

MINAMATA

INITIAL ASSESSMENT REPORT
REPUBLIC OF MACEDONIA

MINISTRY OF ENVIRONMENT AND PHYSICAL PLANNING

POPs Unit

March 2018

MINAMATA INITIAL ASSESSMENT REPORT
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Ministry of Environment and Physical Planning of Republic of Macedonia

March, 2018

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GLOSSARY

CDDA - Common Database on Designated Areas

COP - Conference of the Parties

EBRD - European Bank for reconstruction and development

EIA - Environmental Impact Assesment

EU - European Union

GDP - gross domestic product

GEF – Global Environment Facility

IPH - Institute for Public Health

IPPC - Integrated Pollution Prevention Control

IUCN - International Union for Conservation of Nature

LRTAP - Long-range Transboundary Air Pollution

MAFWE - Ministry of Agriculture, Forestry and Water Economy

MEIC - Macedonian Environmental Information Center

MHK Zletovo - Metalurgical Chemical Industry Zletovo

MoEPP - Ministry of Environment and physical Planning

NATO – North Atlantic Treaty Organization

NSC – National Steering Committee

OHIS – Organic Chemical Industry Skopje

PIC - Prior Informed Consent

POPs - Persistent Organic Pollutants

PRTR - Pollutant Release and Transfer Registers

PVC - Polyvinyl Chloride

REACH – Registration, Evaluation, Authorisation of Chemicals

SAICM - Strategic Approach to International Chemical Management

SEA - Strategic Environment Assessment

UN - United Nations

UN / ECE - United Nations Economic Commission for Europe

UNDP - United Nations Development Programme

UNEP - United Nations Environment Programme

UNIDO – Uniteds Nations Industrial Development Organization,

VCM - Vinyl chloride monomer

WB -– World Bank

WEEE - Waste Electric and Electronic Equipment

WHO - World Health Organization

ZELS – Local Self Government Community

1. EXECUTIVE SUMMARY

The Minamata Convention on mercury is a global treaty with main objective to protect human health and the environment from the adverse effects of anthropogenic emissions and releases of mercury and mercury compounds.. It was agreed at the fifth session of the Intergovernmental Negotiating Committee on mercury in Geneva, Switzerland on 19 January 2013 and adopted later that year on 10 October 2013 at a Diplomatic Conference held in Kumamoto, Japan. The objective of the Minamata Convention is to protect the human health and the environment. It contains provisions that relate to the entire life cycle of mercury, including controls and reductions across a range of products, processes and industries where mercury is used, released or emitted. The treaty also addresses the direct mining of mercury, its export and import, its safe storage and its disposal once as waste.

The Republic of Macedonia as a part of international global community dedicated to sustainable environmental management has been aware that the first step in proper management of mercury is to understand where are the mercury supply sources in the country, in which manufacturing processes the mercury compounds are used, main emissions in air, water, waste and soil in form of mercury inventory, to perform the policy, regulatory and institutional framework assessment in order to be focus on main financial resources and mechanism to deal with health aspects, capacity building and public awareness for all stakeholders involved.

The Minamata Initial Assessment (MIA) Report for the Republic of Macedonia was prepared in the frame of the Project funded by GEF in the period February 2016 – March 2018 and it provides the review of Mercury Inventory results (Level 2) based on the UN Environment Toolkit for identification and quantification of mercury releases", Inventory Level 2 (version 1.3, April 2015), initial findings from the policy, regulatory and institutional assessments and provide general recommendations for further prioritized steps toward phasing out mercury and sustainable mercury management in the country. This MIA Report gives an opportunity for a country for the first time to develop a mercury Inventory, to communicate it with all stakeholders in a clear manner and to discuss with them the measures required for the Minamata Convention objectives implementation. The detailed Mercury Inventory Report was prepared as a stand alone document within the Project.

Results of the mercury inventory

The reference base year for the mercury inventory is 2013 and data for this year was used in the inventory when available. The initial mercury inventory identifies sources of mercury releases in the country and estimates or quantifies the releases. In order to have reliable releases estimations as well as more specific and precise inventory, sampling and analyses of different matrices (coal, fly ash, reject material and tailings, marlstone, limestone, cement and alkaline batteries) were performed and specific input/output factors were developed for those subcate-

gories that may substantially influence the inventory results (coal combustion in power plants, zinc and lead extraction and initial processing, copper extraction and initial processing, cement production and batteries with mercury).

