978	66,214	62,31	51,74	58,38
SO_4^{2-}	4140	1467,324	1880,70	1872,34	1510,378	1422,078
Hydrazine	3	0,122	0,114	0,122	0,118	0,160
Active chlorine	0,6	0,285	0,284	0,360	0,302	0,308
AOX	1,2	0,271	0,284	0,281	0,256	0,287
$N\text{-}NO_3^-$	96	43,286	51,885	46,105	41,960	39,530

Basic chemical parameters of waste water are monitored by continuous analyzers which are located in the waste water treatment facility. Here are the monitored values: reaction of water – pH, sulphate – SO_4^{2-}, ammonia nitrogen – $N\text{-}NH_4^+$, nitrate nitrogen – $N\text{-}NO_3^-$, chemical oxygen demand – $CHSK_{Cr}$, conductivity, temperature. The values are transmitted into the management system in the facility of extraction and storage of chemicals from which the discharge from neutralization of aggressive waters is controlled. The limits are used for automation of the discharge of these waters. The exceeding of the limit concentration results into automatic stop of the discharge of aggressive waste water up until the time when the measured value goes below the limit concentration. The amount of discharged aggressive waste water is controlled according to the parameters of continual measurements by the department of operational support and chemical control. It is provable that by monitoring the parameters of quality and balance of discharged water there was no exceeding of permissible limit values in 2014.

The assessment of possible impact of the operation of SE MO12 and the completion of SE MO34 on the aquatic biotope in the period before 2009 was performed by the estimated values of key chemicals in the environment downstream the river Hron and compared with reference values proposed in the Canadian regulation/directive on water quality for protection of aquatic life (Canadian Water Quality Guidelines for the Protection of Aquatic Life). The Canadian regulation/directive was chosen based on the experience of the company **Golder Associates** in processing the assessment of environmental impacts in this area. Due to the environmental activity the following was particularly taken into account: hydrazine, residual chlorine, $N\text{-}NO_3^-$, $N\text{-}NH_4^+$. To determine the concentration of chemicals from the operation of SE MO34, which are present in the environment downstream the river Hron the following data were used (source of data: Slovenské elektrárne, a.s. „NPP Mochovce VVER 4 X 440 MW - 3. Construction“. Report on the assessment of the proposed activity for the evaluation of the environmental impacts according to Act No. 24/2006 Col. 2009):

- Water quality in the river Hron in terms of natural chemical background in the upstream from the place of the emission,
- Maximum, minimum and average flow of the river Hron below the water reservoir (tab. 5),
- Chemical concentration of emissions and the total emissions of 4 units (SE MO12 a SE MO34),
- Rate of diffusion of discharges and total discharges from 4 units (SE MO12 and SE MO34) – tab. 6,
- Water quality guidelines in terms of the protection of aquatic life.

To estimate the concentration of the above mentioned chemicals, the index of dilution of the discharged water was calculated (tab. 7). It was assumed that the rate of discharge from 4 units approximately doubles compared to the rate of discharge from 2 units.

Table 5: River Hron flow

Profile	**Long-term average flow ($m^3.s^{-1}$)**	**1-year maximum flow ($m^3.s^{-1}$)**	**100-year minimum flow ($m^3.s^{-1}$)**
V. Kozmálovce – Hron, r. km. 73,5	47,16	320	7,78

Table 6: Effective rate of diffusion of 2 units and estimated rate of diffusion of 4 units.

	Rate of diffusion ($m^3.s^{-1}$)
Effective value for SE MO12 in 2005	0,16
Estimated value for SE MO12+SE MO34	0,32

Table 7: Index of dilution of discharged water for the profile V. Kozmálovce – Hron, r. km. 73,5

	Index of dilution of discharged water(/)	
	SE MO12	**SE (MO12+MO34)**
Long-term average flow 47,16 $m^3.s^{-1}$ (profile V. Kozmálovce – Hron, r. km. 73,5)	294,75	147,38
1-year maximum flow 320 $m^3.s^{-1}$ (profile V. Kozmálovce – Hron, r. km. 73,5)	2000	1000
100-year minimum flow 7,78 $m^3.s^{-1}$ (profile V. Kozmálovce – Hron, r. km. 73,5)	48,63	24,31

On the basis of the calculated dilution index the concentration of N-NH_4^+ and N-NO_3^- in the area downstream of the river Hron was estimated. The estimated values are presented in Tab. 8 and compared with the reference values suggested by the Canadian Water Quality Convention on the Protection of Aquatic Life. The estimated concentration values of the indicators are significantly lower that the reference values suggested in the Canadian Water Quality Convention on the Protection of Aquatic Life. Even though the calculation did not use the most recent data, due to the above mentioned results we do not expect significant impact of the completion and operation of SE MO34 on aquatic biotope.

Table 8: Estimated values of selected indicators in the downstream environment and reference numbers

Parameter	**Units**	**SE MO12**	**SE (MO12+MO34)**	**Reference values**
Long-term average flow				
N-NH_4^+	$mg.l^{-1}$	1,56	3,12	-
N-NO_3^-	$mg.l^{-1}$	25,89	51,77	13000

1-year maximum flow				
$N\text{-}NH_4^+$	$mg.l^{-1}$	0,23	0,46	-
$N\text{-}NO_3^-$	$mg.l^{-1}$	3,82	7,63	13000
100-year minimum flow				
$N\text{-}NH_4^+$	$mg.l^{-1}$	9,46	18,92	-
$N\text{-}NO_3^-$	$mg.l^{-1}$	156,92	313,83	13000

2.1.2 Radiological parameters

Between the proposed activities and the aquatic environment interactions were identified already during the project activities. The rate of radioactivity impact on the water is detected by means of detailed radio-ecological monitoring.

The results of the indicators for VEC (human health and population, river Hron and others) are evaluated on regional level.

It is expected that once new units are in operation the annual discharges from SE MO34 will be comparable with the discharges of SE MO12.

It is clear that 95% of the (negligible) dose from the discharges of NPP is caused by the discharges of tritium into the river Hron. It is useful to note that the calculated tritium dose is much smaller than the normal variations in the natural environment. For example, the calculated tritium dose is smaller than the rate of change (decrease) of natural dose (at 1 m above the ground) after 10 mm of rainfall. In other words, these changes have a much greater impact on the individual dose than the tritium dose (Report of NUREG Report 1501/August 1994, in parts regarding the variability of the natural background radioactivity).

In any case, due to the continuous care of SE, a.s. about the environment, the NPP Mochovce should focus its environmental program of sampling on the levels of tritium in groundwater and in the river Hron. Since the model RDEMO© conservatively overestimates real dose situation, a more conservative model of tritium dose calculation should be clarified.

2.1.3 Probable environmental impacts

For non-radiological parameters a long-term growth of pollutants into the environment is unlike because of the limited amount of leakage of liquids. For radioactive parameters, very small negative impacts on human health and population were identified. The significance of probable impacts is evaluated in Tab. 9.

Table 9: Hydrology and groundwater – the significance of adverse impacts

Probable adverse impact							
Evaluated ecosystem component	Adverse impact	Range of (impact)	Geographical diffusion of the (impact)	Timing and duration of the (impact)	Frequency of the (conditions causing the impact)	Degree of reversibility	Significance of the adverse impact
Non radiological							
Hydrology, hydrogeology and aquatic biotope	Chemical and physical impact	Low	Moderate	Moderate	High	Low	No adverse impact
Radiologic							
Human health and population	Doses for groups of population Maximum annual effective dose for inhabitants calculated for normal operation of 4 reactors (0,215 μS.year^{-1}) is negligible compared to the maximum effective dose for the inhabitants of the critical group of population (250 μS.year^{-1})*	Low	Low	Moderate	High	Moderate	Low adverse impact

*Source of data: Slovenské elektrárne, a.s. "NPP Mochovce VVER 4 X 440 MW - 3. construction". Report on the assessment of the proposed activity for the evaluation of environmental impacts according to Act No. 24/2006 Col. Annex 11. Slovenské Elektrárne, a.s. Golder Associates. 2009.

2.2 Procedures and methods of monitoring during the operation of Units 1.and 2. And the completion of Units 3. and 4. of NPP Mochovce

The Public Health Authority of the SR issued in its Decision No. OOZPŽ/6773/2011 of October 20, 2011 a permit for the release of radioactive substances arising from the operation of Units 1 and 2 of NPP Mochovce from the administrative control by allowing the discharge of such substances into the atmosphere and into the river Hron. At the same time this permission sets 28 conditions for the release of radioactive substances. The Authority also issued a compliance statement No. OOZPŽ/8842/2013 on December 13, 2013 with a change in the calculation program from RD EMO v. 1.0 to RD EMO v. 3.5 which is used to assess radioactive impacts of the discharge of radioactive substances.

The Authority estimated that the basic radiological limit for the limit of radiation exposure around the nuclear facility caused by radioactive substances released into the atmosphere and into surface waters. During the operation of the NPP SE-EMO **the effective dose of a representative person per calendar year is 50 µSv.**

The regional Environmental Office in Nitra, Department of protection of environmental components authorized as a competent authority of state water management in its decision No. 2007/00029 from 25.1.2007 **the discharge of waste waters from NPP Mochovce into the surface flow of the river Hron.** At the same time in paragraph 6. of the decision the authority does not allow to exceed the emission limits in the flow with indicators of total volume activity alpha of 0,5 $Bq.l^{-1}$, with total volume activity beta of 1,0 $Bq.l^{-1}$, with the activity of radium ^{226}Ra of 0,2 $Bq.l^{-1}$ and with tritium of 1000 $Bq.l^{-1}$. The measurement of these indicators (4x a year) will take place at the river kilometer 63,7 km (highway bridge Kalná nad Hronom). The regional Environmental Office in Nitra, Department of protection of environmental components authorized as a competent authority of state water management issued in its decision No. 2010/00729 from December 6, 2010 the permission to extend the validity of the license No. 2007/0029 from January 25, 2007 on special use of water – waste water discharges from the NPP Mochovce into the surface water flow of the river Hron until December 31, 2015.

The District Environmental Office in Nitra, Department of the protection of environmental components and appeal procedures of the region, state water management changed as a competent authority of state water management in its decision No.

1893/2013/1961 from May 16, 2013 the decision No. **2007/00029** from January 25, 2007 besides others also in the paragraph No. 9, which states:

„Winter drain" of waste waters is used only in the winter months for the purpose of „thawing off" the surrounding of the surface water treatment facility from the reservoir Veľké Kozmálovce. In case of usage of the „winter drain" the fact will be reported to the owner and to the operator of the water facility. During the usage of the „winter drain" the waste waters containing radionuclides and tritiated water must not be discharged.

The District Office in Nitra, Department of environmental protection, section of state administration of waters and selected components of the environment of the region as the competent authority of the state administration issued in its decision No. OU-NR-OSZP2-2015/043433 **from December 29, 2015 the permission to waste water discharges from the NPP Mochovce into the surface water flow of the river Hron.**

In the conditions the permission identifies in paragraph 2 the place of the waste water discharge by a discharge pipeline of 5800 m into the surface water flow of the river Hron in r. km 73,450. In paragraph 5 the requirements for flow measurements and water discharge measurements are established. In paragraph 9 the emission limits in the flow are given with indicators of total volume activity alpha of 0,5 $Bq.l^{-1}$, with total volume activity beta of 1,0 $Bq.l^{-1}$, with the activity of radium ^{226}Ra of 0,2 $Bq.l^{-1}$ and with tritium of 1000 $Bq.l^{-1}$. The measurement of these indicators (4x a year) will be performed in the r. km 63,7 (highway bridge Kalná nad Hronom). Paragraph No. 10 states that the „Winter drain" of waste waters is used only in the winter months for the purpose of „thawing off" the surrounding of the surface water treatment facility from the reservoir Veľké Kozmálovce. In case of usage of the „winter drain" the fact will be reported to the owner and to the operator of the water facility. During the usage of the „winter drain" the waste waters containing radionuclides and tritiated water must not be discharged.

2.2.1 Basic requirements

The public health authority of the Slovak republic ordered in its decision No. OOZPŽ/6773/2011 from October 20, 2011 **to limit the release of radioactive substances by discharge and control it so that**:

a) the activity of radionuclides emitted in air pollutants per calendar year does not exceed the standard values of:

i) mixture of radioisotopes of noble gases $4{,}1.10^{15}$ Bq,

ii) radioisotopes of iodine – ^{131}I (sum of gaseous and aerosol forms) $6{,}7.10^{10}$ Bq,

iii) mixture of radioisotopes with the time of half-change longer than 8 days in aerosols except for ^{131}I – $1{,}7.10^{11}$ Bq,

b) activity of radionuclides discharged in the waste water per calendar year does not exceed the standard values for:

i) tritium $1{,}2.10^{13}$ Bq,

ii) other radionuclides (except for tritium) $1{,}1.10^{9}$ Bq.

At the same time the authority obliged the SE, a.s. to provide operational control of the release of radioactive substances by discharging, implementing and complying with the investigation and intervention levels specified in the approval.

For the purpose of balancing and assessment of the impact on the dosage load the Authority ordered to monitor:

i) the activity of radioisotopes in gaseous discharges: ^{41}Ar, ^{85}Kr, ^{85m}Kr, ^{87}Kr, ^{88}Kr, ^{133}Xe, ^{133m}Xe, ^{135}Xe, ^{51}Cr, ^{54}Mn, ^{59}Fe, ^{57}Co, ^{58}Co, ^{60}Co, ^{65}Zn, ^{89}Sr, ^{90}Sr, ^{95}Zr, ^{95}Nb, ^{103}Ru, ^{106}Rh, ^{110m}Ag, ^{124}Sb, ^{134}Cs, ^{137}Cs, ^{141}Ce, ^{144}Ce, ^{238}Pu, $^{239+240}Pu$, ^{241}Am, ^{131}I (gaseous and aerosol form), ^{3}H, ^{14}C in organic and inorganic form,

ii) the activity of radioisotopes in liquid discharges: ^{51}Cr, ^{54}Mn, ^{59}Fe, ^{57}Co, ^{58}Co, ^{60}Co, ^{65}Zn, ^{89}Sr, ^{90}Sr, ^{95}Zr, ^{95}Nb, ^{103}Ru, ^{106}Rh, ^{110m}Ag, ^{124}Sb, ^{131}I, ^{134}Cs, ^{137}Cs, ^{141}Ce, ^{144}Ce, ^{238}Pu, $^{239+240}Pu$, ^{241}Am, ^{3}H.

In case of radionuclides in the discharges that are not mentioned above, it is necessary to include them and their measured activity into the balance and evaluation of the radionuclide impact, except for the radionuclides with the half-change time shorter than 8 days in aerosols.

If the measured activity in specified radionuclides is lower than the minimum detected activity half of the minimum detected activity is used for the purpose of balance discharges and evaluation of the impact on dosage load.

The operation monitoring plan includes the monitoring of radioactivity in individual components of the environment:

Water, soil, air, sediments, food products, components of agricultural production, as well as the measuring of the level of power of the areal dose equivalent in the given locality.

All these data are obtained by the survey and measurement in the given locality or by sampling and the subsequent preparation, measurement and evaluation in the laboratories. The monitoring plan includes radiation monitoring of the surrounding of NPP Mochovce **within the distance of 20 km around the NPP**.

The monitoring of the surrounding of NPP Mochovce is provided by the Group LRKO and laboratory measurements. In order to monitor the radiation situation around the NPP Mochovce, the group LRKO and LM provides the following analysis (measurement):

- Analysis of samples in laboratories:
    - Gamma spectrometry of the samples,
    - Measurement of total beta activity,
    - Measurement of total alpha activity,
    - Measurement of ^{3}H,
    - Measurement of the integral areal dose equivalent or of the average power consumption of areal dose equivalent using the TLD.
- Field measurements:
    - Field gamma spectrometry – IN SITU,
    - Measurement of the power of the areal dose equivalent by a ionization chamber or by other portable devices – detectors in TDS stations, detectors and portable devices in monitoring vehicles,
    - Measurement of the volume activity of aerosols and iodine – TDS.
- Measurements performed by the contractors:
    - Alpha spectrometry,
    - ^{14}C in samples of environment,
    - ^{90}Sr in samples of environment.

The monitoring plan includes also the newly built wells for monitoring of groundwater around the **MVE Tekov** EM14 and EM34. Water samples from the wells around MVE Tekov are in accordance with the agreement between the operator of MVE and SE, a.s..

According to this agreement the parties have agreed that they will **monitor the water quality in the well together as follows:**

a) The participants will joinly take water samples every two weeks for the analysis of tritium detection in their own wells during the first year of trial operation.

b) The participants will joinly take water samples once a month for the analysis of tritium detection in their own wells during the second year of trial operation.

c) In case of an increased activity of tritium above the agreed intervention value (35 $Bq.dm^{-3}$ for samples from the well EM-34, PS-1 to PS-4; 15 $Bq.dm^{-3}$ for samples from the well in any house in Nový Tekov) the periodicity of measurement will increase to once a week.

2.2.2 Collection, processing and preparation of samples for measurement

Collection, processing and preparation of samples for measurement are performed by the responsible personnel according to their functional responsibilities. The collection, processing and preparation of samples are described in the document 0SP/8331. collection, preparation and measurement of samples or 0SP/8349, determination of the total beta activity in the waters and 0SP/8350, determination of the total volume of alpha activity in waters. These documents set out the rules, procedures and guidelines for mechanical, thermal, chemical processes and preparation of environmental samples for the measurement (data source: 0-PLN/0006, Radiation monitoring plan of the vicinity of NPP Mochovce).

2.2.3 Measurement of samples in the laboratory

Collected and processed samples are measured in the laboratory according to the document 0SP/8331 - Collection, preparation and measurement of samples, where the samples are adjusted to the proper geometry according to SP/8331, 0SP/8349, Determination of the total beta activity in waters. Measurements of gamma spectrometry activity by the method of total beta activity, total alpha activity and measurement of ^{3}H and ^{90}Sr activity are performed in the laboratory. These measurements are kept in the documents according to 0SP/8331, Collection, preparation and measurement of samples.

2.2.3.1 Gamma spectrometry measurement of samples

For gamma spectrometry measurements the AIM and Lynx from the company CANBERRA is used and for quantitative analysis the program GENIE 2000 is used. There are four measurement routes each with a HPG detector. The work setting (adjustment) of the parameters of each type of samples is generally performed for more routes. The aerosol filters are measured directly, after compression they are placed into the HPG detector. The fallouts are measured in stainless steel dishes in a direct manner. Water is measured in 1 liter Marinelli containers in a direct manner. Samples of soil and sediments are measured in 0,5 liter Marinelli containers in a direct mater. Other samples are also measured in 0,5 liter Marinelli containers in a direct manner. The measurement time is usually 60,000 s, according to the consideration and activity of the samples it may be shorter.

2.2.3.2 Measurement of samples – total beta and alpha activity

By means of the method of total beta and alpha activity he selected samples of surface water in accordance with the regulation 0SP/8349 are measured, determination of total beta activity in waters and 0SP/8350, determination of total volume alpha activity in waters.

2.2.3.3 Measurement of ^{90}Sr

The measurements of ^{90}Sr activity are performed by an outsourced external accredited organization. Sampling and recording of measured results is performed by the group of LRKO and LM.

2.2.3.4 Measurement of ^{3}H

The methodology of ^{3}H measurements is described in 0SP/8357, the determination of tritium ^{3}H in water samples. The frequency of the samples is measured by a liquid scintillation detector TRICARB 3710 TR/SL in PE cuvettes of the brand Packard with the volume of 20 ml. The mentioned device is described in the document 0SP/8354, the equipment for tritium measurement in liquids Tri-carb 3170 TR/SL.

