

Environmental Risk Management Department

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Dear Dr. Maged Younes,

We have received your letter on Governing Council Decision 23/9 IV on the mercury programme - Status report on implementation of mercury partnerships.

Following your request please find attached the information about mercury.

Annex No. 1 - Information concerning development of implementation of topic “mercury” in water sector in the Slovak Republic.

Annex No. 2 - Monitoring of mercury in surface water in the Slovak Republic.

Annex No. 3 – Groundwater monitoring of mercury in the Slovak Republic.

Annex No. 4 – Monitoring of mercury in atmosphere in the Slovak Republic.

Annex No. 5 – Other information about mercury.

Yours sincerely

Darina Kobzová
Head of Department

Dr. Maged Younes
Head, Chemicals Branch, DTIE
United Nations Environment Programme
11-13, chemin des Anémones, CH – 1219 Châtelaine
Geneva, Switzerland
Environmental Risk Management Department

Annex 1:

Information concerning development of implementation of topic “mercury” in water sector in the Slovak Republic

Main legislative tool of the Slovak Republic focused on hazardous substances and priority hazardous substances is Act No.364/2004 Coll. on Waters and Amending Some Others Laws (Water Act). Based on this law mercury and its compounds are listed :

- on List I which contains certain individual substances which belong to the groups of substances selected mainly on the basis of their toxicity, persistence and bioaccumulation, with the exception of those which are biologically harmless or which are rapidly converted into substances which are biologically harmless (in sense of Council Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community)

- on List III as priority substances (in sense of annex X of the Directive 2000/60/EC on the European Parliament and Council of October 23, 2000 establishing a framework for Community action in the field of water policy - Water Framework Directive).

The Governmental Order No. 296/2005 Coll. which sets up requirements on water quality and surface water qualitative objectives and limit values of parameters of pollution in waste waters and special waters is important executive regulation concerning waste water discharges containing hazardous substances and priority hazardous substances.

The Slovak Republic as member state of the European Union has transposed and implemented EU legislation. From this point of view topic “mercury “ is handled, that means we have implemented into national legislation Council Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community and its daughter directives.

In the sense of the requirements of the Directive 2000/60/EC on the European Parliament and Council of October 23, 2000 establishing a framework for Community action in the field of water policy, the Ministry of Environment of the Slovak Republic, based on paragraph 40 of the Water Law No. 364/2004 Coll. has elaborated the Programme of measures focused on pollution reduction by hazardous substances and priority hazardous substances. Programme of measures has been approved by the Slovak Government - decision No. 561/2004, updated on May 2005 . Programme of mercury and its compounds reduction is incorporated in it. Programme of measures is a tool for state water management administration in permission process concerning set up limit values for discharged waste waters and special waters into surface waters and also sets up measures for polluters with aim to reduce pollution of surface and ground waters by hazardous substances and priority hazardous substances.

Annex 2:

Monitoring of mercury in surface water in Slovakia

The Slovak Hydrometeorological Institute has information about concentration of mercury from national monitoring and results of wastewater analysis from operators of the facilities.

Mercury is priority substance and for these substances SR was implement Directive 76/464/EEC and Directive 82/176/EEC on limit values and quality objectives for mercury discharges by chlor-alkali electrolysis industry. This directive was implemented into Slovak Legislation in Water act and the Government Order No. 296/2005 on permissible level of water pollution applies the “combined approach” by setting out ambient quality standards and emission limits values for dangerous substances and industries. SR shall to take appropriate steps to eliminate pollution of water by these dangerous substances.

In Slovak Republic is only one factory were mercury is used as a catalyst for production of vinyl chloride monomers. An emission of discharges mercury from this factory in year 2004 was 481 kg/year Hg and in year 2005 it was 484 kg/year.

In permits for this factory are given limits for average concentration of Hg in wastewater discharge until the end of year 2005 can by 0.15 mg.l⁻¹ (0.922 t/year), at the end of year 2006 the average concentration of mercury must decreased at 0.08 mg.l⁻¹ (0.492 t/year).

The emissions must be reduced at the end of year 2006.

The Slovak Hydrometeorological Institute performs the long term monitoring of mercury concentration in surface water. The results show reduction of mercury concentration during last decade (1994-2004). The most polluted rivers in the Slovak Republic belong to III. quality class (less than 0.5 µg.l⁻¹) according national classification. Qualitative goal for Hg is 0.2 µg.l⁻¹ in surface water according to the Government Regulation.