The results of the Inventory on the mercury releases show that the total mercury release in the country for the year of 2013 is 3.282,77 kg/y. The waste deposition/landfilling and waste water treatment sector is the responsible for the highest amount of mercury releases (contribution of 45% of the total mercury releases) or 1,476.8 kg Hg/y. The second most significant source of mercury release in the country is the waste incineration and burning sector with total release of 382,90 kg Hg/y (12% contribution in total mercury releases), following by extraction and use of fuels/energy sources sector and production of recycled metals with release of 343,83 kg Hg/y (10%) and 299,91kg Hg/y (9%), respectively.

The sub-category with the highest amount of mercury released in the society for 2013 is informal dumping of general waste with 3,186.78 kg, followed by controlled landfills deposition with 777.15 kg and waste water system treatment with 593.24 kg.

Results from the mercury inventory (Level 2) provided information on four different output pathways for mercury: 1) emissions to air, 2) direct releases to water, 3) direct releases to land, and 4) others. The 'other' category includes output pathways for by-products, general waste and sector-specific waste treatment. The leading output of the released mercury by all source categories/subcategories is in the **air**, with total amount of the 1,225.34 kg Hg/y (37,3%), following by **land** and **water** with 977.79 kg Hg/y (29.8%) and 488.92 kg Hg/y (14,9%), respectively.

Emissions to air: The individual mercury release category contributing the highest mercury releases to the atmosphere is waste incineration with amount of 382.9 kg Hg/y, followed by sectors waste deposition/landfilling and waste water treatment with 326.45 kg Hg/y and extraction and use of fuels/energy sources with 218.06 kg Hg/y. The sub-category informal waste burning shares the highest release of mercury in the air with 375.4 kg Hg/y, followed by informal dumping of general waste with 318.68 kg Hg/y and coal combustion in power plants with 167.1 kg Hg/y.

Emissions to land: The dominant source category that made the largest contribution of the mercury releases in the land is the waste deposition/landfilling and waste water treatment with 3,319.74 kg/y.Emissions to water: The highest source categories of mercury releases to water are: waste deposition/landfilling and waste water treatment with 849.71 kg Hg/y, followed by other intentional product/process use with 121.65 kg Hg/y and consumer products with intentional use of mercury with 47.47 kg Hg/y.

Emissions to "other" categories: The individual mercury release category contributing the highest mercury releases to the general waste output is consumer products with amount of 193.41 kg Hg/y, followed by production of recycled metals with 98.97 kg Hg/y, then other intentional products and waste deposition/landfilling and waste water treatment with 49.4 kg Hg/y

and 36.61 kg Hg/y, respectively. The dominant source category that made the largest contribution of the mercury releases in the sector specific waste treatment/disposal output is the extraction and use of fuels/energy sources with 125.76 kg Hg/y, followed by other intentional product/process use with 44.16 kg Hg/y, then waste deposition/landfilling and waste water treatment with 24.66 kg Hg/y and primary (virgin) metal production with 5.74 kg Hg/y. There are two categories of the mercury releases in the by-products and impurities output, namely: other product/process use and production of other minerals with 49.4 kg Hg/y and 36.61 kg Hg/y, respectively.

The following non-waste source sub-categories made the highest inputs of new mercury to society: production of recycled ferrous metals, followed by coal combustion in power plants, thermometers with mercury, dental mercury amalgam fillings and the cement production.

The following waste source sub-categories were found to be the **major flows of mercury with waste and waste water**: informal dumping of general waste, controlled landfills/deposits, waste water system/treatment, and informal waste burning.

Some of the data gaps identified in MAI Report are: a) analysis and estimations in the coal combustion in power plants sub-category does not correspond with the Toolkit's output distribution factors, b) there is no output distribution factors given for Primary metal production, extraction and initial processing, c) analysis of the mercury presence in the marlstone performed for the needs of this Inventory Report differs from the ones performed earlier by the cement plant, d) there is a lack of background information for identification of the status for thermometers, e) there is lack of precise data on the quantities of waste water collected and treated and f) there is no data on the mercury presence in the input materials (fuels, raw materials, products, etc.) and the output streams (waste, emissions, etc.).