2.2.3.5 *Measurement of ^{14}C and selected TRU*

The measurement of ^{14}C activity in the samples of environment are performed according to the Schedule in Annex A. For selected types of environment samples analyses are conducted by an outsourced external accredited organization.

2.2.4 Field measurements

Gamma spectrometric field measurements (in situ) are carried out using portable measuring devices. Portable measuring devices include a semiconductor detector HPGe, multichannel analyzer INSPECTOR, or. INSPECTOR 2000 and a software to process the relevant data.

Simultaneously with the field gamma spectrometry samples of soil layers are collected, which undergo gamma spectrometric analysis after processing in the laboratory. Sampling is performed in 3 points around the detector in the corners of an equilateral triangle inscribed into a circle with a radius of 3 m, the center of which is located below the detector.

On the same place of field gamma spectrometry the measurement of power of the areal dose equivalent in air using the ionization chamber (ICH) is performed.

2.2.4.1 *Measurement of the power of areal dose equivalent of gamma radiation in the air using the ionization chamber*

Using the ionization chamber the immediate total power consumption of the areal dose equivalent in the air is measured around the NPP Mochovce. The results of this monitoring are measured in units of the power of the areal dose equivalent - H*(10), or are converted to this parameter. The measurements are performed using the ionization chamber RSS 112 or RSS 131.

2.2.4.2 *Measurement of the power of areal dose equivalent of gamma radiation in the air using the TLD*

Using the TLD the integral areal dose equivalent of the gamma radiation in the air is measured around the NPP Mochovce. The measurements are performed in accordance with the Regulation 0SP/8334, Measurement of the power of the areal dose equivalent using the

TLD. The results of this monitoring are measured in units of the areal dose equivalent - H*(10), or are converted to this parameter. The TLD measurements are evaluated in the laboratory and are converted to power values of the areal dose equivalent according to the exposure time.

For measuring the doses of gamma in the air around the NPP Mochovce, TLD four-link cards of the type 2x CaF2:Dy and 2x LiF:Mg,Ti. are used. TLD is evaluated in a laboratory using the HARSHAW 4500 device.

2.2.5 Processing the results of analyses and measurements

All results are stored in the SAP module Laboratory measurements.

When processing statistics, the data are compared with the historical data or with pre-operational data. For their evaluation the processes of mathematical statistics are used, mainly:

- Descriptive statistics
- Analysis of diffusion (ANOVA)
- Trend analysis.

When appropriate (e.g. Hron site), it is possible to compare the samples from the locations above and below the waste water discharge outlets.

2.2.6 Archiving results

The measured results are stored in the central database (SAP module Laboratory measurements) and also on a CD ROM in the form of reports. The covering letters of the samples are archived in paper form and the measurement protocols in electronic form. The inspection reports on radioactivity around the NPP Mochovce are archived in paper form. The calculated monthly average power values of the areal dose equivalent measured in the TDS are archived in the database of the system CRCS and on CD-ROM in the form of reports.

2.2.7 Archiving samples

All samples, except for fruit, vegetables and fish are archived for 5 years. The archived samples are stored in the room No. 318 on the second floor of the building LRKO in

Levice. Samples archived in Marinelli containers or in measuring containers from Packard (tritium) are marked with a registration tag containing the following information: registration number, type of sample, place and date of sampling, notes.

Aerosol filters are archived compressed into the form of a roller. On a filter modified like this the title of the measured gamma spectrometry spectra, the sieved air volume and the weight of the filter is written. Compressed and labeled filters are placed into a labeled paper bag and stored in the archive for samples. The **fallouts** are archived and fixed with adhesive dispersion in a measuring dish. The measuring dish is marked with the title of the measured spectra and the number of SDS. A set from SDS sites is wrapped in a labeled paper bag and stored in the archive for samples. **Soils and sediments** are archived processed in the amount of 600 g in Marinelli containers marked with a registration tag.

Milk is archived in amounts of 250 g in the form of dried milk in Marinelli container marked with a registration tag. Samples of **water plants** are archived similarly as grass.

2.2.8 Critical path, critical individuals, critical radionuclides

The need to monitor the impact of radioactive discharges from EMO to its surroundings is given by:

- The need to assess the impact of the operation of NPP on the environment,
- The need to ensure the maintenance of the discharges at the lowest reasonable level, taking into account social and economic factors (ALARA principle),
- The need to document the fulfillment of the prescribed limits, values and benchmark,
- The need to evaluate the adequacy and functionality of the various barriers of radioactivity leakage into the environment, methods of treatment and methods of radioactive waste management and discharge controls.

2.2.8.1 Monitoring of the gaseous discharges

The monitoring of the gaseous discharges is based on the assumption of the knowledge of maximal exposure path or critical radionuclides or critical zone. This knowledge is based on analyses of the radiological impact of radioactive discharges on the environment performed by the program RDEMO. The analyses are listed in the quartal and annual reports on the monitoring of radioactive discharges and on the radiation situation around Mochovce. An important factor is the knowledge of the direction of the wind flow distribution, the so called wind rose.

The analyses show that during normal operation of EMO a critical exposure path in the atmosphere the exposure of the ingestion of food contaminated by the atmospheric fallout (critical radionuclide is ^{14}C and ^{3}H), followed by the external exposure from the cloud (critical radionuclide is ^{41}Ar) and the deposit (critical radionuclides are ^{14}C, ^{60}Co and ^{110m}Ag). The last exposure path is the exposure from the inhalation (critical radionuclides are ^{3}H and ^{14}C).

Other significant radionuclides which contribute to exposure (external and/or internal) are: radionuclides of noble gases, ^{137}Cs, ^{134}Cs, ^{90}Sr. The critical age group is a child of 7 to 12 years. The mentioned radionuclides and critical exposure paths can change during the operation of the units. In case of abnormal operation of the NPP there is an assumption of an increase of gaseous radioactive emissions. In this case the assumed critical radionuclide would be ^{131}I and the predominant exposure path would be the ingestion of the critical path: air – grass – cow – milk – child. The zone with a maximum impact depends on real meteorological situation mainly on the wind direction.

2.2.8.2 Monitoring of the surface water

The analysis of the radiology performed by the program RDEMO shows that during normal operation of EMO the critical exposure path from hydrosphere the exposure of ingestion of contaminated drinking water with dominant radionuclide tritium. The second most important exposure path is the exposure of ingestion of food contaminated by irrigation (critical radionuclides are ^{3}H, ^{137}Cs, ^{110m}Ag and ^{60}Co). Then the exposure path from contaminated coastal sediments (critical radionuclide is ^{60}Co) followed by the exposure paths: exposure from the stay on irrigated land, exposure from swimming or boating and exposure from ingestion of contaminated fish. The critical age group are children at the age of 0 to 1 year. Zones with maximum impact from hydrosphere are zones along the river Hron. The mentioned critical radionuclides and critical exposure paths can change during the operation of units.

2.2.8.3 Groundwater monitoring

Critical radionuclides in terms of contamination of groundwater as well as in terms of radio biologic risks to the population is tritium. This radionuclide spreads out in the form of tritium water HTO at the speed of groundwater. Another critical radionuclide in terms of diffusion in medium distances is ^{60}Co and of local character are ^{137}Cs and ^{90}Sr. Critical path of potential exposure of the population using water from the wells is the ingestion of drinking water and milk, contaminated by feeding dairy cows. The critical group are children.

2.2.9 Quality assurance

The objective of the system of quality control assurance in LRKO is increased responsibility for the analyzed samples and linking of the human factor with all the technical, organizational, information and economical resources and thus achieve recognized results in the laboratory. Quality assurance is the systematic search of errors before the occurrence of another mistake. It is to detect the causes of the shortage, eliminate them and secure them so that the errors do not reoccur. Quality control includes individual measures which relate to quality of individual samples or set of samples.

Quality control of important parameters of measuring devices should ensure a change of these parameters as soon as possible and thus undergo subsequent measures. The parameters of the measuring devices can change imperceptibly in the long term and the operators may not even notice the change. The change of these parameters is assessed on the basis of long-term time records and statistical tools. Sample quality control is provided by the following types of samples:

- Blanks – may be obtained in the process in cooperation with EBO or during comparing measurements
- Neutral samples – analyzed in order to confirm (or disprove) by the result of the analysis the possible contamination of samples which can occur somewhere in the process: collection of samples – processing of samples - analysis. Normally the neutral samples are included among other samples. These may be for example „zero samples“ prepared with distilled water. The form of the zero samples should be the same as the form of the commonly analyzed samples.

- Samples with internal standards – are prepared by adding a known amount of radionuclide concentration into the zero sample or into a sample which was already analyzed in order to perform the analysis with a known concentration.
- Duplicate samples – by the analysis of duplicate samples LRKO confirms the reproducibility of the results of measurement. The repeatability expresses the closeness between the successive measurement results of the same method and the identical test material under the same conditions (by the same operator, on the same equipment, in the same laboratory and within a short time period).

The quantities of analyses for validation of methods are summarized in Table 10.

Table 10: Quantities of analyses for the validation of methods

Type of sample	**Gamma spectrometry**	**Radiochemistry**
Blanks	If possible	If possible
Zero samples	4 pcs – 2x (water, filter)	2 pcs – 2x water – ^{3}H
Samples with internal standards	10 pcs – 2x (soil, water, milk, filter, fallouts)	4 pcs – 4x water – ^{3}H
Duplicate samples	6 pcs – 1x (soil, sediment) 2x (surface water, milk)	2 pcs – 2x water – ^{3}H

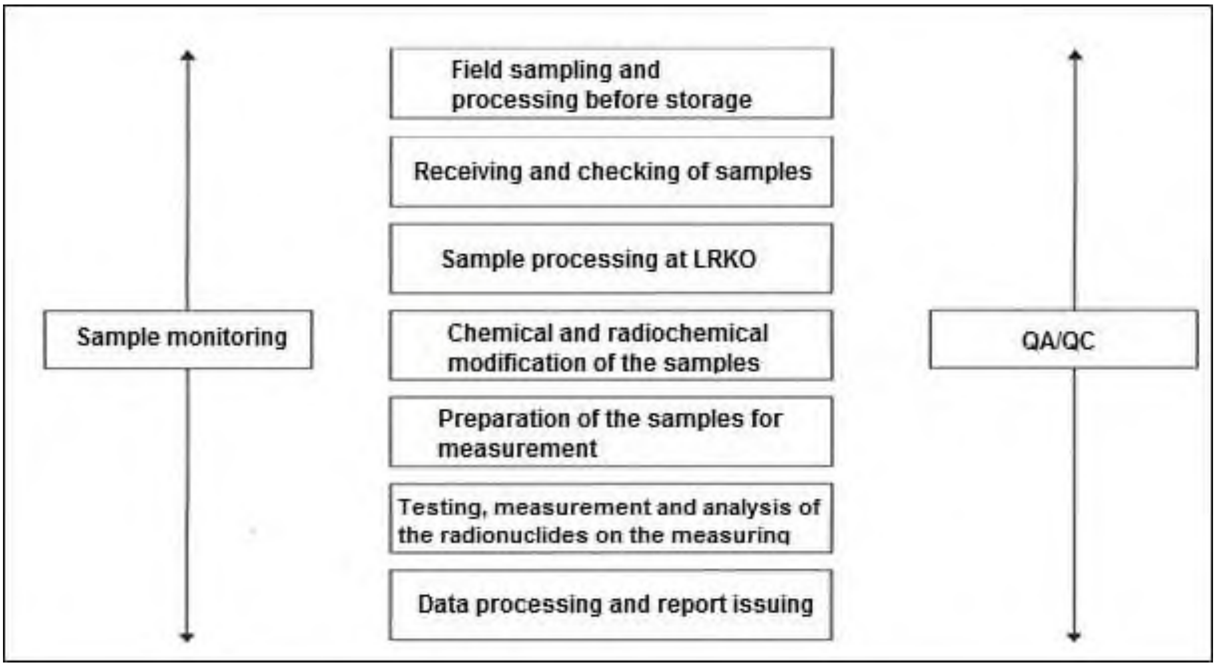
The process of ensuring quality control of measuring devices includes:

- Measurement of the background of the measuring devices,
- Working setting or adjustment of the measuring devices by working standards,
- Periodic calibration or verification of the devices,
- QA/QC testing of individual devices.

The aim of quality management at LRKO is the detection and evaluation of the errors of the measurement procedures ensuring that the errors do not exceed the acceptable limits and ensuring the personal responsibility of the staff performing individual measurements and analyses.

Typical analytic process of samples at LRKO is shown on Fig. 1.

Figure 1: Typical analytic process of samples at LRKO



The LRKO workplace is divided into gamma spectrometry, radiometric and radiochemical sections.

Good experimentation and good laboratory practice at LRKO is provided by the following principles:

- Qualified personnel.
- Processed Schedule of sampling and quality control during sampling (the Schedule of sampling is defined by this regulation, the quality control of sampling including the reproducibility is ensured by training of the personnel). In LRKO a system of cover letter of the sample is established, which after the assignment to the sample moves along with it. The employee working with the sample writes into the cover letter all the actions carried out, name, date, time and data necessary to calculate the measured activity.
- Introduction of the system of quality control and system of quality assurance
  - Only written and approved analytical procedures are used,
  - Only certified standards and verified or calibrated measuring devices - at SMU or metrological workplaces of SE are used,
  - Working adjustments of the measuring devices and background checks,

  - Validation of the processes (confirmation of their validity) – methods (internal and external), which is carried out at least once every three years.
- Audits – audit at LRKO is performed by an external company or is performed by internal auditors of SE, a.s. in terms of the audit schedule.

The measurement results are entered into SAP module Laboratory measurements. Depending on whether or not the investigation level is exceeded, SAP depicts the situation graphically. In case of exceeding the investigation level of the measured parameter, there is a yellow square with a black exclamation mark shown before the number of the project. In case the investigation level is not exceeded there is no warning sign.

2.2.10 Deviation from the Radiation control plan

All deviations from this plan and related regulations such as: sampling site, type, validation, calibration, setup process, reducing the number of analyzed samples, verification or confirmation of nonconformities must be reported to the team leader who decides about the further procedure. Information about the deviation from the radiation control of the surrounding are written down in the inspection report on radioactivity around EMO.

2.2.11 Metrological requirements

Employees of the LRKO are required to meet the metrological criteria and use measuring devices in accordance with the document SE/MNA-312.04, Metrological regulations at SE, a.s.. At the LRKO workplace the following records on measuring devices are kept:

0DKN/8247, Operation control and check of measuring devices and equipment or Book on operation and records of the device.

2.2.12 Working radioactive standards

In the laboratories of radiation control of the surrounding the following working radioactive standards are used: type ER , EK, ERX, or special mixture of standards. A working standard is a standard which is commonly used for calibration, control or verification of materialized measures, measuring devices or reference materials. (STN 01 0115:2001)

The handling system e.g. dilution of working standards is carried out by authorized personnel according to specific requirements, consumption records of open radioactive standards are carried out according to 0PI/8231, LRKO workplace with open and close radioactive sources.

2.2.13 Maintenance and service

In the event of a failure of the measuring devices, the personnel records the fact into DKN/8247 – Book on operation and control of measuring devices and equipment or into the Book on operation and records of the device and reports this fact to the head of the LRKO and laboratory measurement group. The head of the group issues appropriate instructions for registration of the event into the SAP (NG report). After the repair control measurements are performed. In case the values from the control measurements entered into the regulation charts exceed the specified limits, a new setting or the adjustment of the measuring device according to the relevant regulations is performed.

Maintenance and service of laboratory or field measuring devices is performed by a supplier organization or personnel of the department of radiation control management.

2.2.14 Handing out results

In terms of "Act NR SR No. 355/2007 on protection, support and development of public health and on amendments to certain laws“, all types of measurements and analysis set out in the monitoring plan are provided by the EMO operator.

Based on the Decision No. OOZPŽ/7042/2012 for the license to carry out activities for SE, a.s. Mochovce plant leading to radiation, **the results of the measurements and analysis shall be handed out as follows**:

- Report for the I. quarter – by the end of May
- Report for the II. quarter – by the end of August
- Report for the III. quarter – by the end of November
- Report for the IV. quarter – by the end of February of the following year
- Annual report – by the end of March of the following year.

Further distribution of the processed results is performed by the department of radiation protection. Providing information to other organizations should be approved by the head of radiation protection.

2.2.15 Environmental aspects

Identification and methodology of evaluation of the environmental aspects is described in the methodological instruction SE/MNA-190.01, Environmental aspects.

LRKO manages the following environmental aspects:

- Hazardous waste – waste of glass and ceramics contaminated with pollutants, waste filters and absorbent materials, waste chemicals
- Radioactive concentrates
- Active waste
- Release of radioactive substances
- Check of possible environmental contamination of the surrounding of EMO.

2.2.16 Occupational safety and health

All activities carried out during the collection, preparation and processing of samples, during the measurements, determination and archiving can be performed only by persons competent and determined for this purpose. For each activity in each area ways and methods of performance according to OHS are set and all employees of LRKO are obliged to follow besides these procedures also "0PI/8231, LRKO workplace with open and close radioactive sources, 0HP/0002, Object emergency measures and 0EXT/0010, Operating instruction with risk assessment for work associated with exposure to chemical agents in the laboratories of radiation protection around NPP Mochovce which were developed for workplaces with ionizing radiation sources and the general principles of occupational health and safety.

Work safety is ensured by regular training and background checks of the employees.

2.3 Overview of sites, analyses and measurements

Monitoring is currently controlled by the regulation “**Monitoring plan of radiation control in the area of the NPP Mochovce 0-PLN/0006**”, which describes monitoring in the area of the NPP Mochovce within the radius of 20 km from the plant. 24 stations of teledosimetric system and 15 stabile dosimetry stations monitor the gamma radiation dose rate, volume activity of aerosols, volume activity of radioactive iodine, dose and additional information about the state of technology. The monitoring system of the whole locality of Mochovce was designed to include besides the operating Units 1 and 2 also the Units 3 and after their commissioning.

In the following text there is an overview of sites, performed analyses and measurements in individual components of the environment. The source of information are the following documents:

- 0-PLN/0006, Monitoring plan of radiation control in the area of the NPP Mochovce.
- Report on the monitoring of radioactive discharges and radiation situation in the area of NPP Mochovce for the years 2014, 2013, 2012).
- Slovenské elektrárne, a. s., NPP Mochovce, Radiation protection, Group of LRKO and laboratory measurements.

2.3.1 Monitoring of radioactive discharges from the NPP Mochovce

As part of the monitoring of discharges all required measurements are performed regularly. Samples are collected, processed, measured, evaluated and balanced and the results are archived according to the applicable operating regulations.

Data on radioactive discharges are continuously published in quartal reports „Report on the monitoring of radioactive discharges and on radiation situation in the area of the NPP Mochovce“, in quartal reports „Evaluation of the effectiveness of the radiation protection at EMO“ and for informing the public in the monthly paper „Atóm.sk“ issued by Slovenské elektrárne, on internet www.seas.sk and on the information board in front of the NPP Mochovce.

Liquid radioactive discharges are monitored at the source. It means that measured are the total volume activity of gamma and optionally tritium activity concentration of the samples collected from the tanks of each technological process before their discharge. Based on the result of the analysis and the comparison with the limit values the waters in the tanks are either returned into technological process or are purified in the sewage treatment plant or are discharged through the control station of waste water with continuous monitoring of total gamma activity into the environment of the river Hron.

Water from the special sewage (KPG) and the emerged concentrate from the evaporator (KDB) are monitored at FS KRAO.

2.3.2 Aerosols

Locations of sampling: SDS LRKO Levice, SDS Nový Tekov, SDS Tajná, SDS NO. Hrádok, SDS EMO.