In tables are some results of surface monitoring of mercury (years 2002 - 2004)

Stations River-Locality	Identification code – rivers kilometer	Coordinates Latitude: Longitude:	River	River basin
Dunaj - Bratislava	D002051D – 1869.0 km	-1281331.38 -574066.88	Dunaj	Dunaj
Morava - Devínska Nová Ves	M128020D – 1.5 km	-1275003.25 -582991.94	Morava	Dunaj
Váh - Komárno	V787501D – 1.5 km	-1330511.25 -500803.47	Váh	Váh
Nitra - Komoča	N775500D – 6.5 km	-1307092.00 -501562.00	Nitra	Váh
Hron - Kamenica	R365010D – 1.7 km	-1326925.63 -456817.13	Hron	Hron
Ipeľ - Salka	I283000D – 12.0 km	-1184088.25 -213415.97	Ipeľ	Hron
Laborec - Krásny Brod	B02700D – 108.3 km	-1184088.25 -213415.97	Laborec	Bodrog
Bodrog - Streda nad Bodrogom	B615000D – 6.0 km	-1277277.00 -227362.41	Bodrog	Bodrog

Hornád - Ždaňa	H371000D – 17.2 km	-1251743.50 -257022.28	Hornád	Hornád
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		Water - concentration of Hg [$\mu\text{g.l}^{-1}$]			Sediment - concentration of Hg [mg.kg^{-1}]	
		2002	2003	2004	2002	2003
Dunaj - Bratislava	Annual average	0.18	0.1 M	0.1 M	0.061	0.068
	Minimum-Maximum	0.1-1.1	-	-	0.02-0.099	0.034-0.088
	Number of measurements	12	12	12	25	3
Morava - Devínska Nová Ves	Annual average	0.116	0.116	0.183	-	-
	Minimum-Maximum	0.1-0.2	0.1-0.2	0.1-0.2	-	-
	Number of measurements	6	6	6	-	-
Váh - Komárno	Annual average	0.1 M	0.1025	0.1 M	0.17	0.11
Nitra - Komoča	Minimum-Maximum	-	0.1-0.13	-	0.008-0.24	0.143-0.067
	Number of measurements	12	12	12	12	3
	Annual average	0.1 M	0.117	0.244	-	-
	Minimum-Maximum	-	0.1-0.2	0.07-0.6	-	-
	Number of measurements	6	6	12	-	-
Hron - Kamenica	Annual average	0.1M	0.1 M	0.1 M	0.14	0.164
	Minimum-Maximum	-	-	-	0.013-0.24	0.099-0.229
	Number of measurements	4	4	4	12	2
Ipeľ - Salka	Annual average	0.1 M	0.1 M	0.1 M	0.026	0.05
	Minimum-Maximum	-	-	-	0.011-0.077	0.0076-0.0126
	Number of measurements	4	5	4	12	3
Laborec - Krásny Brod	Annual average	-	0.1 M	-	-	-
	Minimum-Maximum	-	-	-	-	-
	Number of measurements	-	5	-	-	-
Bodrog - Streda nad Bodrogom	Annual average	0.57	0.094	2.09	-	-
	Minimum-Maximum	0.05-0.09	0.05-0.15	0.66-6	-	-
	Number of measurements	6	10	9	-	-
Hornád - Ždaňa	Annual average	0.1 M	0.17	1.89	-	-
	Minimum-Maximum	-	0.1-0.5	1.32-2.79	-	-
	Number of measurements	6	6	6	-	-

Annex 3:

Groundwater monitoring of mercury in Slovakia

Groundwater monitoring of mercury in Slovakia is operated by SHMI according to approved Programme of water status for the relevant year. Mercury is monitored in frame of surveillance and operational monitoring.

The groundwater quality in the Slovak Republic has been systematically monitored since 1982. At present 339 objects (boreholes of basic network, exploited and non-exploited boreholes, exploited and non-exploited springs) are monitored in the area of the Slovak republic, except Žitný ostrov. In the Žitný ostrov – the most important resource of drinking water in the Slovak republic, monitoring network consists of 34 multilevel piezometric boreholes of SHMI basic network.

Mercury belongs to basic group of determinants, which are monitored in every object of SHMI monitoring network once a year in the Slovakia and 2 and 4 times a year in the area of Žitný ostrov. The results are assessed in accordance with Regulation 151/2004 Z. z. on Drinking Water Requirements and Drinking Water Quality Control, it defines allowable concentrations of chemical substances in groundwater. Mercury limit value is 1 µg/l.

In 2004 mercury over-limit concentration was recorded only in 1 monitoring object – 276190 Lehôtka pod Brehmi (1.8 µg/l).

Annex 4:

Monitoring of mercury in atmosphere in the Slovak Republic

The chemicals management in the environment (legislation, policies, emission reduction strategies, emission mitigation measures, consultancy for industries, risks to human health, adverse impacts, relevant research, etc.) do not comes under responsibilities of the Slovak Hydrometeorological Institute (SHMÚ). Therefore partnerships on the mercury programme (UNEP GC decision 23/9 IV) are generally beyond the scope of SHMÚ activities.

Considering mercury in ambient air only two particular topics fall among the regular SHMÚ tasks:

- National inventory and reporting of mercury emissions (routine activity resulting from the national air pollution legislation and international conventions).
- Measurement of mercury in ambient air and deposition in the framework of national air pollution monitoring system (routine activity resulting from the 4th daughter directive relating to heavy metals and polycyclic aromatic hydrocarbons in ambient air of European Union; at present the monitoring Hg in Slovakia is in preparing phase only).