This initial mercury inventory should be considered as a first step as further assessment is needed to confirm the potential priority problems that should be .addressed through release reduction initiatives.

Policy, regulatory and Institutional Framework Assessment

Taking into consideration that the many environmental problems have a transboundary nature and global impact, Macedonia takes an active part in the ratification and implementation of multilateral environmental agreements (e.g., Rotterdam Convention on the prior information consent (PIC) procedures ratified in 2011, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes ratified in 1989, Stockholm Convention on Persistent Organic Pollutants ratified in 2004, Convention on Long-range Transboundary Air Pollution ratified in 1979, LRTAP Convention Protocol on Heavy Metals (ratified in 1998) and Protocol on Pollutant Release and Transfer Registers – PRTR as part of the Aarhus Convention in 2010).

Republic of Macedonia signed the Minamata Convention on 25 July 2014, but it has not been yet ratified.

The assessment performed during development of MIA Report shows gaps that may impede efficient implementation of Minamata Convention objectives on national scale.

The regulatory gap analysis on mercury management in the Republic of Macedonia has been performed and it is presented in Annex 1 of the MIA Report containing the Minamata Convention objectives, identification if these objectives exist in national legislation and statements if these requirements have been transposed.into the national legislation.

The main conclusions are:

- The legal framework for mercury management in the Republic of Macedonia is incomplete and included in several framework laws and secondary legislation;
- Special national legislation incorporating the Minamata Convention objectives and EU Regulation 1102/2008 on the banning of mercury and certain mercury compounds and mixtures and the safe storage of mercury does not exist;

  Some of the Minamata Convention objectives have been transposed in national legislation (e.g. certain definitions are incorporated in the definitions of the Law on Environment, in the chapter on sources for mercury supply and trade only the provision related to the export of mercury is completely covered by the Law on Chemicals, production processes using mercury or mercury compounds are partly covered by several acts of national legislation including the Law on Environment, Law on Ambient Air Quality, Law on Waters and the by-laws, and the Law on Ratification of the Protocol to The Convention on Long-Range Transboundary Air Pollution for Heavy Metals, the temporary storage of mercury, which is not waste mercury, is completely regulated by the new Law on Chemicals, promotion of health aspects through the development and implementation of strategies and programs for identifying the population at risk, especially the vulnerable categories is regulated in the Law on Health Care and the Law on Safety and Health at Work. The provisions of the Convention related to the exchange of information, as well as information, awareness and education of the public are generally included in the Law on Environment and the Law on Health Protection (epidemiological information on the effects on the health of people due to exposure to mercury and mercury compounds);
- Provisions related to mercury-added products are partially incorporated in several national framework laws and by-laws;
- The control and reduction of emissions of mercury and mercury compounds into the atmosphere through measures for control of emission from point sources is to a certain extent transposed in Law on Environment and Law on air quality, while discharges to other environmental media (soil and water) is partially covered by the Law on Environment and the Law on waters;
- Mercury-contaminated sites are not included in existing national legislation;
- The provisions of the Convention related to the exchange of information, as well as information, awareness and education of the public are generally included in the Law on En-

vironment and the Law on Health Protection;

- The obligation to develop mercury phasing out implementation plan does not exist in national legislation.

There is a need for strengthening the legal framework to overcome these gaps with detailed analysis and incorporation of mercury related objectives into national legislation.

In order to facilitate the mainstreaming of mercury priorities in national strategic planning and their integration of sound management of chemicals in the national, regional or sectorial development, a list of policy documents related to mercury management was developed. Some of them are: National Action Plan for Ratification and Implementation of the Protocol on Heavy Metals, Protocol on POPs and Gothenburg Protocol to Convention on Long-range Transboundary Air Pollution (2010), National Plan for Waste Management (2009 – 2015), National Plan for ambient air protection in the Republic of Macedonia for period 2013 – 2018. All of them as well as future ones could be used for mainstreaming of mercury priorities and integration of sound management of chemicals in the national, regional or sectorial development in the phase of development of Mercury implementation plan and its implementation. The opportunity of updating the existing national plan for SAICM implementation will be used to mainstream the mercury issue in the document and in the general national chemical management including scheme for synergy of Basel, Rotterdam and Stockholm Conventions.