In the area of the NPP EMO there are fifteen stabile dozimetric station (SDS) deployed, which are equipped with devices for collecting aerosols (Fig. 2). In normal operation the aerosols are collected from five SDS which are located in the direction of the prevailing wind (on the Picture these SDS are marked green). If necessary, aerosols may be also collected from the remaining SDS.

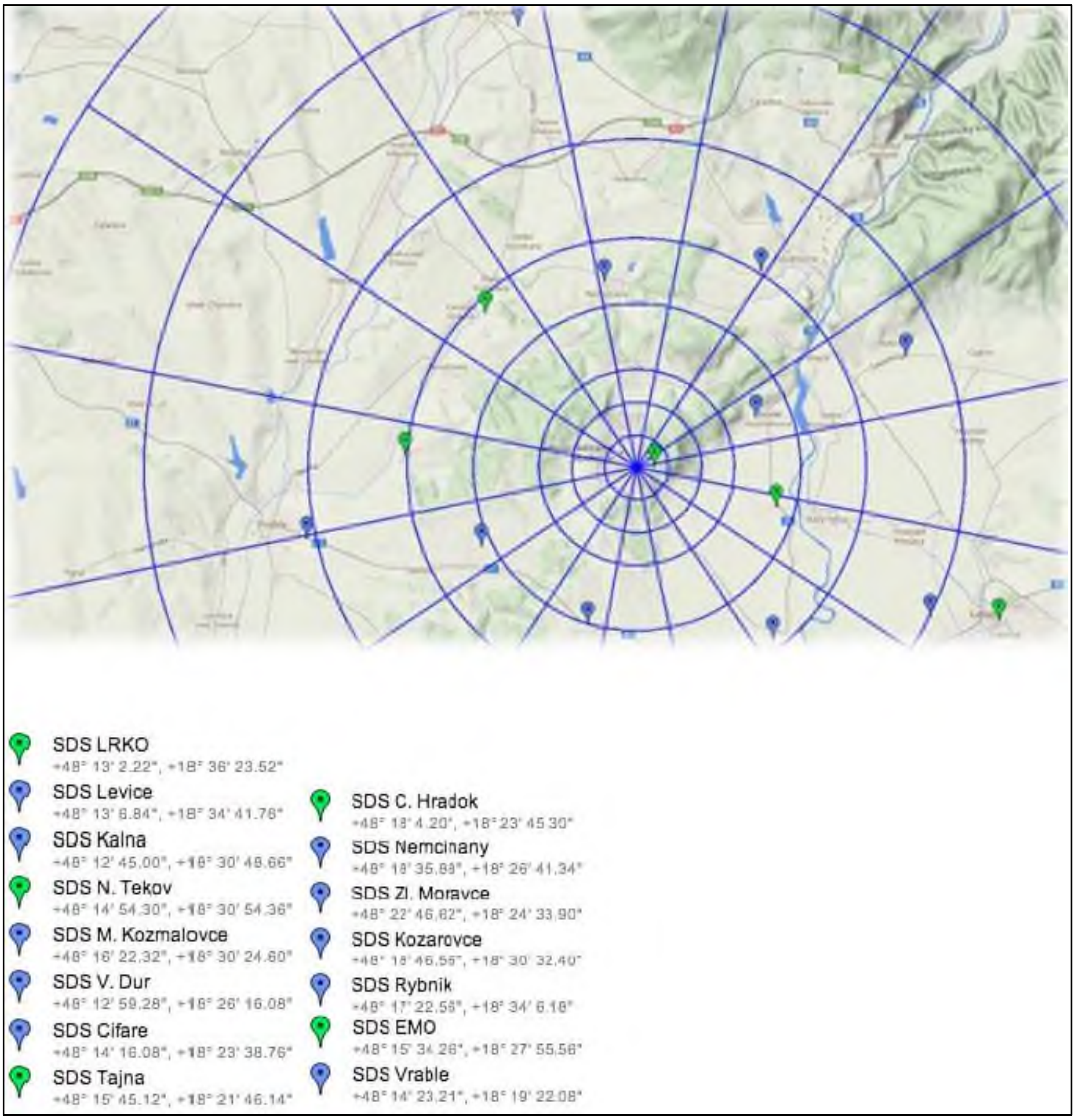
Filter exposure period: 2 weeks.

Performed analyses: gamma spectrometry, ^{90}Sr.

Number of performed analyses per year – gamma spectrometry: 130 - (26 x 5).

Number of performed analyses per year – ^{90}Sr: minimum 8 - (4 x 2) – last week of the given quarter per one sample from the locality Nový Tekov and Červený Hrádok (in the direction of prevailing winds). The analyses of ^{90}Sr are carried out also when the background levels of gamma spectrometry are exceeded – after a positive verification of the result.

Figure 2: Locations of SDS deployment (source SE, a.s.)



2.3.3 Fallouts

Location of fallouts sampling: SDS Nový Tekov, SDS EMO, SDS NO. Hrádok (Fig. 3).

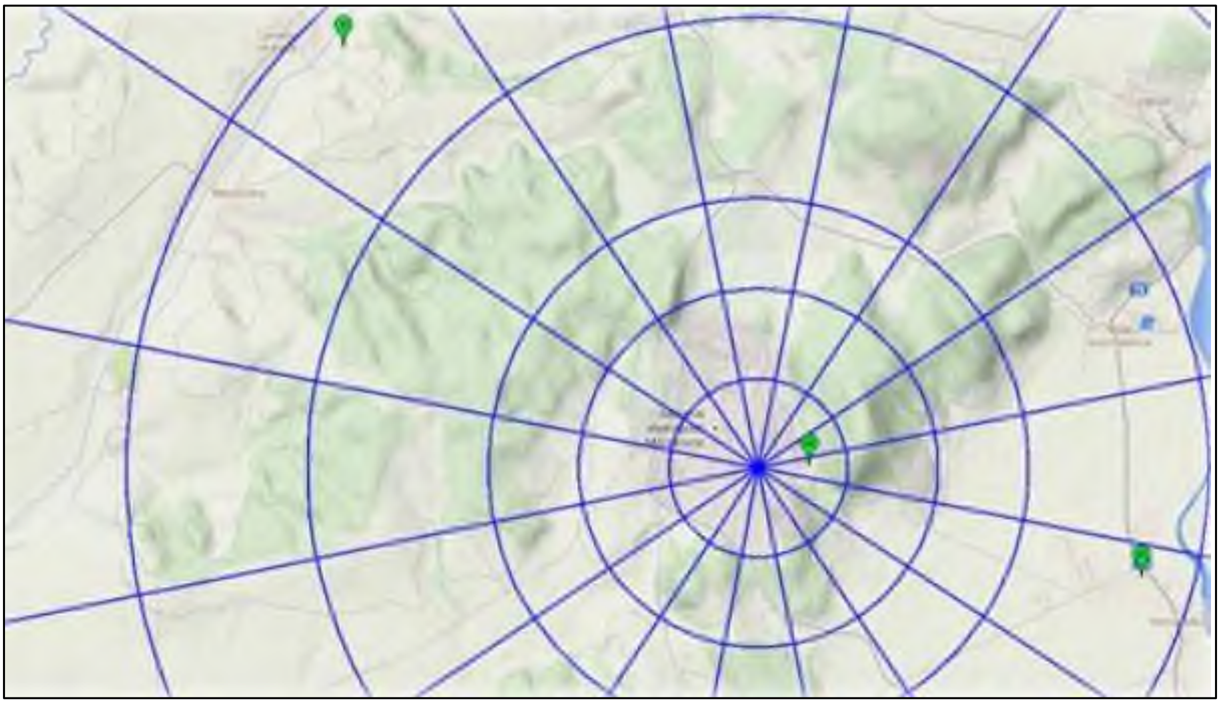
In the area of the NPP EMO there are fifteen stabile dozimetric station (SDS) deployed, which are equipped with devices for collecting fallouts. In normal operation the fallouts are collected from three SDS. If necessary, fallouts may be collected from all the SDS (SDS Nový Tekov, SDS EMO, SDS NO. Hrádok, SDS Levice, SDS Kalná n/Hronom, SDS M. Kozmálovce, SDS V. Ďur, SDS Čifáre, SDS Nemčiňany, SDS Zl. Moravce, SDS Kozárovce, SDS Rybník a SDS Vráble).

Frequency of fallouts sampling: quartal.

Performed analyses: gamma spectrometry.

Number of performed analyses per year – gamma spectrometry: 12 - (4 x 3).

Figure 3: Locations of fallouts sampling (source SE, a.s.)



2.3.4 Soils

Locations of soil measurements: Červený Hrádok, Nevidzany, EMO – Z157, Nový Tekov, Starý Tekov (Fig. 4).

Frequency of sampling: annually.

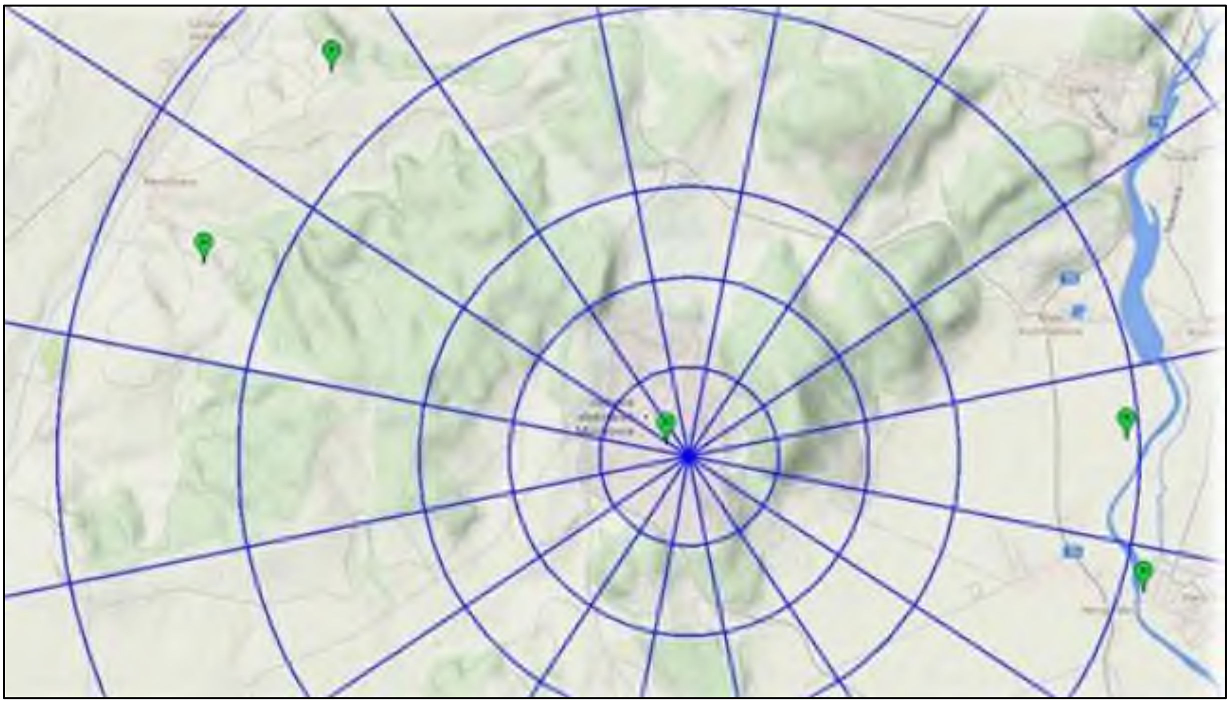
Performed analyses: gamma spectrometry, ^{90}Sr, alpha spectrometry.

Number of performed analyses per year – gamma spectrometry: 15 - (1 x 5 x 3).

Number of performed analyses per year – ^{90}Sr: 1 - (1 x 1), locality EMO-Z157.

Number of performed analyses per year – alpha spectrometry: 2 - (1 x 2), locality EMO-Z157 and Nový Tekov.

Figure 4: Locations of soil sampling (source SE, a.s.)



2.3.5 Sediments

Locations of sediment sampling: Tlmače, Nový Tekov (MVE), Kalná n/Hronom (plant) (Fig. 5).

Frequency of sampling: annual.

Performed analyses: gamma spectrometry, ^{90}Sr, alpha spectrometry.

Number of performed analyses per year – gamma spectrometry: 3 - (1 x 3).

Number of performed analyses per year – ^{90}Sr: 3 - (1 x 3).

Number of performed analyses per year – alpha spectrometry: 1 - (1 x 1), locality Nový Tekov (MVE).

Figure 5: Locations of sediment sampling (source SE, a.s.)

2.3.6 Surface water

Locality of collection (Fig. 6): Mochovce (Telinský potok), Tlmače (Hron) – reference site for background samples, Kalná n/Hronom (reference site for sampling pursuant to the decision of the Regional Environmental Office in Nitra No.2007/00029 from 25.1.2007, the validity of which was extended pursuant the Decision No. 2010/00729 from 6.12.2010 and amended pursuant to Decision No. 1893/2013/1961 from 16.5.2013), Nevidzany, OK - l.No. 1, OK - l.No. 2, OK - l.No. 3, Nový Tekov – dead arm, Nový Tekov – pit in the field, Starý Tekov – fishpond.

Frequency of sampling: quartal from Mochovce (Telinský potok), Tlmače, Kalná n/Hronom a Nevidzany. For other localities the following applies:

- Once in two weeks during the first year of trial operation of MVE N. Tekov (until 31.3.2015),
- Once a month during the second year of the trial operation of MVE N. Tekov (from 1.4.2015 until 31.3.2016).

Performed analyses: gamma spectrometry, total alpha activity, total beta activity, ^{90}Sr, ^{3}H, alpha spectrometry, ^{14}C.

Number of performed analyses per year – gamma spectrometry: 16 - (4 x 4).

Number of performed analyses per year – total alpha activity: 8 - (4 x 2) (Tlmače, Kalná n/Hronom).

Number of performed analyses per year – total beta activity: 8 - (4 x 2) (Tlmače, Kalná n/Hronom).

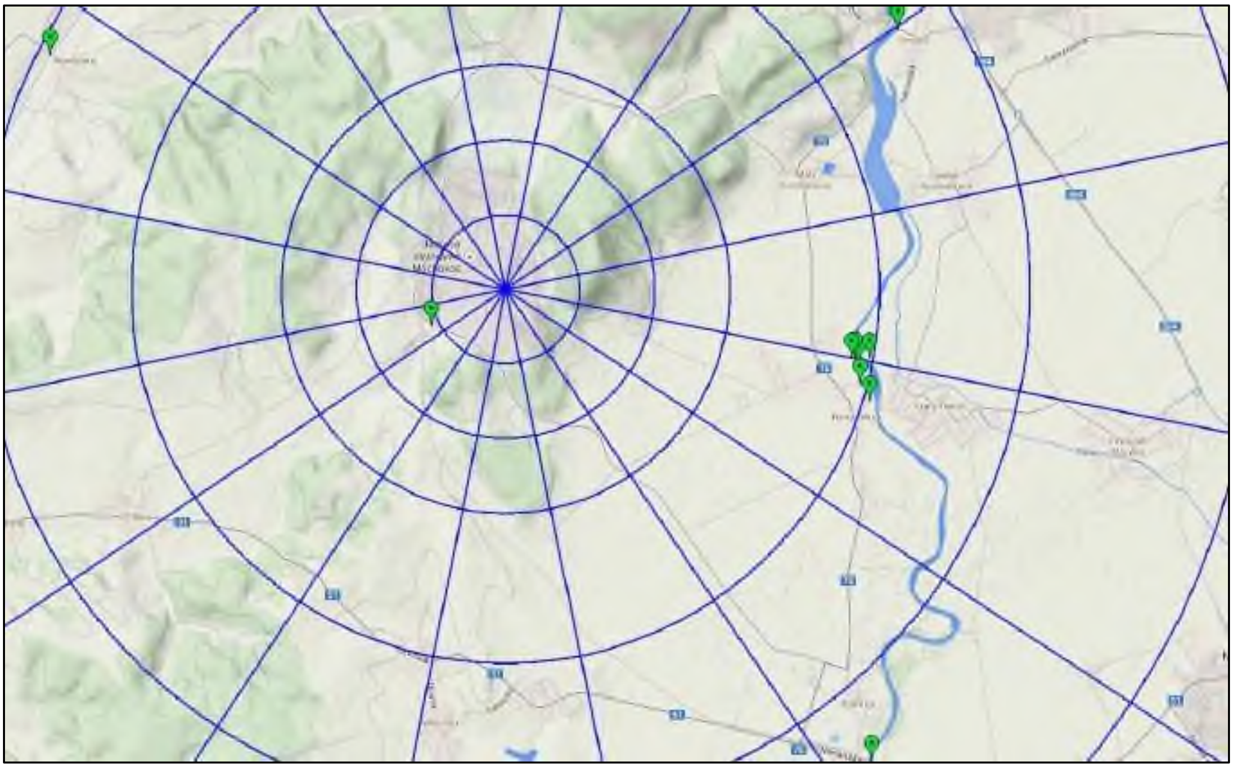
Number of performed analyses per year – ^{90}Sr: 16 - (4 x 4).

Number of performed analyses per year – ^{3}H: 112 (42 (7x6) + 16 (4 x 4)+ 54 (9x6)).

Number of performed analyses per year – alpha spectrometry: 2 - (1 x 2) (Tlmače, Kalná n/Hronom).

Number of performed analyses per year – ^{14}C: 1 - (1 x 1) (Kalná n/Hronom).

Figure 6: Locations of surface water sampling (source SE, a.s.)



2.3.7 *Drinking water*

Locations of sampling (Fig. 7): Malé Kozmálovce, Starý Tekov, Kalná nad Hronom, Nový Tekov No.d. 96, Nový Tekov No.d. 116, Nový Tekov No.d. 132.

Frequency of sampling: quartal from Malé Kozmálovce, Starý Tekov and Kalná nad Hronom. For other locations the following applies:

- Once in two weeks during the first year of trial operation of MVE N. Tekov (until 31.3.2015),
- Once a month during the second year of the trial operation of MVE N. Tekov (from 1.4.2015 until 31.3.2016),
- Once a week in case of increased activity of tritium above the agreed intervention levels (35 Bq/dm^3 for samples from the bore EM-34, PS-1 to PS-4; 15 Bq/dm^3 for samples from any well in Nový Tekov).

Performed analyses: ^{3}H (gamma spectrometry and ^{90}Sr – only in case of exceeding the investigation level for ^{3}H)

Number of performed analyses per year – ^{3}H: minimum 60 (21 (3x7) +27 (3x9) +12 (3 x 4)).

Figure 7: Locations of drinking water sampling (source SE, a.s.)

2.3.8 Ground water

Monitoring aims to determine the eventual contamination of groundwater caused by direct leaching of radioactive materials into different depths and distances of the bedrock.

Locations of sampling (waste piping Mochovce - Hron): HG-3, HG-5, HG-7, EM1 to EM13, EMH1

Frequency of sampling: every six months

Performed analyses: ^{3}H (in case of exceeding of the investigation activity of ^{3}H, analyses of ^{90}Sr and gamma spectrometry are performed)

Number of performed analyses per year – ^{3}H: 34 - (2 x 17).

Location of sampling (boreholes around the MVE Tekov): EM-14 to EM-34, PS-1 to PS-4

Frequency of sampling: quartal from the boreholes EM-14 to EM-34. For boreholes PS-1 to PS-4, EM-31 and EM-34 applies:

- Once in two weeks during the first year of the trial operation of the MVE N. Tekov (until 31.3.2015),
- Once a month during the second year of the trial operation of the MVE N. Tekov (from 1.4.2015 until 31.3.2016),
- Once a week (for boreholes PS-1 to PS-4 and EM-34) in case of exceeding of the tritium activity levels over the agreed intervention levels (35 Bq/dm^{3} for samples from the borehole EM-34, PS-1 to PS-4; 15 Bq/dm^{3} for samples from any well in Nový Tekov).