Table 1 presents the official Slovak anthropogenic emissions of mercury in air for 1990, 2000 and 2004. A very significant decrease of anthropogenic emission was registered during the last 15 years (from 12 to 3 t.yr⁻¹; Europe from 429 t.yr⁻¹ in 1990 to 190 t.yr⁻¹ in 2004). The current Slovak inventories do not resolve different physical and/or chemical forms of mercury. The Slovak natural emission including re-emission was not estimated yet. The largest Slovak industrial sources of mercury emission are: ore agglomeration (ŽB Nižná Slaná; economically ineffective production that should be closed in the near future); chlor-alkali plant (NCHZ Nováky; innovation of production is planed – membrane technology) and waste incineration (because of EU measures concerning the application of mercury a decrease of Hg emission from these sources can be expected). Based on these assumptions a decrease of the Slovak national mercury emission into ambient air below 1 tone per year is real.

Table 1. Anthropogenic Hg emissions in Slovakia in 1990, 2000 and 2004 [tonnes]

Sector / Sub-sector	1990	2000	2004
Combustion on energy	0.424	0.036	0.028
Public power	0.324	0.033	0.027
District heating plants	0.101	0.003	0.001
Non-industrial combustion plants	0.173	0.036	0.027
Commercial and institutional plants	0.096	0.005	0.003
Residential plants	0.077	0.029	0.022
Agriculture		0.002	0.002
Combustion in manufacturing industry	10.067	3.684	1.961
Comb. in boilers, gas turb. and stat. engines	0.360	0.160	0.001
Iron production	0.306	0.272	0.324

Glass production	0.012	0.012	0.013
Ore agglomeration	3.506	3.068	1.573
Copper production	4.310	0.070	0.012
Cement production	1.431	0.100	0.037
Aluminium oxide production	0.139		
Magnesite production	0.002	0.000	0.000
Production processes	1.074	0.041	0.462
Steel production	0.014	0.011	0.014
Aluminium production			
Ferro alloys production			
Pig iron production			
Galvanizing			
Alloys (Cu-Zn) production	0.843		
Inorganic chemical industry	0.217	0.030	0.448
Other traffic			
Waste treatment and disposal	0.731	0.566	0.548
Incineration of municipal waste	0.257	0.339	0.335
Incineration of industrial waste	0.471	0.198	0.156
Incineration of hospital waste		0.026	0.053
Cremation	0.003	0.004	0.004
Total	12.470	4.364	3.026

Mercury in ambient air was monitored in Slovakia only in the framework of programme Phare EU/93/AIR/22 “Local Studies of air quality in Slovakia” in 1996-1997 in the 20 sampling sites. The annual average TGM (total gaseous mercury) concentrations at most of localities were in the interval 2.7 – 3.9 ng.m⁻³. The lowest concentrations were indicated at the EMEP background station Starina located in the North-eastern part of Slovakia. The highest values were observed in Kropachy (non-ferrous smelters close to the former production of mercury from local ore). Slightly elevated levels were registered in region around Košice (steel industry) and in Prievidza (power plants, chlor-alkali plant). Average TPM (total particulate mercury) concentrations were found about 10 % of TGM levels.

In the framework of UN ECE EMEP programme the Meteorological Synthesizing Centre – East (MSC-E) is responsible for the model assessment of concentrations, depositions and transboundary fluxes of mercury for the EMEP domain, which includes also Slovakia. The results are available at www.emep.int.

Annex 5:

Other informations

In public health legislation, the topic of mercury and other heavy metals is partly covered by Regulation of the government No 355/2006 on health protection of workers from chemical factors exposition risks at work.

From position of Public Health Authority of Slovak Republic, primary field of concern is health effect of mercury element and mercury compounds. Therefore, objectives of partnership at projects and studies in future can be directed to health impact topics of amalgam used by stomatology after chemical release from tooth fills and dental waste, effects of carcinogenic forms of mercury on genesis of cancer diseases and subsequent health prevention from unkindly effects.

Problematic of mercury in air is solved in Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004, relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air. This directive shall be transposed to the Slovak legislation till 15 February 2007, at least. Amendment of Slovak act on air and new decree on air quality are under preparation. These two legislative tools will transpose Directive 2004/107. Directive will be implemented by the date of entering into force new act and decree. It is supposed in first half of 2007.

Mercury and compounds is the pollutant No 21 in Annex II of the Regulation (EC) No 166/2006 of the European Parliament and of the Council concerning the establishment of a European Pollutant Release and Transfer Register.

The target of this Regulation is to contribute to the prevention and reduction of pollution of the environment based on the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

Slovakia as the member of the EU try to ensure data collection available for the first reporting year 2007 to assist EU to make the European PRTR in accordance with scheduled timeframe.

The Ministry of Economy of the Slovak Republic participate in the adoption of „Proposal for a Directive of the European Parliament and of the Council relating to restrictions on the marketing of certain measuring devices containing mercury (amendment of Council Directive 76/769/EEC)“. The proposal of the Directive is part of global community strategy in the use of mercury. The mercury is global problem and it is necessary to take into account the manufacture, use and the mercury waste management.