There is a long list with relevant stakeholders need to work and communicate together towards efficient mercury phasing out and sustainable mercury management. The main players are: a) National institutions (Ministry of Environment and Physical Planning, Ministry of Health, Ministry of Agriculture, Forestry and Water Economy, Customs Administration, Ministry of Finance, state inspectorates, etc.), b) Industry (all related sector categories where there are mercury compounds use, mercury release and emissions, etc.) including workers directly exposed to the mercury, c) Small and medium production and service facilities (hazardous waste collecting contractors, maintenance of equipment/measuring and control devices, dental clinics, pharmacy stores, etc., d) local and regional authorities, e) Professional associations, international financial organization and f) Consumers and general population. The MIA Report identifies the role and responsibility of each stakeholder, what are the key issues to be discussed with them, who are the decision-makers, what is the level of engagement (inform, involve and empower) and approach based on stakeholder's influence and importance.

It is very important that all stakeholders actively participated in the process of MIA development and raised several problems linked with mercury management and elimination. They defined general steps and recommendations to be further developed and considered in future national actions for mercury management:

- It is essential the Government of Macedonia to mobilize and allocate funds for further improvements towards reduction and elimination of mercury emissions and releases;
- The Government needs to make efforts to establish an efficient sustainable mercury in-

ventory system and to develop a detailed inventory after the Minamata Convention ratification;

- To improve the capacities of monitoring and reporting of mercury in different media;
- There is a need for interministerial coordination to control the import of mercury products through strengthening the institutional framework;
- To build the capacities and strengthen the institutions for sound management of waste which is the major source category according to the results of the National Inventory of Mercury Releases;
- To develop and launch the Public awareness campaigns accompanied with Mercury Risk assessment Study, Communication Strategy for phasing out of mercury and Mercury Alternatives products and processes Study;
- The future implementation plan should contain list of national priorities for mercury management and elimination that will be basis for preparation of action plan for mercury management and phase-out;
- To strengthen the legal framework with main aim to change/amend the national legislation related to the detailed regulatory gap analysis towards Minamata Convention objectives;
- To support the industry and small scale facilities (SMEs) to incorporate BAT/BEP related to mercury emissions and good practice of mercury containing products management.

The MIA Report will be used as a comprehensive information to be presented to the Macedonian Government and Parliament in the course of the ratification process. After ratification of the Minamata Convention (tentative period November – December 2018) the Ministry of Environment and Physical Planning will continue to work on development of Implementation plan in accordance to the Article 20 of the Minamata Convention. It is planned to approach the Specific International Programme with the proposal for development of the above mentioned Implementation Plan. The Plan (2020-2025) will give brief situation report on mercury management in the country, national priorities for mercury management and elimination and national action for mercury management and elimination.

2. NATIONAL BACKGROUND INFORMATION

2.1 General data

Republic of Macedonia is a country located in the central Balkan Peninsula in Southeast Europe with a total area of 25,713 km2 and 2,022,547 inhabitants, according to the 2002 Census. It has 748km of borders, shared with Serbia, Kosovo, Bulgaria, Greece and Albania.



The country's capital is Skopje with 506,926 inhabitants. The geographical position of the country is very favorable and it is significant cross roads linking several countries in the Balkans and this part of Europe. Important traffic and railway corridors are corridor 8 and 10, as well as the international highway E - 75 road M5 and international railway. The first section of Eastern railway corridor 8 (to Bulgarian border) is under construction and together with planned Western section (to Albanian border) it will ensure better freight exchange and passengers movement in the region and environmentally sound transportation modes.

The country is 80% mountainous, rising to its highest point at Mountain Korab (peak 2,764 meters) with the lowest elevation (44m) on the Vardar River at the border with Greece. Three climatic types overlap in the country: Mediterranean, moderately continental and mountainous, producing hot, dry summers and cold, snowy winters.

The Republic of Macedonia is a landlocked country that is geographically defined by a central valley formed by the Vardar River and framed along its borders by mountain ranges. The Republic's terrain is mostly rugged, located between the Shara and Rhodope mountains, with the valley of Vardar between them. Three large lakes — Lake Ohrid, Lake Prespa and Dojran Lake — lie on the southern borders of the Republic, bisected by the frontiers with Albania and Greece. Lake Ohrid is considered to be one of the oldest lakes and biotopes in the world.