Performed analyses: ^{3}H (Note: in case of exceeding of the investigative activity level of ^{3}H, analyses of ^{90}Sr and gamma spectrometry are performed).

Number of performed analyses per year – ^{3}H: minimum 172 – (42 (7x6) +54 (9x6) + 76 (4 x 19)).

Locations of sampling (boreholes of radiation control - NPP Mochovce): RK 1 to RK 4, RK 7 to RK 13, RK 30, RK 31, RK 32, RK 40, HMB1, HMB2 (water is regularly present only in boreholes RK 11, RK 13, RK 30, RK 31, RK 32 and RK 40 – other boreholes are checked for the presence of water and in case water is found samples are also collected).

Frequency of sampling: once in six months.

Performed analyses: gamma spectrometry and ^{3}H.

Number of performed analyses per year– gamma spectrometry: 8 - (2 x 4) (RK 11, RK 13, RK 30 and RK 40).

Number of performed analyses per year– ^{3}H: 34 - (2 x 17).

Locations of sampling: Shaft 0TKS01, Shaft 0TKS02.

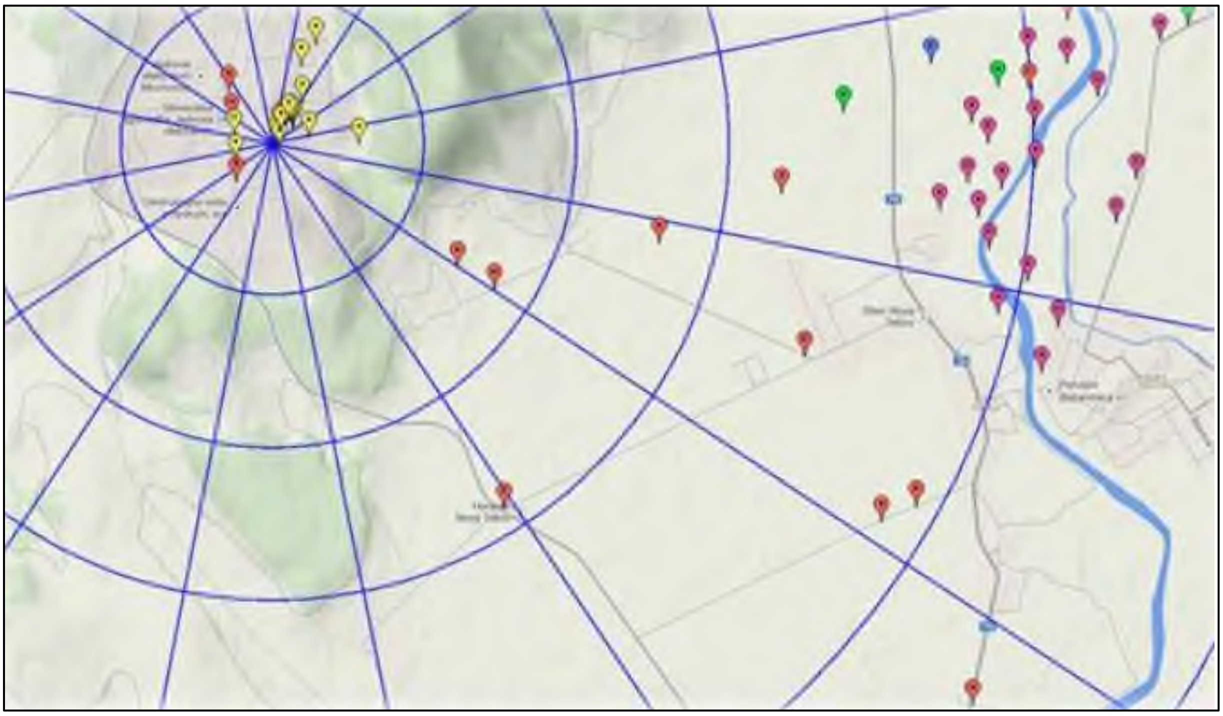
Frequency of sampling: quartal.

Performed analyses: ^{3}H.

Number of performed analyses per year– ^{3}H: 8 - (4 x 2).

Location of groundwater sampling are shown in Fig. 8.

Figure 8: Locations of groundwater sampling (source SE, a.s.)



2.3.9 Rainfalls

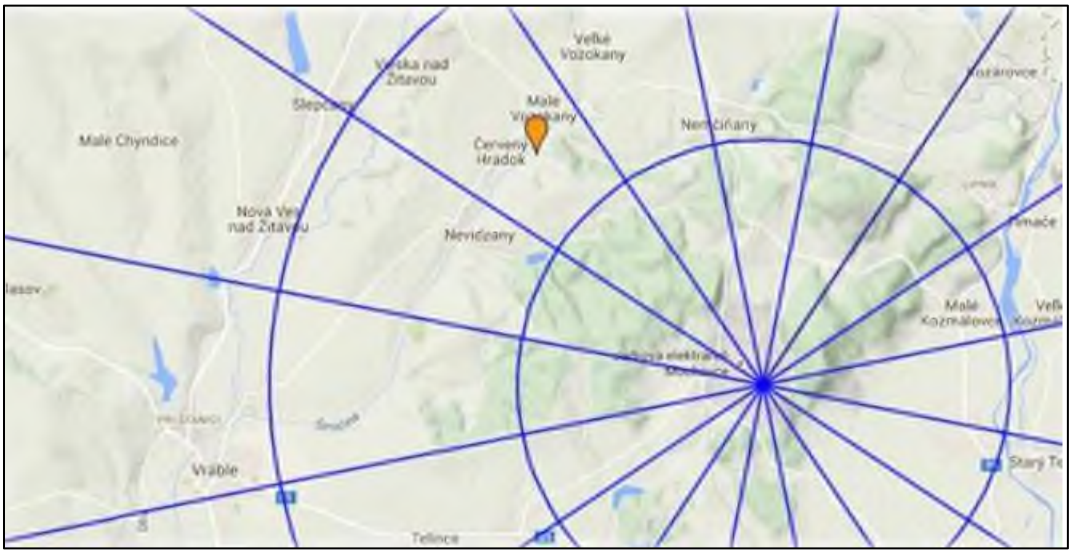
Locations of sampling: SDS Červený Hrádok (Fig. 9).

Frequency of sampling : quartal.

Performed analyses: ^{3}H.

Number of performed analyses per year– ^{3}H: 4 - (4 x 1).

Figure 9: Locations of rainfall sampling (source SE, a.s.)



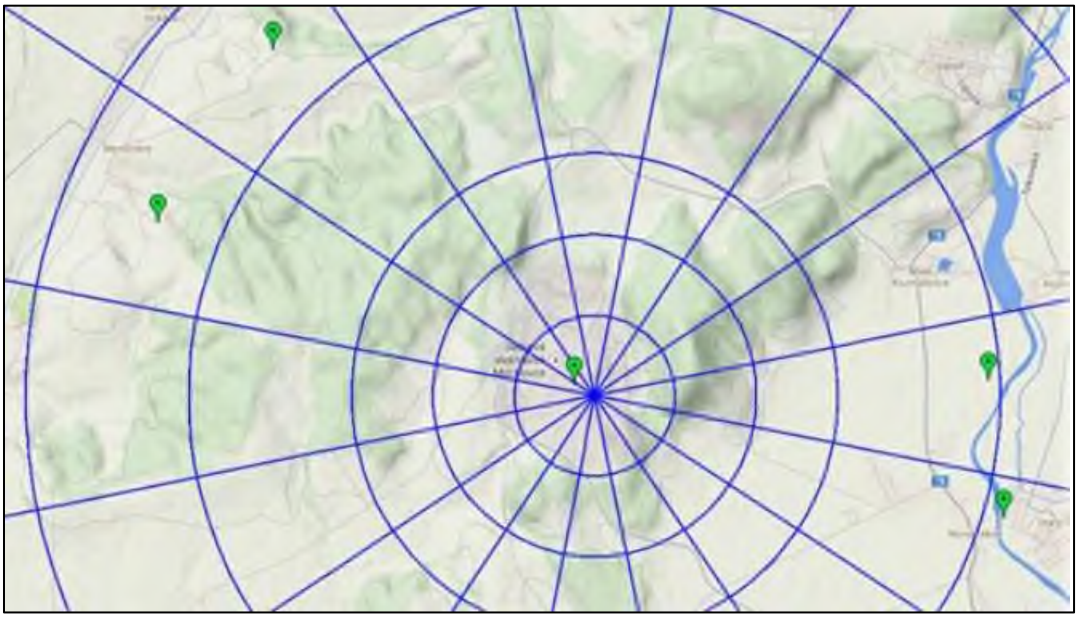
2.3.10 Power measurements of the areal dose equivalent by IK

Locations of IN SITU measurements: Červený Hrádok, Nevidzany, EMO – Z157, Nový Tekov, Starý Tekov (Fig. 10).

Frequency of measurements: annual.

Number of performed analyses per year– PPDE: 5 - (1 x 5).

Figure 10: Locations of PPDE measurements by IK (source SE, a.s.)



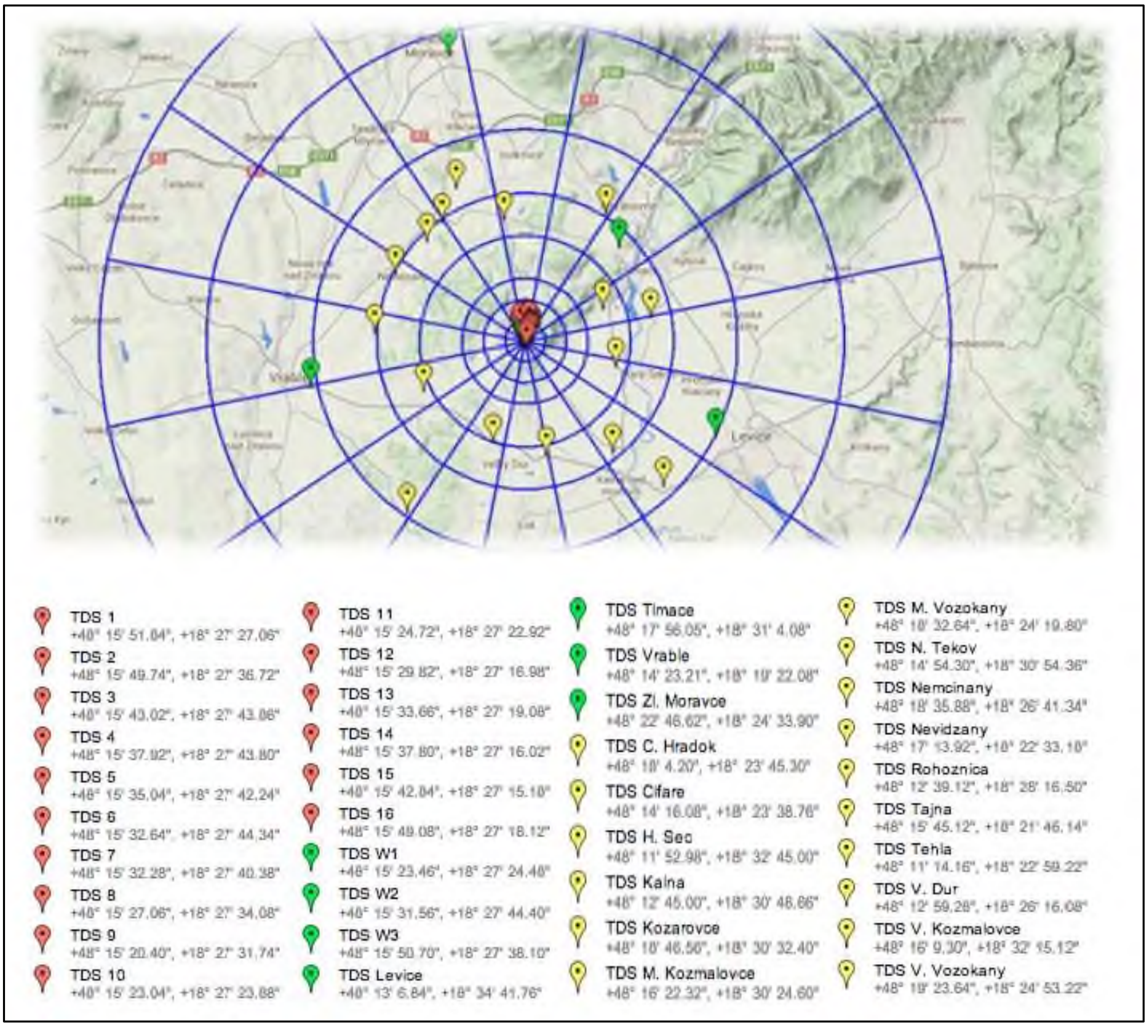
2.3.11 Power measurements of the areal dose equivalent - TDS

Location of measurement: TDS stations (Fig. 11)

Frequency of measurement: Monthly (average of daily measurements)

Number of performed analyses per year– PPDE: 468 - (12 x 39)

Figure 11: Locations of TDS deployment (source SE, a.s.)



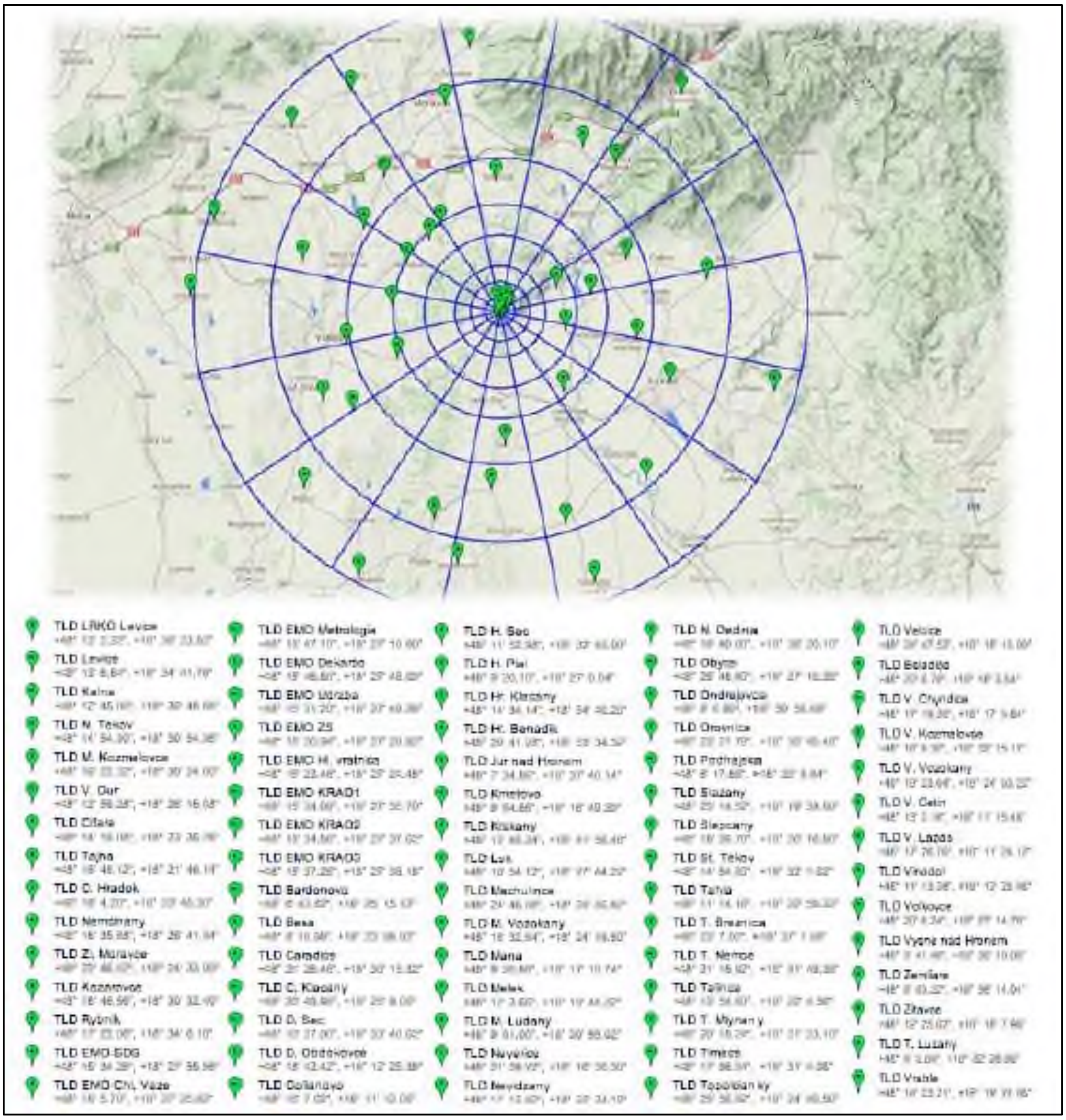
2.3.12 Power measurements of the areal dose equivalent by – TLD

Measuring sites: SDS LRKO Levice, SDS Levice, SDS Kalná n/Hronom, SDS Nový Tekov, SDS M. Kozmálovce, SDS Veľký Ďur, SDS Čifáre, SDS Vráble, SDS Tajná, SDS NO. Hrádok, SDS Nemčiňany, SDS Zlaté Moravce, SDS Kozárovce, SDS Rybník, EMO SDS, EMO cooling towers, EMO metrology, EMO decarbo, EMO maintenance, EMO ZS, EMO gate-house, EMO FS KRaO 1, EMO FS KRaO 2, EMO FS KRaO 3, Bardoňovo, Beša, Čaradice, Čierne Kľačany, Dolná Seč, Dolné Obdokovce, Golianovo, Horná Seč, Horný Pial, Hr. Beňadik, Hronské Kľačany, Jur n/ Hronom, Kmeťovo, Krškany, Lok, Machulince, Malé Vozokany, Maňa, Melek, Mýtne Ludany, Neverice, Nevidzany, Nová Dedina, Obyce, Ondrejovce, Orovnica, Podhájska, Slažany, Slepčany, Starý Tekov, Tehla, Tekovská Breznica, Tekovské Lužany, Tekovské Nemce, Telince, Tesárske Mlyňany, Tlmače – Lipník, Topoľčianky, V. Chrašťany – Beladice, V. Kozmálovce, Velčice, Veľké Chyndice, Veľké Vozokany, Veľký Cetín, Veľký Lapáš, Vinodol, Volkovce, Vyšné n. Hronom, Žemliare, Žitavce (Fig. 12).

Frequency of measurements: quartal.

Number of analyses performed per year – PPDE (TLD): 296 - (4 x 74).

Figure 12: Locations of deployment of TLD (source SE, a.s.)



2.3.13 Activity of water plants

Locations of sampling: Hron - (water gate, Tlmače Hron), Hron – below the outlet.

Frequency of sampling: annually from the first location and once in six months from the second location.

Number of performed analyses per year– gamma spectrometry: 2 - (1 x 2).

Number of performed analyses per year– ^{14}C: 1 - (1 x 1), location Hron – below the outlet.

2.3.14 Mass activity in fish flesh

Locations of sampling: Hron – under the outlet.

Frequency of sampling: annually.

Number of performed analyses – gamma spectrometry: 2 - (1 x 2).

2.3.15 Summary overview

The summary overview of all analyses performed during the monitoring of the operation of Units 1. and 2. and the completion of Units 3. and 4. of the NPP Mochovce is presented in the following tables 11 to 17.