The natural conditions in the Republic of Macedonia (geology, relief, climate, hydrography, soil, flora, fauna) make it one of the rare countries in Europe with wealth of natural values. the moment, the network of Protected Areas (PA) within Republic of Macedonia covers total 86

areas (MoEPP, CDDA 2014) or 230.083 ha (8,9% of the territory of the RM). According to IUCN, the protection category of the protected areas is following: a) 2 Strict Nature Reserve areas with 7.787 ha or 0.3% of the country territory, b) 3 National Parks - Mavrovo, Galichica and Pelister with area of 114.870 ha or 4.48% of the territory, c) 67 Monuments Of Nature with total area of 78.967,5 ha or 3.0% of the whole country territory, d) 12 Nature Parks with area of 3.045 ha and few other protected areas – landscapes and multiproposes areas. With more than 18,000 taxa of flora, fauna and fungi – 900 endemites, Macedonia has very rich and highly valued biodiversity.

The agricultural land, which includes the cultivable land and the pastures, takes about 56.2% of the total area. The forests spread on around 43.8% of the total area of the country.

Republic of Macedonia is considered rich in water resources and it has recorded and mapped 4,414 springs in total, with overall annual capacity reaching 6.63 billion m3 water. From hydrological point of view, the country belongs to three water basins, namely: Adriatic Sea (15% of the territory) with the main entry watercourse being the river Crn Drim; Aegean Sea (85% of the territory) with the rivers Vardar and Strumica as the major watercourses; Black Sea, the basin of which has insignificant territory.

Vardar is the largest river with around 80% of the total water outrun from Macedonia with overall length of 388km (301 km in the country).

In 2006 the process of decentralization started with delegation and transferred of plenty of rights and responsibilities to the Local self-Governments and currently there are 80 municipalities and the City of Skopje, which is a district unit of local self-government that consists of 10 municipalities. There are 43 urban municipalities and 37 rural municipalities. In total there are 1767 settlements and 34 cities in the Republic of Macedonia. The municipalities in Macedonia are presented on Figure 2. For better economic development and statistical purposes, the Republic of Macedonia is divided into eight statistical planning regions (shown on Figure 1) and each of the planning regions has Development Center for development of regional and international projects aiming to support the cooperation and local sustainable development.



Figure 1 Statistical planning regions in Macedonia



Figure 2: Municipalities in the Republic of Macedonia

The main competences of the municipalities are in the following areas: a) urban planning, b) environmental protection, c) communal activities, d) education – primary and secondary schools, social protection and health care, culture, sport and others.

2.2 Political facts and socio-economic situation

Republic of Macedonia is a parliamentary democracy with an executive government composed of a coalition of parties and an independent judicial branch with a constitutional court. The Assembly is made up of 120 seats and the members are elected every four years. The role of the President of the Republic is mostly ceremonial, with the real power resting in the hands of the President of the Government. The President is elected every five years, on the second run of the presidential elections held on 5 April 2009, Mr. Gjorge Ivanov was elected as new Macedonian president and in 2014 he was reelected.

The country's main political divergence is between the largely ethnically based political parties representing the country's ethnic Macedonian majority and Albanian minority.

As of 31 May 2017, the Prime Minister of Macedonia is Mr. Zoran Zaev, who also heads the SDSM party, and the current President of the Parliament is Mr. Talat Xhaferi.

The strategic orientation of the Government of Republic of Macedonia is its full integration into the EU and membership in NATO. Republic of Macedonia applied for EU membership in March 2004. The Commission issued a favourable opinion in November 2005, and the Council decided in December 2005 to grant the country candidate status. In October 2009, the Commission recommended that accession negotiations be opened.

The statistical data on the macroeconomic indicators shows that for 2016 the gross domestic product (GDP) is 10.4 billion US$ EUR and the GDP per capita is 5.2 US$. The most important economic sectors in Macedonia, according to the statistical data, are: mineral extraction and metal processing industries, telecommunications, production of automotive parts and electronic products, trade, pharmaceuticals, chemical industry, agriculture and food production and beverage production. The significant exports products are: automotive components (catalysts, capacitors and electronic boards), hoses, buses, iron, steel, pharmaceuticals, textile, lead, zinc and copper concentrate, ferro nickel, tobacco, lamb and wine. The agricultural sector employs approx. 18 % of available labor force, in the industry sector it is approx. 30% of the labor force engaged and the rest is dedicated to trade and services. The unemployment rate in 2016 was approximately 27%.