Table 11: Overview of power measurings of the areal dose equivalent

Type of sample	**Total number of PPDE measurements per year: 769**		
	Number of locations	**Number of measurings per year**	**Total per year**
PPDE - IK	5	1	5
PPDE - TDS	39	12	468
PPDE - TLD	74	4	296

Table 12: Overview of the gamma spectrometry measurements

Type of sample	**Total number of gamma spectrometry measurements per year: 216**		
	Number of locations	**Number of measurings per year**	**Total per year**
Aerosols	5	26	130
Parts of food chain	6	1	6
IN SITU measurement	5	1	5
Milk	1	12	12
Ground water - boreholes RK (EMO)	4	2	8
Surface water	4	4	16

Type of sample	**Total number of gamma spectrometry measurements per year: 216**		
	Number of locations	**Number of measurings per year**	**Total per year**
Soils	15	1	15
Fish	2	1	2
Sediments	3	1	3
Fallouts (SDS)	3	4	12
Grass	5	1	5
Water plants	2	1	2

Table 13: Overview of measurements of total alpha and total beta activity

Type of sample	**Total alpha activity**			**Total beta activity**		
	Total number of measurements per year: 8			**Total number of measurements per year: 8**		
	Number of locations	**Number of measurements per year**	**Total per year**	**Number of locations**	**Number of measurements per year**	**Total per year**
Surface water	2	4	8	2	4	8

Table 14: Overview of ^{3}H measurements

Type of sample	**Total number of ^{3}H measurements per year: 424**		
	Number of locations	**Number of measurements per year**	**Total per year**
Drinking water	3	4	12
	3	7 (do 31.3.15)	21
	3	9 (od 01.4.15)	27
Groundwater (waste piping)	17	2	34
Groundwater (MVE N. Tekov)	19	4	76
	6	7 (do 31.3.15)	42
	6	9 (od 01.4.15)	54
Groundwater - boreholes RK (EMO)	17	2	34
Groundwater (Shaft 0TKS01 and 0TKS02)	2	4	8
Surface water	4	4	16
	6	7 (do 31.3.15)	42
	6	9 (od 01.4.15)	54
Rainfalls	1	4	4

Table 15: Overview of ^{90}Sr measurements

Type of sample	**Total number of ^{90}Sr measurements per year: 38**		
	Number of locations	**Number of measurements per year**	**Total per year**
Aerosols	2	4	8
Segments of the food chain	6	1	6
Milk	1	4	4
Surface water	4	4	16

Soils	1	1	1
Sediments	3	1	3

Table 16: Overview of alpha spectrometric measurements

Type of sample	**Total number of alpha spectrometric measurements per year: 5**		
	Number of locations	**Number of measurements per year**	**Total per year**
Surface water	2	1	2
Soils	2	1	2
Sediments	1	1	1

Table 17: Overview of ^{14}C measurements

Type of sample	**Total number of ^{14}C measurements per year: 10**		
	Number of locations	**Number of measurements per year**	**Total per year**
Segments of the food chain	6	1	6
Milk	1	2	2
Surface water	1	1	1
Water plants	1	1	1

2.4 Investigation levels

For the purpose of early registration of changes of power consumption of the areal dose equivalent or of the activity of radionuclides in individual components of the environment around the NPP Mochovce, internal investigation levels of observed values have been established depending on the kind of analysis, type of measured samples and sampling location. The investigation level is defined as the level of concentration of radionuclide, radioactivity, doses, dose rates above which the requested investigation is to perform.

The investigation includes the control of processes – the collection, processing and measurement of samples, repeating of chosen measurements, collection of new samples, increase of sampling frequency or extension of monitoring plan.

All these measures are intended to identify the reasons for the exceeding of the investigation level and decide whether the elevation was affected by the operation of NPP.

Pursuant to the Decree No. 545 of the Ministry of Health from August 16, 2007 laying down the requirements for radiation protection during activities leading to radiation and activities important to radiation protection, the investigation levels of the monitored quantities are set in three tenths of the exposure limits or benchmark or as the upper limit of the normally occurring levels.

The investigation levels for the activity of tritium in surface water in the locality of Kalná nad Hronom and Nový Tekov – dead arm, and for the activity of tritium in waters from private wells in Nový Tekov are set at three tenths of the limits set out in the Government Ordinance No. 269/2010 which lays down the requirements to achieve good water status.

Investigation levels are reviewed every 3 years. After each significant modification of the background of the monitored value new investigation levels must be calculated.

2.5 Analysis of tritium around the MVE Tekov in 2014

In 2013 the construction of the MVE Tekov on the river Hron on km 70,665 ended and the MVE was filled with water several times over the testing period. As a result of this, there was an increase in groundwater levels in the boreholes around Nový Tekov and Starý Tekov. It also increased the level of surface water and the level of water around N. Tekov. In samples collected from the wells and surface water elevated levels of tritium activity were measured.

The District Authority in Nitra approved in its Decision No. OU-NR-OSZP2-2014/004631 from 14.3.2014 the operational regulation of the water structure „MVE Tekov“ on km 70,665 of the river Hron valid until 31.3.2016. From this day on the MVE has been in continuous operation throughout the year 2014 except for the period of 8. until 23.9.2014, when the water reservoir drained to flush sediments in the river Hron. Slovenské elektrárne, a. s., NPP Mochovce has in this regard taken measures to collect extra samples from the river Hron around N. Tekov in a two week period to analyze the volume activity of tritium. The water sampling locations were:

- Surface water: lake (dead arm of the river Hron), N. Tekov – pit at the field, drainage sewer No. 1, No. 2, No. 3, Starý Tekov – pond,
- Drinking water: wells in the houses in N. Tekov – No. d. 116, 132, 96,
- Ground water: boreholes EM-31, EM-34 and boreholes of the operator of MVE Tekov PS-1, PS-2, PS-3, PS-4.

Besides the above mentioned measured volume activities of tritium, also the volume activities of tritium in the river Hron, which were calculated from the balance sheet of the discharged control tanks from the system ŠOV 3, the flows through the river Hron in time of the discharge of control tanks and the average values of monthly precipitation in Western and Central Slovakia were added into the analysis. The analysis covers the period of March to November 2014. This period can be divided into 2 periods: from March to June, July to November. At the turn of those periods the control tanks were not released for 1 month. Another period of discharge of the MVE Tekov was from 8.- 23.9.2014.

The results of the analysis showed that throughout the whole period the tritium volume activity in the river Hron was approximately on the same level of 24,5 Bq/l, with the range of the measured values 3,5 to 72,5 Bq/l. However the tritium volume activity in the well and surface waters were in the first period 2 to 3-times higher than in the second period, e.g. wells: 22,2 to 25,1 Bq/l vs. 8,3 to 8,8 Bq/l and surface waters: 10,8 to 16,6 Bq/l vs. 4,1 to 6,2 Bq/l. The reason could be the fact that in the second half of the year the rainfalls were twice as more often than in the first and the flow of the river Hron was 1,5-times higher. This could cause the dilution of the surface and ground water measured later in the second half of the year.

The highest measured value of the volume activity of tritium in drinking water was 29,5 Bq/l. This value is more than 3 times lower than the recommended limit value for drinking water under the Government Regulation No. 269/2010 Col., i.e. 100 Bq.l^{-1}. When calculating the radiological impact of the drinking of such water throughout the year 2014, a person, child of 0-1 year would receive a 50(70) year individual effective dose at 0,47 μSv.year^{-1}. The health damage of such an individual does not exceed the level of 1/100 of the limit exposure of the population in accordance with § 15 of the Government Regulation No. 345/2006, i.e. the effective dose of the critical individual from ingestion is lower than 10 μSv.year^{-1}. This means that the severity of the groundwater contamination is low and if such water is drawn and used it would not be satisfactory from the radiation point of view. For the population around Nový Tekov it is not necessary to take any regulatory protective measures.

2.6 Evaluation of the performance increase of units SE EMO12 in Mochovce on radiation situation around the NPP Mochovce

Based on the decision of the Nuclear Regulatory Authority of the Slovak Republic No. 195/2008, concentrating on the increase of the thermal power of the reactor of each unit to 1471 MWt and maximum value of the power of each turbine generator to 235 MWel, point

6., a regular monitoring and evaluation of the impact on discharges of radioactive substances released around the NPP Mochovce under the applicable and approved regulation „EMO/NA-172.00-05 Monitoring plan of the radiation control of the surrounding of NPP Mochovce“ was carried out in the years 2009 to 2014. The results of the monitoring and evaluation of the radiation situation around the NPP were processed into regular yearly reports „Report on the radiation control around the NPP in the year ...“, which were submitted to the relevant supervisory authorities as well as to the mayors of the surrounding municipalities.

Furthermore the NRA in the decision in the part „Justification“ set for the operator Slovenské elektrárne, a. s., NPP Mochovce, among other things, also the **following recommendations:**

Recommendation 3.21.: *Adjust the monitoring of the environmental components, namely air, surface and ground waters in relation to the increase of the power of the units of SE EMO12.*

Recommendation 3.22.: *Ensure permanent and detailed monitoring of the impact on the environment of the operating power plant throughout the operation and after its completion.*

Recommendation 3.23.: *Ensure monitoring of the values within the range specified by the competent supervisory authority in the permit for operation of SE EMO12. Strictly implement the monitoring outputs of the radionuclides into the atmosphere and hydrosphere during the entire period of operation.*

Recommendation 3.24.: *Regularly in one year periods evaluate all proposed activities. Provide the results of monitoring to the concerned. Provide comprehensive assessment of the whole period after five years and on its basis process a monitoring proposal for the next period.*

The following section of this chapter is to evaluate the results of radiation monitoring around the NPP Mochovce in the years 2009 to 2013 due to the power increase of the units and turbogenerators in accordance with the decision of the NRA SR No. 195/2008. As part of this assessment the obtained results of monitoring from the period before the power increase (2004 to 2008) are compared with the results after the power increase of the units (2009 to 2013). This assessment relates to radioactive discharges from EMO, monitoring of the surrounding and the radiological assessment of the impacts of radioactive discharges on the population. Data for these evaluations are drawn from the published (and by the state sent) annual reports on the radiation situation around EMO **„Report on the radiation control around the NPP for the year... (2004 to 2013)**" as well as the **„Report on the state of radiation protection for the year... (2004 to 2014)"**, chapter 3.2 **„Radioactive discharges from the NPP Mochovce and their radiological impact on the surrounding in the year ... (2004 to 2014)"**.

Discharges of radioactive substances in the years 2004 to 2014

Based on the above data as well as the data in the annual reports and on the basis of the findings in the report of 2014 it is not possible to prove an increase in radioactive discharges from the NPP Mochovce into the environment due to the increased power of the units and turbogenerators.

Monitoring of the surrounding in 2004 to 2014

The purpose of the assessment of the impact of the increase of power of the units of SE EMO12 on the measured values in the samples of the environment or on the input power of the areal dose equivalent around EMO were the input data divided into two groups - from 2004 to 2008 and from 2009 to 2013. On the selected location statistical test were performed in order to find out whether there is a significant difference between the averages of the groups.

In the soils there is no statistically significant difference between the averages of mass activity Cs-137 from the locations SDS Malé Kozmálovce and Kalná n/Hronom before the increase and after the increase of the power of EMO units. The increase of power of the units SE EMO12 did not lead to the increase of measured values of Sr-90 activity in soils at either sites.

In the surface waters, there was no statistically significant difference between the average specific activity of ^{3}H from the locations of Kalná n/Hronom and Tlmače (Hron) before and after the increase of power of EMO units. Similarly in drinking water no statistically significant difference between the averages of volume activity of ^{3}H from the locations Nový Tekov, No.d. 96 and Starý Tekov and no statistically significant difference between the volume activity ^{90}Sr from the locations Nový Tekov, No.d. 96, Starý Tekov and Kalná n/Hronom was found.

In groundwater no statistically significant difference between the volume activity of ^{3}H from the boreholes HG-3, HG-5, HG-7, RK-11, RK-13, RK-40 before and after the power increase of EMO units was found.

There was no statistically significant difference between the averages of mass activity of Cs-137 in sediments from the locations Tlmače, Nový Tekov and Kalná n/Hronom before and after the increase of power of the EMO units. Similarly in sediments no statistically significant difference between the averages of mass activity of ^{90}Sr from the location Tlmače, Nový Tekov and Kalná n/Hronom before and after the power increase of EMO units.

Based on the above mentioned data as well as the statistical comparison of the two periods (before and after the power increase of the units) or data listed in the annual reports, it is not possible to identify the decline of the radiation situation around the NPP Mochovce due to the increase of the power of units and turbogenerators or to prove the impact of the increase of power on the monitored values around the NPP Mochovce.

2.7 Radiologic impact of the radioactive discharges 2004 to 2014

The calculated radiological impact of the radioactive discharges from the NPP Mochovce is shown in Tab. 18. The table shows calculated values of 50(70)-year old individual effective doses to the representative person from the critical population group - zone No. 64 with the village Nový Tekov for the age group of children of 0-1 years and adults. Furthermore, there are results of 50(70)-year old collective effective doses for the zone 64 and the age group adults. In the last column the CED for all zones or regions within the radius of 60 km from the NPP is listed.

Based on the above mentioned data as well as the data in the annual report it is not possible to prove the increase of radiological impact of the radioactive discharges from NPP Mochovce on the population around the NPP Mochovce due to the increase of the power of units and turbogenerators.

Table 18: Radiologic impact of the radioactive discharges from the NPP Mochovce on the environment

Year	50(70)-year old individual effective dose Zone 64 (nSv)		50(70)-year old collective effective dose	
			Zone 64 (manμSv)	All zones (manmSv)
	Children 0-1 year	Adults	Adults	Amount
1998	100,3	68,0	49,4	3,63
1999	377,2	209,8	155,5	16,83
2000	677,4	359,1	263,0	28,75
2001	582,5	316,6	243,1	26,71
2002	573,8	313,4	240,4	26,41
2003	668,1	359,2	269,0	29,64
2004	613,6	330,1	245,6	27,16
2005	561,8	303,1	228,6	25,22
2006	107,3	65,2	48,6	5,36
2007	129,3	103,1	78,0	8,33
2008	147,3	117,7	86,0	9,33
2009	181,6	144,2	105,6	11,47
2010	60,7	49,2	35,2	4,21
2011	296,3	236,0	162,1	18,68
2012	329,8	263,5	181,0	20,91
2013	112,1	91,0	49,7	6,14
2014	143,0	116,6	58,2	7,85

2.8 Summary

The monitoring system of NPP Mochovce was designed so that it includes in addition to the operated units 1 and 2 also the units 3 and 4 after their commissioning.

The results of monitoring in the affected area show that the effects of SE MO12 during standard operation are close to zero (in spite of the high sensitivity of the used equipment) and it can be assumed that the contribution of SE MO34 will follow this trend. The radiological impact of the operation of the plant on the environment and the exposure of the population must be under the defined limits. Tritium and ^{90}Sr values measured in the surface waters (of the river Hron) must comply with the project values of the NPP Mochovce and the legal requirements (Government Ordinance No 296/2005, laying down the indicators of permissible levels of tritium contamination of surface water).

The subject of the monitoring programs will be aimed at providing the necessary information to verify the predictions of the impacts on the environment and the effectiveness of mitigation of the results, mainly in the relation to the probable effects which were included in the step of determining the severity in the review process. The studies on the regular evaluation of the effectiveness of operational monitoring were designed for:

- Pre-operational phase,
- Operational phase.

The pre-operational monitoring confirms or adds existing information used to define the improvement of the project and the measures to mitigate the consequences. This will improve the basis for subsequent comparison of the studies of regular evaluation of the operational monitoring to be carried out after commissioning of the units 3 and 4.

Before the commissioning of units 3 and 4 of the NPP Mochovce other specific studies (e.g. radiological analysis) may be initiated. These studies are meant to provide environmental information which together with the existing information can be used to improve monitoring during the operational phase.

The operational phase of monitoring will start along with the commissioning of the units 3 and 4 of the NPP Mochovce. The focus of monitoring will provide environmental information which together with the basic information from before the commissioning can be used to determine the actual impact and provide a basis for determining the validity of the predictions of the EIA, the effectiveness of the measures and determining whether additional or new measures for the reduction of consequences.

2.9 Monitoring of non-radiological indicators

District Office in Nitra, Department of environmental protection, department of the state water management and of selected components of the environment of the region as the component authority of the state administration issued in its decision number OU-NR-OSZP2-2015/043433 from 29.12.2015 a permit to wastewater discharges from the NPP Mochovce site into the surface flow of the river Hron. In the conditions of the permit in section 2 the place of discharge of waste water by a pipeline of 5800m into the surface water of the river Hron on the river km 73,450 was defined. In section 5 the requirements for registration of the flow measurement and of the amount of discharged water was determined. At the same time the allowed concentration limits for non-radiological indicators shown in Table 19 were established.

Table 19: Permissible concentration limits for non-radiological indicators

Indicator	Permitted limit concentration ($mg.l^{-1}$) except for pH and T
$CHSK_{Cr}$	40
$N\text{-}NH_4$	$3{,}0^*$
Cl^-	100

BSK_5	12
NEL	0,5
RL_{105}	1500
RL_{550}	1000
$P_{celk.}$	1
T [^{0}C]	30
NL	40
SO_4^{2-}	690
pH	6,0-9,0
Hydrazine	0,5
AOX	0,2
$N\text{-}NO_3^-$	16^{**}

Explanation:

**at the time of the waste water discharge from the neutralization tanks 3,0 mg.l^{-1} – the discharge is detected before and during the sampling*

***with the possibility of exceeding 5 x a year into the level 22 mg.l^{-1}.*

The analyses of particular indicators are according to valid decision performed 48 x a year except for BSK_5, hydrazine – 12 x a year and AOX, NEL, active chlorine – 4x a year. The given balance values are calculated in the total volume of the water collected from the river Hron.

3 Proposal of the monitoring plan during the commissioning of the units 3 and 4 of the NPP Mochovce

During the commissioning of the units 3 and 4 of the NPP Mochovce monitoring of these **parameters and events** is expected (Report on the safety of units 3 and 4 of the NPP Mochovce. Slovenské elektrárne, a.s.):

- Radiation characteristics and content of the radionuclides in the individual components of the environment.
- Radiological load of the surrounding – long.-term observation of the development of radiation situation during normal operation or monitoring of the radiation situation during an accident of the NPP.
- Meteorological situation – current situation, long-term observation, predictions.
- Hydrological situation – current situation, long-term observation.
- Seismicity, geology and hydrology of groundwater – long-term observation.
- Demography and other parameters – current situation, long-term statistical data, demographic data, average of the consumption of food, etc.

Monitoring of radiation at SE MO34 and its surrounding is part of the radiation protection. The aim of monitoring is except for the obtaining of the current data of radiation situation in working areas also the monitoring of the state – tightness of physical barriers against the spread of radioactive substances into the working area and into the environment, control of the operation of technological systems for evaluating their proper operation and/or efficiency, control surface contamination of space, personnel and material when leaving the controlled area in NPP, control of the activity of gaseous and liquid discharges from the NPP into the environment and the activity of individual components of the environment around the NPP for the purpose of evaluation of operational impact on the environment.

The system of radiation control is used to control the radiation situation in the facilities of the NPP and in its surrounding including the systematic control of the level of activity, transport, storing and losses in technological circuits and control of the personnel doses. The radiation control system as a whole is separate and independent from other NPP systems.

The basis of the radiation control system is **a centralized radiation control system** also called informational system of radiation control which will operate continuously and as such will include a computer superstructure which is used for the collection, evaluation, interpretation and display of the measurement data. The system permanently monitors the radiation situation with the necessary optional display, recording and signaling the adjusted thresholds for limit or reference values of the measured quantities. The exceeding of the set signal values of the dose rate will be indicated in the system in the radiation control rooms and at the measuring point by a light and sound signal. Processing, recording of the measured values and the relation with other informational system of the NPP is performed by the informational system of radiation control.

Radiological consequences of SE MO34 on the environment – radiologic impact of normal operation (source of information: Slovenské elektrárne, a.s., Report on the safety of the Units 3. and 4. of the NPP Mochovce, Summary, Safety Report 2011)

The release of radionuclides into the environment is ruled by strict criteria according to the current legal requirements and at the same time according to the decision of the supervisory authorities. The activity of radionuclides released into the atmosphere is balanced through the monitoring in the ventilation stack. The activity of radionuclides released into the hydrosphere is balanced from the analyses of the samples extracted from the control tanks where the water intended for release into the surface water is collected. Water management is otherwise closed and no other sewage water other than water from the control tanks can enter into the environment. At the discharge of waste water into the pipe draining water from the territory of the power plant, there is a device installed to monitor liquid waste. Here the reference values of the water discharged from the NPP are checked. Liquid waste is fed through an underground pipe system directly into the river Hron where it is diluted with the water of the river. The opening of the river is below the dam Veľké Kozmálovce.

Radioactive discharges and their limits

For discharging of gaseous and liquid radioactive substances into the environment of the NPP limit doses for design and construction of the NPP are set in a way so that the relevant critical group of the population the effective dose due to these discharges did not exceed 250 μSv per one calendar year (in accordance with NV SR No. 345/2006 Col.). If in one area are more nuclear facilities which effect the doses of the population in the same critical group, this value applies to all nuclear facilities. For discharges of radioactive substances into the environment the principle ALARA is used in the NPPs. The principle applies to the total radiation from all nuclear facilities in the area or region.

Limits for the release of radionuclides into the environment

Limits, target values and reference levels for SE MO34 will probably be similar to the SE MO12.

From all kinds of discharged low-level and conditionally active waters from the radio-hygienic point of view the most important water are the ones containing tritium. Tritiated water is discharged organized after the preceding radiochemical control of the tanks of the active water purification plant.

From the experience of the actual operation the real activity of the radionuclides in the gaseous waste from the NPP does not reach 1 % of the target values. Similarly, the real activity of the discharge of the activation and fission products in the hydrosphere reach < 2% of the authorized limits. Only the activity of tritium discharged into the surrounding hydrosphere reaches tens % (usually around 90 %) of the target values. This means that in our conditions due to small flow of water in the rivers that the critical path of the radiation load from actual discharges is hydrosphere. The critical radionuclide is tritium - ^{3}H, which can cause a significant radiation burden on the population from the hydrosphere even though it belongs to the radionuclides with relatively low radiological consequences.

To estimate the radiologic consequences of the radioactive discharges into the atmosphere through ventilation stacks in EMO and into the hydrosphere – surface water i.e. the river Hron during normal operation the computer software system RDEMO is used (Annual doses around EMO). All calculated individual doses from the projected discharges of SE MO12 and SE MO34 during normal operation are lower than 250 μSv, which is a target value of the acceptance criteria for the project of SE MO34 and at the same time the target radiation dose according to the Slovak legislation – Government regulation No. 345/2006 Col.

Assessment of consequences of the actual operation of EMO12 on the environment

To assess the real impact of the NPP Mochovce on the surrounding population, the radiation dose of the surrounding population according to the activity of real discharges of radioactive substances into atmosphere and hydrosphere is analyzed by the program RDEMO which was also used for the project calculations. According to the calculations, the region with the highest annual individual effective doses are in the ESE (in the direction of the river Hron) and in the NW (direction of prevailing winds) of the NPP. The zone with permanent settlement and the highest calculated value of the annual ID from the data of real discharges is in the ESE, in the distance of 3 to 5 km. In this zone there is the village Nový Tekov.

From the analyses of radioactive impact of the radioactive discharges from the NPP Mochovce into the environment in 2014 it is clear, that the **highest value of 50(70)-year old collective effective dose** was calculated in the zone No. 64 in Nový Tekov and **it reached the following values** (source: Report on the monitoring of radioactive discharges and on the radiation situation around the NPP Mochovce in 2014. Slovenské Elektrárne, a.s.):

- For children 0-1 year 143,0 nSv
- For adults 116,6 nSv.

50(70)-year old collective effective dose to the critical group of the population in the zone No. 64 (number of inhabitants 601) **reached the value of the age category**

- adults 58,2 manμSv.

The value of the 50(70)-year old collective effective dose for the entire region (number of inhabitants around 1,13 Million) reached the value:

- for all inhabitants 7,85 manmSv.

From the protection of public health it can be concluded that the calculated maximum value of 50(70)-year old individual effective dose to the representative person (0,143 μSv) is lower, than the basic radiological limit (50 μSv) established by the Public Health Authority in the permit to discharge radioactive substances from the NPP Mochovce and it drew 0,29 % of the value.

This value is also negligible in comparison with the annual limits for the individual from the population (1 mSv) or the target dose for the critical group of inhabitants from the radioactive discharges from the nuclear facilities which is set for projecting and construction of nuclear facilities (250 μSv) i.e. values laid down by the Governmental Regulation of SR No. 345/2006 Col., as well in comparison with the radiologic limit for radioactive discharges from the NPP Mochovce (50 μSv) laid down by the authority. This value is also much lower than the radiation load of the population cause by natural background. According to the report published by the organization UNSCEAR in 2008 an average value of the dose from natural background is 2,4 mSv.year^{-1} for world's population.

Radiologic consequences of SE MO34 on the environment – radiologic consequences in emergency conditions – abnormal operation (accident of the type DBC 3a) and project accident (accident type DBC 3b)

The scenarios use highly conservative assumptions – the worst possible course of the accident for example the failure of safety systems, direct release of radioactive materials from the containment zone, the highest activity in the primary circuit, the worst meteorological conditions etc. It is clear that the actual effects will be significantly lower than the calculated ones.

The evaluated events are safely manageable considering the conservative initial conditions and setting of the protective and control equipment.

3.1 Basic requirements for monitoring

As already stated in the chapter 2.2.1, based on the decision of the Public Health Authority of the Slovak Republic No. OOZPŽ/6773/2011 **the activity of radionuclides released in the air pollutants and wastewater in a calendar year does not exceed the established standard values for the** mixture of noble gases, iodine ^{131}I radioisotope, mixture of radioisotopes with the time of half change longer than 8 days in aerosols except for ^{131}I, tritium and other radionuclides (except for tritium).

The authority ordered the limit and control of the release of radioactive substances so that the:

a) activity of radionuclides emitted in the air pollutants per calendar year does not exceed the standard values for:

i) a mixture of radioactive isotopes of noble gases 4,1 . 10^{15} Bq,

ii) radioisotopes of iodine - ^{131}I (the amount of gaseous and aerosol forms) 6,7 . 10^{10} Bq,

iii) a mixture of radioisotopes with the time of half change longer than 8 days in aerosols except for ^{131}I 1,7 . 10^{11} Bq,

b) activity of radionuclides discharged into the waste water per year did not exceed the target values for:

i) tritium $1{,}2 \cdot 10^{13}$ Bq,

ii) other radionuclides (except for tritium) $1{,}1 \cdot 10^{9}$ Bq.

At the same time the authority placed the responsibility to provide operational control and control of the release of radioactive substances discharged and respecting of investigation and intervention levels specified in the authorization. For the purpose of balancing and assessment of the impact on the dose load monitor:

i) *the activity of radioisotopes in gaseous discharges*: ^{41}Ar, ^{85}Kr, ^{85m}Kr, ^{87}Kr, ^{88}Kr, ^{133}Xe, ^{133m}Xe, ^{135}Xe, ^{51}Cr, ^{54}Mn, ^{59}Fe, ^{57}Co, ^{58}Co, ^{60}Co, ^{65}Zn, ^{89}Sr, ^{90}Sr, ^{95}Zr, ^{95}Nb, ^{103}Ru, ^{106}Rh, ^{110m}Ag, ^{124}Sb, ^{134}Cs, ^{137}Cs, ^{141}Ce, ^{144}Ce, ^{238}Pu, $^{239+240}$Pu, ^{241}Am, ^{131}I (gaseous and aerosol form), ^{3}H, ^{14}C in organic and inorganic form,

ii) *the activity of radioisotopes in liquid discharges*: ^{51}Cr, ^{54}Mn, ^{59}Fe, ^{57}Co, ^{58}Co, ^{60}Co, ^{65}Zn, ^{89}Sr, ^{90}Sr, ^{95}Zr, ^{95}Nb, ^{103}Ru, ^{106}Rh, ^{110m}Ag, ^{124}Sb, ^{131}I, ^{134}Cs, ^{137}Cs, ^{141}Ce, ^{144}Ce, ^{238}Pu, $^{239+240}$Pu, ^{241}Am, ^{3}H.

In case radionuclides are found in the discharges, which are not mentioned above, it will be necessary to include these radionuclides and their measured activity into balance and evaluation of radionuclide impact, except for the radionuclides with the time of half change shorter than 8 days in aerosols.

Within the operational monitoring it is necessary to monitor the radioactivity in the individual components of the environment: water, soil, sediments, food products and elements of agricultural production as well as the measuring of the level of the power of areal dose equivalent in the monitored locality. The radiation control within monitoring will include the surrounding of the NPP Mochovce **within the radius of 20 km from the NPP**.

Monitoring of the surrounding of the NPP Mochovce **will be provided by the staff of the radiation control department and laboratory measurements (LRKO a LM)**. In order to monitor the radiation situation in the surrounding of the NPP Mochovce, the group of LRKO and LM will provide the following measurements and analysis (sampling locations and frequency of sampling with particular focus on the river Hron and related elements of the environment are given in chapter 3.2):

- Analysis of samples performed in the laboratory:

- gamma spectrometry of the measured samples,
- total beta activity measurement,
- total alpha activity measurement,
- ^{3}H measurement,
- measurement of the integral areal dose equivalent or average power of the areal dose equivalent by TLD.

- Field measurements:
  - field gamma spectrometry – IN SITU,
  - measurements of power of the areal dose equivalent by ionization chamber or other portable devices – detectors in the TDS stations, detectors and portable devices in the monitoring vehicles,
  - measurements of the volume activity of aerosols and iodine – TDS.
- Measurements performed by contractors:
  - Alpha spectrometry,
  - ^{14}C in samples of the environment,
  - ^{90}Sr in samples of the environment.

3.2 Proposal of the radioactivity monitoring in the environment with particular focus on the river Hron and related components of the environment

Proposal on the monitoring with particular focus on the impact of Unit 3 and 4 of NPP Mochovce commissioning should be based on the **requirements of the Slovak legislation**, authorizing of state supervisory authorities, in accordance with international recommendations and implemented in accordance with applicable regulations.

The scope of the monitoring of the area of NPP Mochovce since the operational activities started has only slightly changed in the time. Monitoring needs to be slightly modified each year according to the actual situation. Monitoring is performed according to the monitoring plan of the radiation control of the surrounding of NPP Mochovce 0-PLN/0006 and in this range monitoring should continue also during the commissioning and operation of SE EMO34.

Monitoring plan of the radiation control of the surrounding of the NPP Mochovce 0-PLN/0006 valid since 2014 replaced the monitoring plan „EMO/NA-172.00-05 Monitoring plan of the radiation control of the surrounding of the NPP Mochovce“, in compliance with the order „SE/PGR-16/2012 – Restructuring of the company 2013-2014“, comparing the monitoring plans of other NPPs (Dukovany and Temelín) - benchmarking BEN-2012-06-EMO, taking into consideration international recommendations and experiences and Slovak legislation – Regulation of the ministry of health of the SR No. 524/2007 Col., as well as the analyses performed by the program RD EMO“. A change of the monitoring plan was agreed by the statement of the Public Health Authority of the SR No. OOZPŽ/7881/2013 from 21.10.2013.

In order to monitor the environmental radioactivity around the NPP Mochovce an external laboratory of radiation control in Levice was built (**LRKO** Levice), which should provide follow-up work in the coming period. At present the group LRKO and LM performs monitoring of radioactivity of the environment in connection with the operation of SE EMO12. Due to the approved monitoring program of the NPP Mochovce and its implementation, it can be said that the group LRKO and LM performs monitoring of the surrounding for all 4 units - SE EMO12 in operation and SE MO34 under construction in order to carry out the monitoring program. The group LRKO and LM will monitor all potential radioactive impacts of the emissions and other effluents in the atmosphere and in the components of the hydrosphere (surface water, drinking water, sediments of the tank bottom etc.) on the surrounding of the power plant.

SE a.s. shall submit a complete report on the monitoring of radioactivity in the environment of the („Report on radiation control of the surrounding of EMO“) every year. The reports will be processed by the group LRKO and LM. The report will include an updated monitoring plan of the surrounding of the NPP for the concrete year as well as all results of the monitoring.

In accordance with the radiation monitoring plan of the surrounding of the NPP Mochovce **0-PLN/0006**, the NPP Mochovce shall control all the radiologic impacts on the environment and population. The monitoring will be focused on documenting that radiologic impacts i.e. exposure of inhabitants and concentration of isotopes from emissions are below the limits set in the Annex 3 of the Government Regulation No.

345/2006 Col. On basic safety requirements for Protection of health and population from ionizing radiation and that the impacts are as low as reasonably achievable – ALARA. The decisions of the Public Health Authority of the SR and the relevant environmental authorities were further commented in chapter 2.2.

The proposed annual plan on radiation-ecological controls during the commissioning of units 3 and 4 of the NPP Mochovce is described in the text below with particular focus on the river Hron and related elements of the environment (ground water, rainfalls, sediments, water plants, fish). The plan is based on the current plan of the radiation control of the NPP Mochovce **0-PLN/0006**, where in case of the evaluation of components there is no increase in the volume of sampling and or analytic work. The exception is the installation proposal of lysimeters, their description and justification is given in chapter 3.3. It will be necessary to review (update) the monitoring program for particular years based on the results of the previous monitoring.

3.2.1 Soils

We propose to perform sampling and in situ measurements as follows.

Field gamma spectrometry – frequency once a year in localities:

- Červený Hrádok – GPS: N 48°17,850´ / E 18°24,273´,
- Nevidzany – GPS: N 48°16,703´ / E 18°23,122´,
- EMO zone Z157 – GPS: N 48°15,524´ / E 18°27,280´,
- EMO Z169 (MO34)
- Nový Tekov – GPS: N 48°15,711 / E 18°31,517´,
- Starý Tekov – GPS: N 48°14,743´ / E 18°31,545´.

We propose to perform the soil activity in 3 sample layers: 0 – 2 cm, 2 – 5 cm a 5 – 10 cm.

Mass activity of ^{90}Sr in soils – frequency once a year in localities:

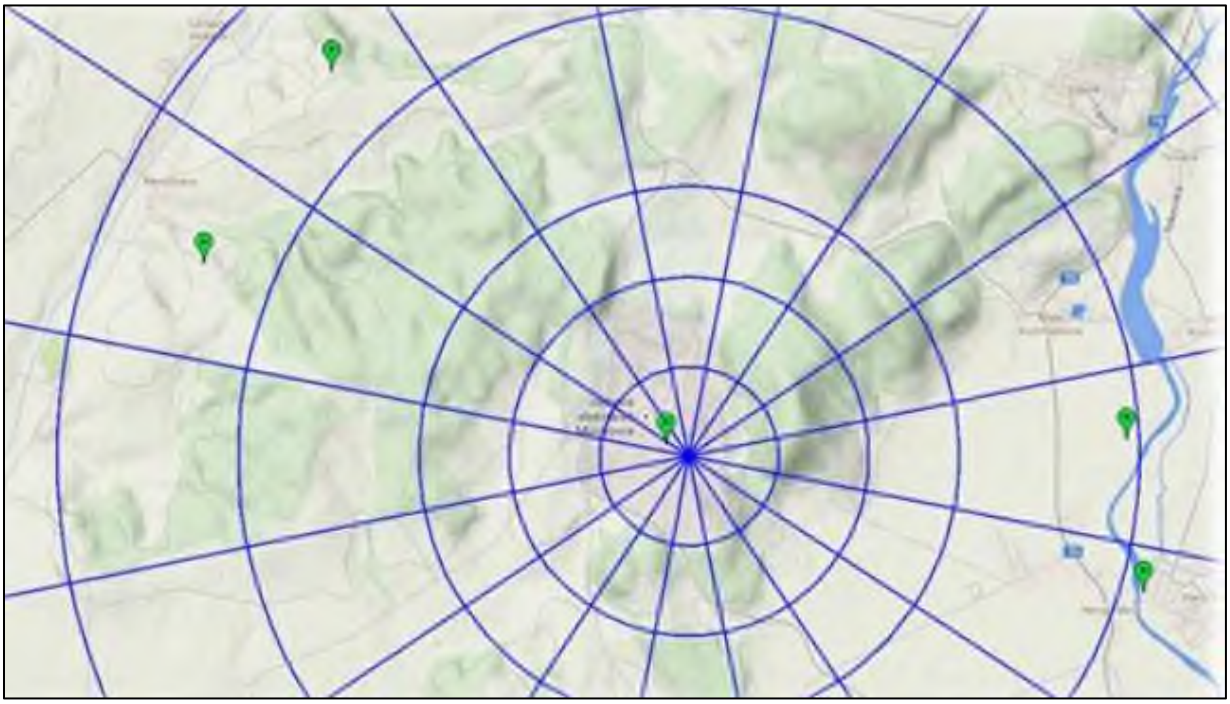
- EMO zone Z157 – GPS: N 48°15,524´ / E 18°27,280´.
- EMO Z169 (MO34)

Alpha spectrometry – frequency once a year in localities:

- EMO zone Z157 – GPS: N 48°15,524´ / E 18°27,280´,
- EMO Z169 (MO34)
- Nový Tekov – GPS: N N 48°15,711 / E 18°31,517´.

Locations of soil sampling during commissioning of Units 3 and 4 of NPP Mochovce are shown on Fig. 13.

Figure 13: Proposal of the soil sampling location during commissioning of units 3 and 4 of NPP Mochovce (map source: SE, a.s.)



3.2.2 Mass activity of sediments

We propose to monitor the mass activity of sediments as follows.

Gamma spectrometry on the river Hron – frequency once a year in locations:

- Tlmače - nad Haťou V. Kozmálovce – GPS: N 48°17,787´ / E 18°31,790´,
- MVE N. Tekov – GPS: N 48°15,059´ / E 18°31,271´,
- Kalná nad Hronom – GPS: N 48°13,261´ / E 18 °32,005´.

Alpha spectrometry on the river Hron – frequency once a year in locations:

- MVE N. Tekov – GPS: N 48°15,059´ / E 18°31,271´,

Measurement of ^{90}Sr activity on the river Hron – frequency once a year in locations:

- Tlmače – above the water gate V. Kozmálovce – GPS: N 48°17,787´ / E 18°31,790´,
- MVE N. Tekov – GPS: N 48°15,059´ / E 18°31,271´,
- Kalná nad Hronom – GPS: N 48°13,261´ / E 18 °32,005´.

Locations of sediments sampling during commissioning of Units 3 and 4 of NPP Mochovce are shown on Fig. 14.

Figure 14: Proposal of the sediments sampling location during commissioning of units 3 and 4 of NPP Mochovce (map source: SE, a.s.)

3.2.3 Volume activity of surface waters

Proposal of monitoring of surface waters volume activity is given below in the text.

Gamma spectrometry – quartal frequency in localities:

- Mochovce (Telinský potok) – GPS: N 48°15,293' / E 18°26,670',
- Tlmače (Hron) – GPS: N 48°17,407' / E 18°31,697' (reference location for background samples),
- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422',
- Nevidzany (Širočina) – GPS: N 48°17,230' / E 18°22,570'.

^{90}Sr – quartal frequency in localities:

- Mochovce (Telinský potok) – GPS: N 48°15,293' / E 18°26,670',
- Tlmače (Hron) – GPS: N 48°17,407' / E 18°31,697' (reference location for background samples),
- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422',
- Nevidzany (Širočina) – GPS: N 48°17,230' / E 18°22,570'.