2.3 Environmental profile related to mercury

The Republic of Macedonia has started the transposition of the EU legislation in the national legislation since 2005. Until today all legislation related to the environment (IPPC, EIA, SEA, waste menagement, water and waste water management, air quality, chemicals, nature protection, etc.) is fully transposedin the national legislation but it needs more efforts for its implementation.Taking into consideration that the many environmental problems have a transboundary nature and global impact, Macedonia takes an active part in the ratification and implementation of multilateral environmental agreements at global level (multilateral agreements negotiated under the UN), at regional level (e.g. in the context of the UN / ECE or the European Council) and on sub-regional level (e.g. for the transboundary waters). Some of mercury and chemicals related multilateral agreements ratified by the Government of Republic of Macedonia are: Rotterdam Convention on the prior information consent (PIC) procedures for certain hazardous chemical and pesticides in International trade (ratified in 2011), Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their disposal (ratified 1989), Stockholm Convention on Persistent Organic Pollutants ratified in 2004, Convention on Long-range Transboundary Air Pollution (LRTAP Convention) ratified in 1979and LRTAP Convention Protocol on Heavy Metals (ratified in 1998.

Republic of Macedonia also signed the Protocol on Pollutant Release and Transfer Registers – PRTR as part of the Aarhus Convention on Access to Information, public participation in decision – making and access to justice in environmental matters at an extraordinary meeting of the parties within the fifth Pan – European Ministerial Conference 'Environment for Europe' held on 21-st May 2003. Republic of Macedonia ratified the Protocol in 2010.

Macedonia established and maintain publicly accessible database as a national Pollutant Release and Transfer Register through the PRTR web portal (http://ripz.moepp.gov.mk/).

The Pollutant Release and Transfer Register provides a summary overview of national data on all emissions and transfers of polluting substances (heavy metals – mercury and its compound) by the operators that have obligations for submitting reports each year with data for the previous year.

2.4 Contaminated sites

There are already identified 16 major industrial contaminated sites - "hot spots" in Macedonia due to disposed hazardous waste and chemicals from industrial processes (historical pollution). Based on their risk the "hot spots" were ranked in 3 categories: high environmental risk, medium environmental risk and low environmental risk. Three environmental hot spots were ranked with a high environmental risk: OHIS A.D. Clorine alkali plant, Lindane plant,HCH dump site, Bucim (copper mine - flotation tailings), 3. MHK Zletovo (zinc and lead smelter –

mine tailings), seven environmental hot spots with medium environmental risk and six low-risk hot spots for environment. From the total quantity of disposed waste (267,626,810 m3) on the contaminated sites, on the area of 2,590,325 m2, to the highest risk contaminated site belongs 197,367,200m3 hazardous waste.

According to Feasibility Study for OHIS (Development of remediation plans with financial requirements for elimination of industrial hotspots), main pollutants on this contaminated site are HCH isomers, remaining from former Lindane production and Mercury from former chlor electrolyses plant. Both production lines are closed since the late '80s. While the HCH isomers had been controlled disposed on two dumpsites and covered, causes the mercury soil contamination due to spilling and droplets from former production, service and maintenance. Regarding these processes an amount of 30.000 tons of disposed HCH isomers and a potential of 336 tons of mercury, without emission into air. The major amount of mercury was discharged through the process water system into the river Vardar. Ongoing pollution due to dismantling of the electrolysis plant has been identified.

The FS proposed several options for remediation of contaminated site, but no actions have been taken so far.

According to Geochemical Atlas of Skopje (2017) and the map of spatial distribution of mercury, it can be seen that a higher content of this element were found in the soil of the southern (Vodno, Gorno Nerezi, Sopiste and Usje) and eastern parts (Trubarevo, Indzikovo and Hipodrom) of Skopje. Some areas in the north parts of Skopje are also rich in Hg (Suto Orizari, Orizarski Rid, Konak) and the area around the iron and steel facilities. The content of mercury in soil is high, from the central part of Skopje and areas mentioned above, probably due to contamination from the urban activities and industry.