^{3}H – quartal frequency in localities:

- Mochovce (Telinský potok) – GPS: N 48°15,293' / E 18°26,670',

- Tlmače (Hron) – GPS: N 48°17,407' / E 18°31,697' (reference location for background samples),
- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422',
- Nevidzany (Širočina) – GPS: N 48°17,230' / E 18°22,570',
- OK - l.No. 3 / Nový Tekov – GPS: N 48°14,750' / E 18°31,400',
- Dead arm / Nový Tekov – GPS: N 48°15,068' / E 18°31,238',
- Pit at the field / Nový Tekov – GPS: N 48°14,874' / E 18°31,291',
- Rybník / Starý Tekov – GPS: N 48°15,056' / E 18°31,395'.

Total alpha activity – quartal frequency in localities:

- Tlmače (Hron) – GPS: N 48°17,407' / E 18°31,697' (reference location for background samples),
- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422'.

Total beta activity – quartal frequency in localities:

- Tlmače (Hron) – GPS: N 48°17,407' / E 18°31,697' (reference location for background samples),
- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422'.

Ra-226 – quartal frequency in localities:

- Tlmače (Hron) – GPS: N 48°17,407' / E 18°31,697' (reference location for background samples),
- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422'.

Alpha spectrometry – frequency once a year in localities:

- Tlmače (Hron) – GPS: N 48°17,407' / E 18°31,697' (reference location for background samples),
- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422'.

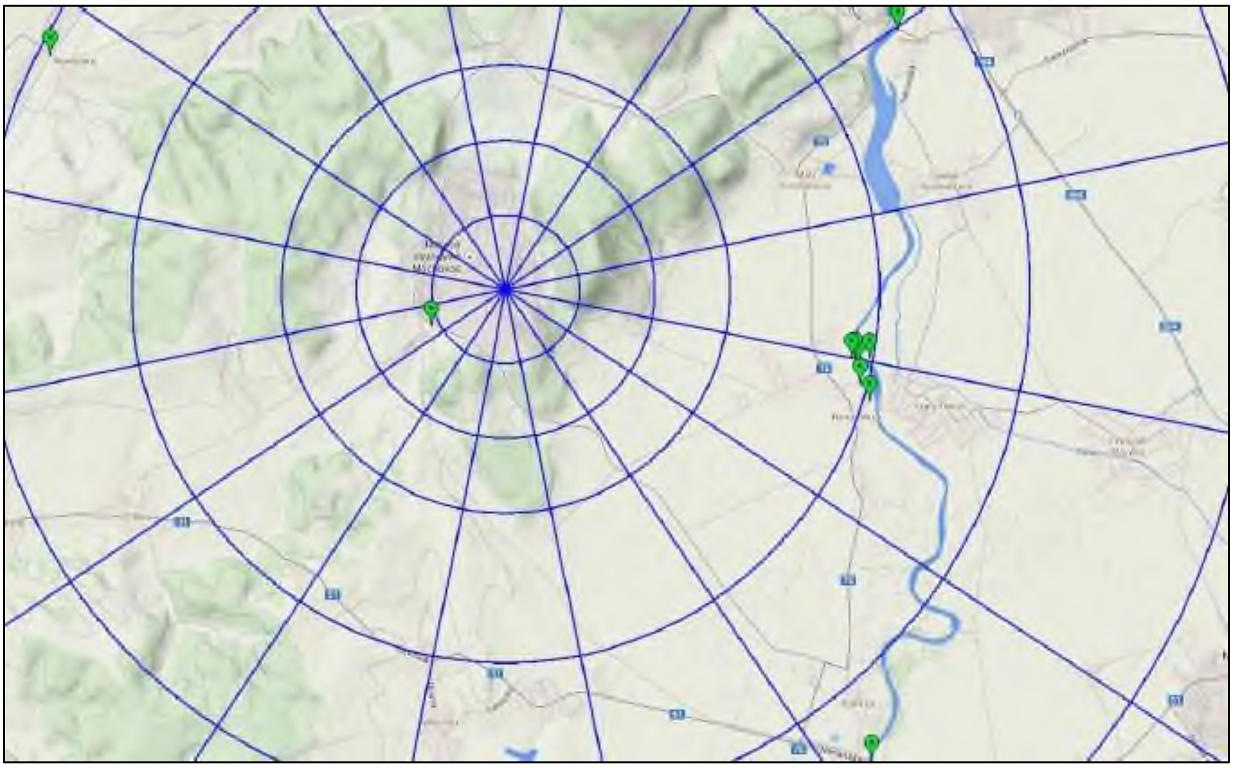
C-14 – frequency once a year in localities:

- Kalná nad Hronom (Hron) – GPS: N 48°12,162' / E 18°31,422'.

Sampling methods: Before surface water sampling the sampling container must be thoroughly rinsed by the extracted water. The collection of samples of water follows by sinking a 10 l PE container into maximum depth of 0,5 m. The water is then poured into a prepared transport container. For sampling is by default used a sampling vessel (10l PE bucket).

Surface water sampling locations during the commissioning of units 3 and 4 of NPP EMO are shown on Fig. 15.

Figure 15: Proposal of the surface water sampling location during commissioning of units 3 and 4 of NPP Mochovce (map source: SE, a.s.)



3.2.4 Volume activity in drinking water

Proposal of surface water volume activity measuring is shown below.

^{3}**H** – quartal frequency in localities:

- Kalná nad Hronom – GPS: N 48°12,720´ / E 18°31,140´,
- Malé Kozmálovce – GPS: N 48°16,289´ / E 18°30,736´,
- Nový Tekov No. d. 96 – GPS: N 48°14,696' / E 18°31,269',
- Starý Tekov – GPS: N 48°14,918´ / E 18°32,054´.

^{3}**H** – monthly frequency in localities:

- Nový Tekov No. d. 96 – GPS: N 48°14,696' / E 18°31,269',
- Nový Tekov No. d. 116 – GPS: N 48°14,817' / E 18°31,169',

- Nový Tekov No. d. 132 – GPS: N 48°14,988' / E 18°30,927'.

Sampling methods: the employee of the group LRKO and LM opens the tap during sampling and lets the water flow for about 1 minute. After that the sampling container is rinsed thoroughly in the water flow. After that the sample of drinking water is collected and poured into a transport container. Drinking water is collected also in a direct extraction from the well.

Drinking water sampling locations during the commissioning of units 3 and 4 of NPP EMO are shown on Fig. 16.

Figure 16: Proposal of the drinking water sampling location during commissioning of units 3 and 4 of NPP Mochovce (map source: SE, a.s.)

3.2.5 Volume activity of groundwater

Monitoring aims to determine the eventual contamination of groundwater caused by direct leaching of radioactive materials into different depths and distances of the bedrock.

The proposal of volume activity of groundwater is given below.

3.2.5.1 Groundwater (waste piping Mochovce – Hron

^{3}H – quartal frequency in localities:

- EM-1 / Mochovce – GPS: N 48° 15,414' / E 18° 27,276',
- EM-10 / Nový Tekov – GPS: N 48° 14,796' / E 18° 30,297',
- EM-11 / Nový Tekov – GPS: N 48° 14,216' / E 18° 30,702',
- EM-12 / Nový Tekov – GPS: N 48° 14,271' / E 18° 30,887',
- EM-13 / Nový Tekov – GPS: N 48° 13,567' / E 18° 31,184',
- EM-2 / Mochovce – GPS: N 48° 15,634' / E 18° 27,253',
- EM-3 / Mochovce – GPS: N 48° 15,733' / E 18° 27,239',
- EM-4 / Nový Tekov – GPS: N 48° 15,113' / E 18° 28,454',
- EM-5 / Nový Tekov – GPS: N 48° 15,035' / E 18° 28,645',
- EM-6 / Nový Tekov – GPS: N 48° 15,199' / E 18° 29,524',
- EM-7 / Nový Tekov – GPS: N 48° 15,374' / E 18° 30,171',
- EM-8 / Nový Tekov – GPS: N 48° 15,743' / E 18° 31,486',
- EM-9 / Nový Tekov – GPS: N 48° 14,263' / E 18° 28,701',
- HG-3 / Malé Kozmálovce – GPS: N 48° 15,703' / E 18° 30,456',
- HG-5 / Malé Kozmálovce – GPS: N 48° 15,752' / E 18° 31,321',
- HG-7 / Veľké Kozmálovce – GPS: N 48° 15,970' / E 18° 32,330',
- EMH1.

In case of exceeding the investigative level of ^{3}H activity, the analyses of ^{90}Sr and gamma spectrometry should be performed.

3.2.5.2 Groundwater (boreholes of radiation control – area of NPP Mochovce)

Gamma spectrometry – frequency every six months in localities:

- RK - 11 – GPS: N 48°15,571´ / E 18°27,666´,
- RK - 13 – GPS: N 48°15,581´ / E 18°27,267´,
- RK - 30 – GPS: N 48°15,690´ / E 18°27,626´,
- RK - 40 – GPS: N 48°15,378´ / E 18°24,924´.

^{3}H – frequency every six months in localities:

- RK - 11 – GPS: N 48°15,571´ / E 18°27,666´,
- RK - 13 – GPS: N 48°15,581´ / E 18°27,267´,
- RK - 30 – GPS: N 48°15,690´ / E 18°27,626´,
- RK - 40 – GPS: N 48°15,378´ / E 18°24,924´,
- RK - 31 – GPS: N 48°15,826´ / E 18°27,623´,
- RK - 32 – GPS: N 48°15,901´ / E 18°27,698´.

All sampling locations (boreholes of radiation control – area of NPP Mochovce) are: RK 1 to RK 4, RK 7 to RK 13, RK 30, RK 31, RK 32, RK 40, HMB1, HMB2 (water is only present in the boreholes RK 11, RK 13, RK 30, RK 31, RK 32 a RK 40). In other boreholes the presence of water has to be checked and in case water is present, it is necessary to perform sampling of it as well.

We propose to monitor also the boreholes RK - 21, 22, 23, 24, 25, 27, 28, 33, 34 and 35, which should be built in the area of SE MO34 and borehole RK - 33, which is planned in the whole area of EMO. Sampling from these boreholes should be performed immediately after the realization of the boreholes and after handling over to the operation.

3.2.5.3 Groundwater (boreholes around the MVE Tekov)

^{3}H – quartal frequency in localities:

- EM-14 / Nový Tekov – GPS: N 48° 15,988' / E 18° 31,690',
- EM-15 / Nový Tekov – GPS: N 48° 15,625' / E 18° 31,179',
- EM-16 / Nový Tekov – GPS: N 48° 15,834' / E 18° 31,687',
- EM-17 / Nový Tekov – GPS: N 48° 15,866' / E 18° 31,481',
- EM-18 / Nový Tekov– GPS: N 48° 15,615' / E 18° 31,517',
- EM-19 / Nový Tekov – GPS: N 48° 15,552' / E 18° 31,267',
- EM-20 / Nový Tekov – GPS: N 48° 15,390' / E 18° 31,343',
- EM-21 / Nový Tekov – GPS: N 48° 15,411' / E 18° 31,162',
- EM-22 / Nový Tekov – GPS: N 48° 15,290' / E 18° 31,220',
- EM-23 / Nový Tekov – GPS: N 48° 15,316' / E 18° 31,013',
- EM-24 / Veľké Kozmálovce – GPS: N 48° 16,017' / E 18° 31,850',
- EM-25 / Veľké Kozmálovce – GPS: N 48° 15,718' / E 18° 31,849',

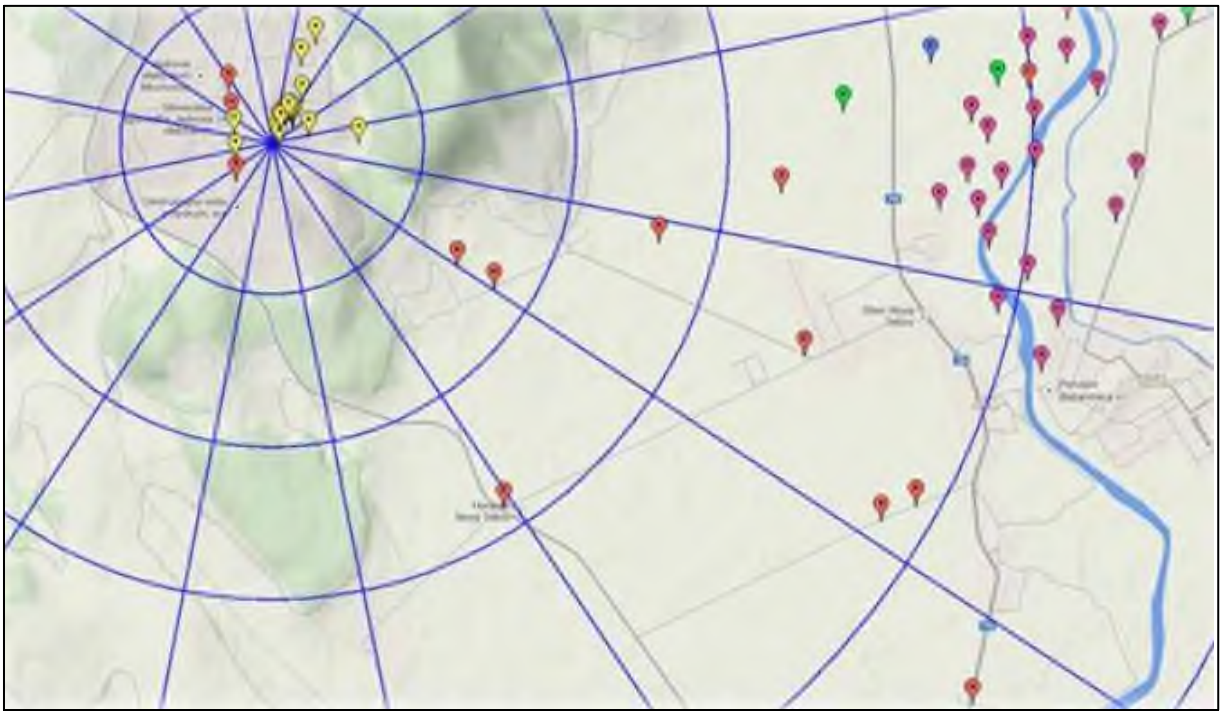
- EM-26 / Starý Tekov – GPS: N 48° 15,465' / E 18° 31,522',
- EM-27 / Starý Tekov – GPS: N 48° 15,180' / E 18° 31,272',
- EM-28 / Veľké Kozmálovce – GPS: N 48° 15,915' / E 18° 32,181',
- EM-29 / Starý Tekov – GPS: N 48° 15,424' / E 18° 32,058',
- EM-30 / Starý Tekov – GPS: N 48° 15,271' / E 18° 31,951',
- EM-32 / Starý Tekov – GPS: N 48° 14,903' / E 18° 31,640,
- EM-33 / Starý Tekov – GPS: N 48° 14,742' / E 18° 31,552'.

^{3}H – monthly frequency in localities:

- EM-31 / Starý Tekov – GPS: N 48° 15,066' / E 18° 31,477',
- EM-34 / Nový Tekov – GPS: N 48° 14,950' / E 18° 31,318'.
- PS1 / Nový Tekov – GPS: N 48° 14,760' / E 18° 31,373,
- PS2 / Nový Tekov – GPS: N 48° 14,829' / E 18° 31,391',
- PS3 / Nový Tekov – GPS: N 48° 14,797' / E 18° 31,281',
- PS4 / Nový Tekov – GPS: N 48° 14,894' / E 18° 31,346'.

Ground water sampling locations during the commissioning of units 3 and 4 of NPP EMO are shown on Fig. 17.

Figure 17: Proposal of the groundwater sampling location during commissioning of units 3 and 4 of NPP Mochovce (map source: SE, a.s.)



3.2.6 Volume activity of ^{3}H in rainfall

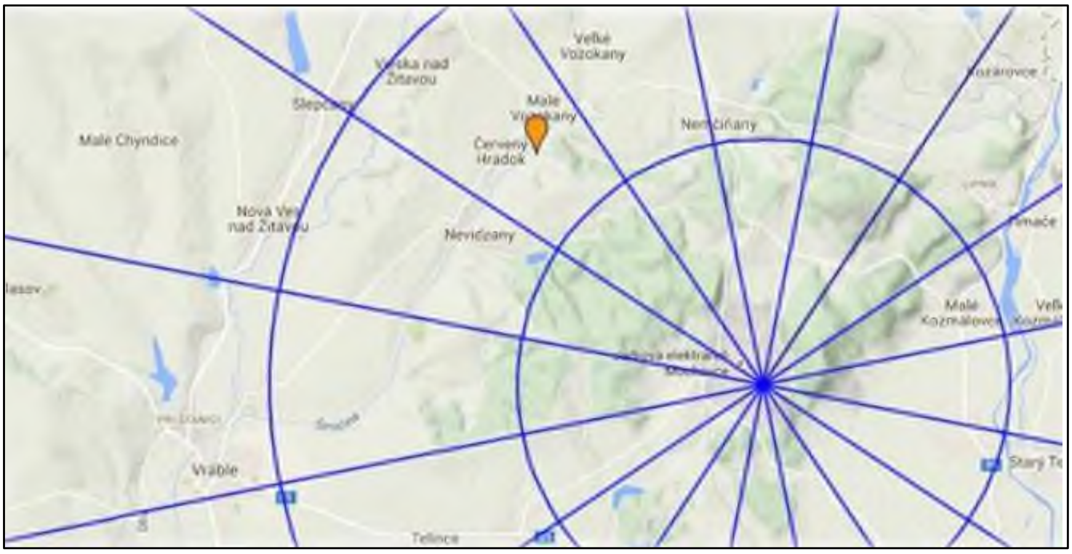
The proposal of groundwater volume tracking is as follows:

^{3}H – quartal frequency in localities:

- SDS Červený Hrádok – GPS: N 48° 18,070' / E 18° 23,755'.

Rainfall sampling locations during the commissioning of units 3 and 4 of NPP EMO are shown on Fig. 18.

Figure 18: Proposal of the rainfall sampling location during commissioning of units 3 and 4 of NPP Mochovce (map source: SE, a.s.)



3.2.7 *Water plants activities*

Proposal on water plant activity tracking is as follows:

Radiochemistry – C-14 – frequency 1x year in localities:

- Kalná nad Hronom - Hron – GPS: N 48°13,127´ / E 18°32,263´.

Gamma spectrometry – frequency 1x year in localities:

- Kalná nad Hronom - Hron – GPS: N 48°13,127´ / E 18°32,263´,
- V.Kozmálovce (Hron) – GPS: N 48°15,720´ / E 18°31,837´.

3.2.8 *Mass activity in fish flesh*

The proposal on mass activity tracking in fish flesh is as follows:

Gamma spectrometry – frequency 1x year in localities of the river Hron – under the outlet:

- Jalec – V. Kozmálovce – GPS N 48°16,092´ / E 18°31,683´.
- Plotica – V. Kozmálovce – GPS N 48°16,128´ / E 18°31,686´.

3.3 Monitoring of non-radiological indicators

As already mentioned in the chapter 2.9, the discharge from the NPP Mochovce into the surface waters of the river Hron is provided on the basis of the decision of the District

Office in Nitra, department of environmental protection, sub department of the state water management, No. OU-NR-OSZP2-2015/043433 from 29.12.2015. In the terms of approval paragraph No. 2 the office identified the place of discharge of waste waters by the 5800 m long pipeline into the surface waters of the river Hron as a place on river km 73,450. In section 5 the Office established the requirements on registration of flow measurement and of the amount of discharged water. At the same time it set the allowed concentration limits for non-radiological parameters that need to be monitored in the water.

Analyses in particular indicators should therefore be performed according to the valid decision 48 x a year except for BSK_5, hydrazine – 12 x a year and AOX, NEL, active chrome – 4x a year. The given balance values will be calculated in the total volume of water collected from the river Hron.