For a proper management of the contaminated sites in the Republic of Macedonia, there is a need for prioritisation of the contaminated site (regarding the provided financial resources for their solving and priorities of the government) after which they can be remediated.

In the frame of the UNIDO Project "Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for Alpha-HCH, Beta-HCH and Lindane Contaminated Sites at OHIS GF/MCD/", MOEPP as competent authority prepares the following documents: Methodology for identification of contaminated locations; Rulebook on types and levels of concentrations of hazardous substances in soil and groundwater and ecosystems; Rulebook on the contents and format for the management of contaminated sites reports. These prepared documents need to be adopted by the Government in the near future.These regulatuions together with Standard Operational Procedures for contaminated sites that are in the process of development, will support the process of prioritization of contaminated sites, fundraising for financial support for sustainable remediation.

2.5 Regulation of industry related to mercury usage and release

The industry activities and its impacts on environment and human heath has been regulated with issuing the environmental permits. In Macedonia there are two types of integrated environmental permits (type A – complex installations with high potential impact and B – smaller production facilities with low environmental risk).

There are approx. 140 “A-type installations” and 500 “B-type installations”. Operators of the installations are regularly inspected in order to check if the operator complies with the applicable legislation and with the conditions defined in the permits.

The most relevant industrial sectors in Macedonia related to mercury use and mercury release are: Primary metal production facilities (Extraction of lead, zinc, copper and primary ferrous production facilities), Production of other minerals and materials with mercury impurities (Production of cement), Sector for use of fuels/energy sources (Coal combustion in large power plants, Production of mineral oil and gas, Usage of other fossil fuels), Waste incineration (Incineration of medical waste), Waste deposition/landfilling and waste water treatment, Identified hot spots (Closed/abandoned chlorine-alkali production sites; Tailings/residue deposits from other non-ferrous metal extraction) and they are included in the mercury Inventory. All of installations that belong to these sectors are regulated with A-type permit and they need to introduce BAT technologies in order to minimize the emissions into air, water and soil, to minimize the waste generation and to use the natural resources and chemicals on sustainable manner.

Industrial waste waters from IPPC installations are discharged into the recipient after their purification in the industrial waste water treatment plants (mainly there are only primary pretreatment systems) or they are mixed with the urban waste waters coming to the urban waste water treatment plant.

For the urban waste waters there is a lack of urban waste water treatment plants across the country. There are only 16 waste water treatment plants in the country with capacity of 400,000 population equivalent and they covered approximately 20% of total population.

2.6 Waste management related to mercury

In the Republic of Macedonia waste management is implemented through landfilling of waste. There is only one sanitary landfill in Skopje (Drisla) and 47 non – compliant municipal landfills in other municipalities across the country.

According the National Waste Management Strategy (2008 - 2020), the regional approach to the municipal solid waste management was proposed and 8 Waste Management Centers with Regional Waste Management Bodies will be established.The Feasibility Studies and Regional Waste Management Plans were developed for six of them in the last 3 years with financial support of EU IPA funds.

Currently, there are 116 licensed and authorized companies for collection, transportation, storage and treatment of waste (plastic, metal, wood, motor oil, etc.). For storage and treatment of Waste Electrical & Electronic Equipment (WEEE) there are 4 authorized collective companies registered for this type of waste. They have signed an agreement with companies which produce electrical and electronic equipment. The collection of the WEEE is enabled by installation of equipment for collection of WEEE across the country and mostly the WEEE waste has been exported in other countries where the recycling centers for this type of waste operate.

Since several years ago, the system for proper separation, collection, transportation and inceneration of medical waste functioning very well with final inceneration at Drisla landfill.

The Annual Report on Quality of the Environment in Republic of Macedonia (2016), states that 90 business entities generate hazardous waste in the process of their production and operation that result with total reported generated hazardous waste in the amount of 23,417.43 tons or 4.325,2 m3. Around 75% of the total generated hazardous waste has been handover to other entities to be recycled or exported.

According to the Annual Report on Quality of Environment (2016), and according the submitted data from the health institutions in the Republic of Macedonia, the amount of the reported generated medical waste for 2016 is 712.24 tones. Medical waste includes several types of waste according the national List of wastes, from which the amalgam waste from dental care (waste code 18 01 10*) participates with quantity of 0,02 tones.