4 LOCATIONS AND CONDITIONS OF SAMPLING

The locations for sampling are designed in accordance with the objectives of the monitoring. An important condition for obtaining representative results is the correct sampling which is guided by professional practices, methodology and standards. Samples of ground and surface water are usually collected in accordance with applicable standards of STN EN ISO 5667 (part 1 to 17).

Sampling, sample preparation and measurement should be in accordance with the Radiation Protection Plano of the surrounding of the NPP Mochovce 0-PLN/0006.

Samples of ground water will be collected by a collecting vessel for ground water and for radiation monitoring of the boreholes an air samples will be used.

Samples of surface water will be collected by immersing the sampling PE vessel into a maximum depth of 0,5 m. The water will then be poured into the prepared transportation containers.

The method of drinking water sampling. The employee opens the water valve and lets the water flow for about 1 minute, then he rinses the container thoroughly with the extracted water. Afterwards he collects a sample of the drinking water and pours it into the transportation container. After the sampling the sampling container is to be thoroughly washed with distilled water. Drinking water will be collected by direct extraction from the wells.

The laboratory of radiation control of the surrounding (LRKO) sets volume activity of individual radionuclides in waters by the method of gamma spectrometry, ^{3}H and ^{90}Sr activity and total alpha and beta activity. To determine the total alpha and beta activity samples of the volume of 1 dm^3 will be collected.

Places of sampling/measuring points of the individual components of the environment are shown on Fig. 13 to 18.

Field measurement

Gamma spectrometric field measurements (in situ) will be performed by means of portable measuring devices with semiconductor detector HPGe, multichannel analyzer INSPECTOR or INSPECTOR 2000 and the software for processing of relevant data.

Simultaneously with field gamma spectrometry also soil samples from soil layers will be collected which will undergo a gamma spectrometric analysis after processing in the laboratory. Sampling will be performed in 3 points around the detector, in the corners of an equilateral triangle inscribed into a circle with a radius of 3 m the center of which is located below the detector. At the same location of the field gamma spectrometry power measurements of areal dose equivalent in the air using a ionization chamber (IK) will be performed.

Measuring the power of the areal dose equivalent of gamma spectrometry in the air using the ionization chamber

Using the ionization chamber in the surrounding of the NPP Mochovce on selected points the immediate total power consumption of the areal dose equivalent in the air will be measured. The results of the monitoring will be measured in the units of power consumption of the areal dose equivalent - H*(10), or will be converted to these units.

Measuring the power consumption of the areal dose equivalent of gamma spectrometry in the air using the thermoluminiscent dosimeter TLD.

Using the TLD in the surrounding of the NPP Mochovce the integral areal dose equivalent of the gamma radiation in the air is measured. The measurements will be performed in accordance with the regulation 0SP/8334, Measurement of the equivalent power consumption using the TLD. The results of the monitoring will be measured in the units of power consumption of the areal dose equivalent - H*(10), or will be converted to these units. TLD will be evaluated in the laboratories and will be converted to the values of the power consumption of the areal dose equipment according to the exposure time.

Continuous measurements of the activity of gaseous discharges

Continuous system of monitoring provides measurements of volume activity of the basic components of gaseous discharges: radioactive noble gases, aerosols and iodine in the gas phase and auxiliary parameters.

Balancing of the discharges is based on discontinuous measurements. The samples of individual components of the discharges – aerosols, iodine, tritium and carbon oxides for the analysis of ^{14}C carbon – are accumulated on appropriate filter materials in optimal periods.

The samples are measured in laboratories using methods with high sensitivity. Sampling devices are part of the system of radiation control, their characteristics and conditions are monitored.

Measurement of the activity of liquid discharges

The system of liquid discharges monitoring is a common system for all four units of the NPP Mochovce. For this type of monitoring the waste water treatment station is used, where two monitors for continuous monitoring and a dispensing system for discontinuous control of the activity of waste water at the outlet of the common collector from EMO are used. The monitoring system includes a continuous measurement of the flow (i.e. amount) of the waste water. The station is in operation since the commissioning of unit 1 of SE EMO12.

The monitoring system gives impulse to automatically close the valve to control the discharge of the water from the tank in the facility of auxiliary operations if the limit of activity is exceeded or the device is in failure.

5 METHODS OF ANALYSIS AND EVALUATION OF SAMPLES

5.1 Measurement of samples in laboratories

Water analysis will be performed in a targeted way and pre-selected indictors set in the monitoring plan proposal will be monitored. The quality assurance and quality control system will be processed in the relevant laboratory so that it guarantees that the tests performed are correct with the declared precision.

Collected and processed samples will be measured in the laboratory according to the document 0SP/8331, Collecting, preparation and measurement of samples, where the samples will be adjusted to the correct geometry according to SP/8331, 0SP/8349, Determination of total beta activity in water. The laboratory will perform measurements of the activity by gamma spectrometry measurements, by total beta activity, total alpha activity and by the activity of ^{3}H and ^{90}Sr. Records on the measurements will be kept in documents, the patterns are annexed in the document 0SP/8331, Collecting, preparation and measurement of samples.

Gamma spectrometric measurement of samples

During gamma spectrometric measurements AIM and Lynx by CANBERRA will be used and the quantitative analysis will be performed in the program GENIE 2000. Four measuring paths will be available, each with a HPGe detector. Work settings (adjustment) of the parameters of each type of samples will be generally performed for more types of paths. The aerosols filters will be measured directly, after compression they will be placed on the HPGe detector. Fallouts will be measured in stainless steel bowls in a direct way. Water will be measured in 1 liter Marinelli containers in a direct way. Samples of soil will be measured in 0,5 l Marinelli containers in a direct way. Other samples will also be measured in 0,5 l Marinelli containers in a direct way. The measuring of the samples will usually take 60 000 s, depending on the circumstances and on the activity of the samples it may be shorter.

Measurement of samples – total beta and total alpha activity

Selected samples of surface water will be measured by the method of total alpha and beta activity according to the regulation 0SP/8349, Determination of total volume beta activity in waters and 0SP/8350, Determination of total volume alpha activity in waters.

^{90}Sr measurement

Measurements of ^{90}Sr activity will be performed by an external accredited organization. Sampling and recording of measurement results will be carried out by the group of LRKO and LM.

^{3}H measurement

The methodology for ^{3}H measurements is described in 0SP/8357, Determination of tritium ^{3}H in water samples. The frequency of the samples is measured on a liquid scintillation detector TRICARB 3710 TR/SL in plastic cuvettes by Packard with the volume of 20 ml. The device is described in the document 0SP/8354, Equipment for measurements of tritium in liquids Tri-carb 3170 TR/SL.

Measurement of ^{14}C and selected TRU

Measurements of ^{14}C activity in the samples of the environment will be performed according to the schedule. On selected types of environmental samples analyses will be performed by an accredited organization.

5.2 Processing of the analyses and measurement results

All results will be stored in the SAP module on laboratory measurements. During statistical processing data will be compared with the previous ones and possibly also with the pre-operational information. For their evaluation processes of mathematical statistics will be used, mainly:

- Descriptive statistics,
- Analysis of variance (ANOVA),
- Trend analyses.

Where applicable (e.g. river Hron), it will be possible to compare samples collected from the places above and below the discharge outlets of waste water.

Filing results

The measured results are stored in the central database (SAP module laboratory measurements) and at the same time are recorded on a CD ROM in the form of reports. Accompanying letters will be filed in paper form and protocols on measurements in electronic form. Reports on the radioactivity control in the surrounding of EMO will be filed in paper form. The calculated monthly average power consumption equivalent measured in the TDS stations will be archived in the database of the CRCS system and on the CD-ROM in the form of reports.

Archiving samples

All samples, except for fruits, vegetables, fish will be archived for 5 years. Samples archived in the Marinelli containers or in measuring containers by Packard (tritium) will be marked with a registration tag which will contain the following information: registration number, type of sample, location, collection date, notes.

Aerosol filters will be archived compressed in a form of a roll. On a filter modified like this the spectra measured by gamma spectrometry, the sieved air volume and weight of the filter will be written on. Compressed and marked filters will be inserted into a marked paper bag and stored in the sample archive. **Fallouts** will be archived and fixed with adhesive dispersion in the measuring bowl. The measuring bowl will be marked with the name of the measuring spectrum and the SDS. The fallouts from the SDS sites will be wrapped in a paper bag, labeled and archived in the sample archive. **Soils and sediments** will be archived in the amount of 600 g in Marinelli containers marked with a registration tag. **Grass and fodder** will be archived in the amount of 200 g, prepared as a dried and homogenized sample placed in a Marinelli container and marked with a registration tag. **Milk** will be archived in the amount of 250 g in the form of milk powder in the Marinelli container marked with a registration tag. Samples of **water plants** will be archived similarly to grass.

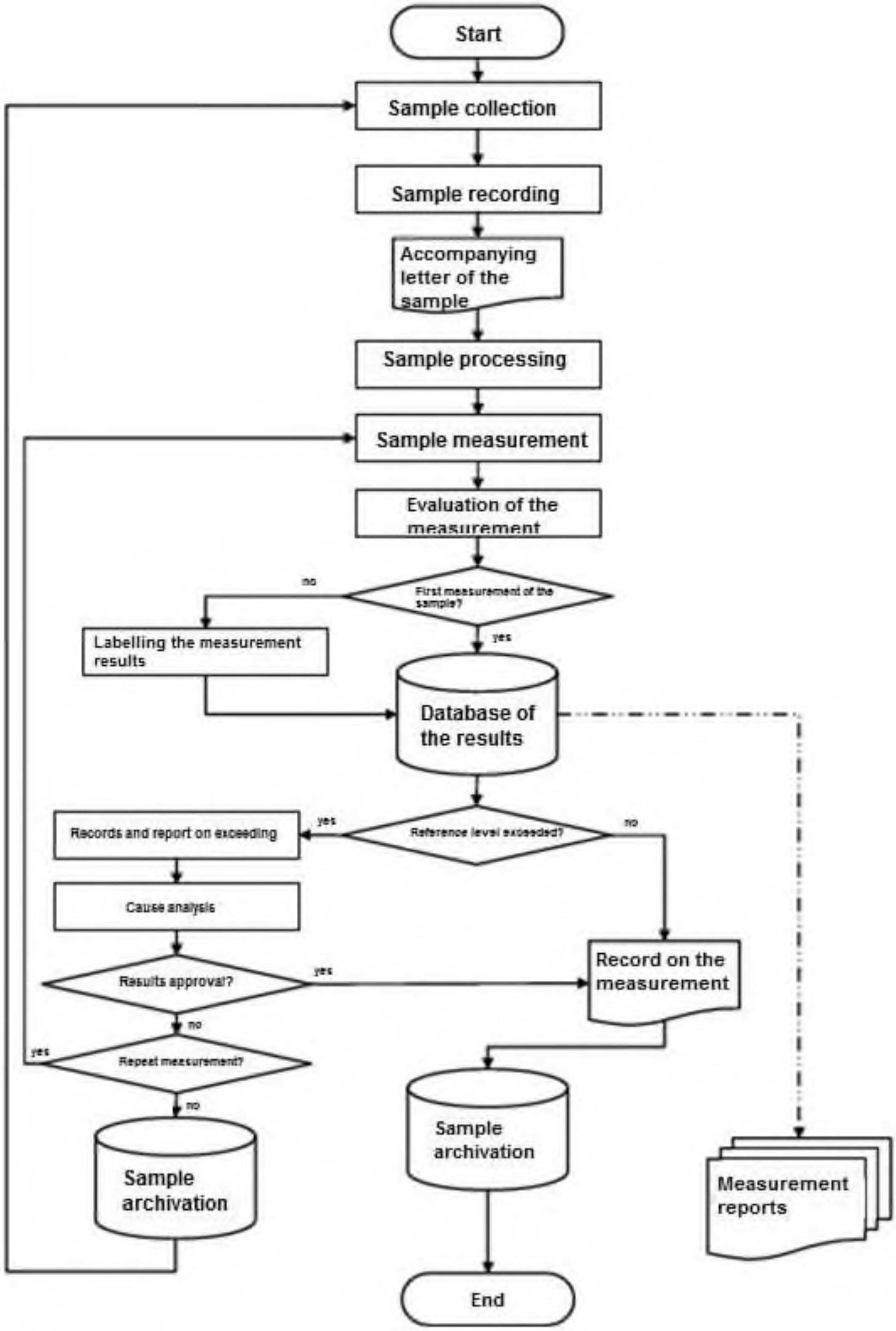
Handing out results

In terms of the "Act of the NR SR No. 355/2007 on protection, support and development of public health and on amending certain laws“, all types of measurements and analyses mentioned in the monitoring plan are provided by the operator EMO. In terms of the decision No. OOZPŽ/7042/2012 on the license to carry out the activities leading to radiation for SE, a.s., Mochovce, **the results on measurements and analyses will be handed out as follows**:

- Report for the first quartal – by the end of May,
- Report for the II. quartal – by the end of August,
- Report for the III. quartal – by the end of November,
- Report on the IV. quartal – by the end of February of the following year,
- Annual report - by the end of March of the following year.

Basic scheme of the data and information flow at EMO is shown on Fig. 19.

Figure 19: Basic scheme on information and data flow at EMO (source SE, a.s.,)



6 PLACE AND DATE OF THE PROCESSING OF THE MONITORING PLAN AND ANALYSIS

PROCESSOR

ENEX trade, s.r.o.
Zlatovská 1962
911 05 Trenčín
IČO: 45 600 198
IČ DPH: SK 20 23 047 268
In Commercial Register of District Court Trenčín under section Sro,.No. 23121/R
Represented by: Ing. Ján Hricko, CEO
Prepared by: ENEX trade, s.r.o.: Ing. Ján Hricko, CEO
Mgr. Filip Sapák, project manager
Contacts: e-mail: hricko@enextrade.sk Mobil: 0911 179 157
sapak@enextrade.sk Mobil :0911 414 009

SUBCONTRACTOR:

Aqua.geo, s.r.o.
Škultétyho 4, 831 03 Bratislava
IČO: 44 156 537
Represented by: RNDr. Martin Žitňana, CEO

The processor confirms with his signature the correctness of the data in the Methodology for assessment of cumulative effects on the environment to the completion of units 3 and 4 of NPP Mochovce, in terms of the standards of good manufacturing practice and the IFC manual.

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SUBMITTER

Slovenské elektrárne, a.s.
Mlynské nivy 47
821 09 Bratislava
IČO: 35 829 052
IČ DPH: SK 20 20 261 353
In Commercial Register of District Court Bratislava I, under section: Sa, No.: 2940/B
On behalf of: Ing. Alžbeta Klepáčová, Manager of procurement MO3,4

7 OTHER

Trenčín, 21.9.2016, Ing. Ján Hricko

Bratislava, 20.9.2016, RNDr. Martin Žitňan

8 ADDITIONAL INFORMATION TO THE REPORT

8.1 Sources

[1] Act NR SR No. 355/2007 Col. On protection, support and development of public health an on amendments to certain Laws.

[2] Government Regulation SR No. 345/2006 on basic safety requirements for health protection of workers and population from ionizing radiation.

[3] Government Regulation SR No. 269/2010 laying down the requirements to achieve good water status.

[4] Regulation of the Ministry of Health of the SR 524/2007 of 16. August 2007.

[5] MERIT: Assessment of the impacts of discharges into the air around EMO, basis for monitoring program of the surrounding of EMO.

[6] EKOSUR: EMO – System of hydrosphere monitoring - Part A: System of ground water monitoring.

[7] MERIT: EMO - System of hydrosphere monitoring - Part B: System of surface water monitoring.

[8] Pre-operational safety report - RÚ RaO, VÚJE TRNAVA a.s.

[9] Water research institute Prague – Experience with sampling of water, sediments and plants.

[10] Environmental Radiological Monitoring - Technical Guidance Note 2

[11] Safety Guide No. RS-G-1.8 Environmental and Source Monitoring for Purposes of Radiation Protection.

[12] Abrahám, J. 2009: Analysis of the water need for 4 units of EMO. SE, a.s. 24 s.

[13] Operational regulation for water construction water gate Veľké Kozmálovce on the river Hron r. km. 73,500.

[14] Comprehensive report on the state of the environment in EMO in 2012. Slovenské Elektrárne, a.s.

[15] Comprehensive report on the state of the environment in EMO in 2013. Slovenské Elektrárne, a.s.

[16] Comprehensive report on the state of the environment in EMO in 2014. Slovenské Elektrárne, a.s.

[17] www.shmu.sk

[18] Report on the monitoring of radioactive discharges and radiation situation in Mochovce in 2012. Slovenské Elektrárne, a.s.

[19] Report on the monitoring of radioactive discharges and radiation situation in Mochovce in 2013. Slovenské Elektrárne, a.s.

[20] Report on the monitoring of radioactive discharges and radiation situation in Mochovce in 2014. Slovenské Elektrárne, a.s.

[21] Report on the environment of SE MO34 in 2012. Slovenské Elektrárne, a.s.

[22] Report on the environment of SE MO34 in 2013. Slovenské Elektrárne, a.s.

[23] Report on the environment of SE MO34 in 2014. Slovenské Elektrárne, a.s.

[24] Slovenské elektrárne, a.s. „Nuclear power plant Mochovce VVER 4 X 440 MW - 3. Construction“. The report on the proposed activity for assessment of the environmental impacts according to Act No. 24/2006 Col. Slovenské Elektrárne, a.s. Golder Associates. 2009.

[25] Slovenské elektrárne, a. s., NPP Mochovce, Radiation protection, Group LRKO and laboratory measurements

[26] Report NUREG Report 1501/August 1994

[27] Slovenské elektrárne, a.s., Safety report of units 3. and 4. of the NPP Mochovce, Summary, Safety report 2011.

[28] 0-PLN/0006 Radiation monitoring plan of the surrounding of NPP Mochovce

8.2 Recommended referring documentation

[1] 0HP/0002, Facility emergency measures

[2] 0PI/8231, LRKO with open and sealed radioactive sources

[3] 0SP/8331, Collection, preparation and measurement of samples

[4] 0SP/8349, Determination of total volume beta activity in waters

[5] 0SP/8350, Determination of total volume alpha activity in waters

[6] 0SP/8334, Power measurement of the areal dose equivalent by TLD

[7] EMO/MNA-172.06, Monitoring in emergency situations

[8] 0TP/8435, Teledosimetric system of EMO

[9] 0SP/8335, Power measurement of the areal dose equivalent by ionization chamber RSS 112

[10] 0SP/8353, Power measurement of the areal dose equivalent by ionization chamber RSS 131 ER

[11] 0SP/8352, Radiometer RP-2000

[12] 0SP/8341, Portable measuring devices FH 40G

[13] 0SP/8340, Portable measuring devices RDS 120

[14] 0SP/8355, Alpha - beta MINI meter - 20

[15] 0TP/8332, Lab semiconductor system AIM/ICB model

[16] 0TP/8333, Field semiconductor system ISOCS

[17] 0SP/8354, Equipment for tritium measurement in liquids Tri-carb 3170 TR/SL

[18] 0SP/8357, Determination of tritium H3 in water samples

[19] 0TP/8347, Alpha - Beta FHT 770 T meter

[20] SE/MNA-190.01 Environmental aspects

[21] 0EXT/0010, Operational regulations with the risk assessment for the work associated with the exposure to chemical agents at the laboratories of the radiation control of the surrounding of the NPP Mochovce

[22] SE/MNA-172.01, Radiation protection

[23] SE/PGR-16/2012, Restructuring of the company 2013-2014

[24] 0PI/8205, Work with open and sealed radioactive sources at the workplace of spectrometry

8.3 Records

[1] Protocols on sample measurements

[2] Reports on the monitoring of radioactive discharges and on radiation situation around the NPP Mochovce