2.7 Air emissions and air quality related to mercury

The monitoring of air quality is carried out by the Ministry of Environment and Physical Planning (MoEPP) using the State Monitoring System of Air Quality, as well as the Institute for Public Health (IPH) with the Centers for Public Health (Skopje, Veles, Bitola, Tetovo, Kocani, Prilep, Stip, Ohrid, Kumanovo, Strumica). The State Monitoring System for Air Quality is consists of total 17 monitoring stations. Besides the monitoring of following parameters: SO, NOx, O3, etc., this monitoring system also measures the concentration of heavy metals such as: Pb, As, Cd, Hg and Ni (periodic measurements).

The monitoring of the concentration of heavy metals is not provided continuously in RM. Instead of this, there is a periodic measurement of the concentration of heavy metals in Skopje (from monitoring station in settlement Karpos within the period of 08.2015 till 03.2016) and Tetovo (from monitoring station in Tetovo within the period of 10.2015 till 02.2016). According the Annual Environment Report from 2016, total national emissions of mercury in 2015 are 0.2511 tones. Around 46% (largest share) come from electricity generation processes, 19% come from production processes, same share (19%) from incineration in the manufacturing industry, as well as waste with 13%.

Regarding the obligation for reporting according to ratified Protocol on heavy metals, Republic of Macedonia in 2011 prepared “Report for measurements and analysis of heavy metals from stationary sources”, according the Annex II of the Protocol. The total quantities of heavy metals from identified installations which emitted heavy metals in the air, according their technological process are: Hg (0,00021 Kt/year), Pb (0.0023 Kt/year), Cd (0,00019 Kt/year), Ni (0,0047 Kt/year) and As (0,001 Kt/year).

3. MERCURY INVENTORY AND IDENTIFICATION OF EMISSIONS AND RESOURCES

3.1 Introduction

The national inventory on mercury releases in the Republic of Macedonia was developed in December 2017. Reference base year is 2013 and data for this year have been used in the inventory when available. For some data types, data from this year have not been available. The year for all data given is noted with the data in question in the relevant sections of this report.

This mercury release inventory was prepared with the use of the "Toolkit for identification and quantification of mercury releases" made available by the Chemicals Branch of the United Nations Environment (UN Environment Chemicals). The Toolkit is intended to assist the country to build a knowledge base on mercury, based on which in further steps it can be used to set goals, priorities and monitor progress.

The national mercury inventory identifies sources of mercury releases in the country and estimates or quantifies the releases.

This inventory was developed on the Toolkits Inventory Level 2. The Toolkit methodology is based on mass balances for each mercury release source sub-category and consists of a four-step procedure:

- Identification of the main mercury source categories present in a country,
- Classify main source categories further into sub-categories and gather additional qualitative information to identify existing activities and sources of mercury releases,
- Gather detailed quantitative information on the identified sources, and quantify releases,
- Apply nation-wide to establish full inventory and report results.

Estimating releases of mercury from the various release sources should be based on actual data, specific to the specific product, industrial facility or activity under consideration. In a situation where no data for more reliable estimations are available, the Toolkit recommends to use the default factors, emphasizing the fact that the factors are based on a limited data base and are expert judgments based on summarized data only, i.e. no systematic quantitative approach involved in the development of the factors.

In order to have best estimates releases, i.e. more specific, precise and reliable inventory, sampling and analyses of different matrices (coal, fly ash, reject material and tailings, marlstone, limestone, cement and alkaline batteries) was performed and specific input/output factors were developed for those subcategories that may substantially influence the inventory

results (coal combustion in power plants, zinc and lead extraction and initial processing, copper extraction and initial processing, cement production and batteries with mercury).

3.2 Inventory results

Releases per source categories/subcategories

The identified mercury release source types present in the country are shown in Table 1.

Table 1 Mercury release source types

Cat. no.	Source category	Source presence (y/n/?)
5.1	**Main category - Extraction and use of fuels/energy sources**	
5.1.1	Coal combustion in large power plants	**y**
5.1.2	Other coal combustion	**y**
5.1.3	Extraction, refining and use of mineral oil	**y**
5.1.4	Extraction, refining and use of natural gas	**y**
5.1.5	Extraction and use of other fossil fuels	**y**
5.1.6	Biomass fired power and heat production	**y**
5.1.7	Geothermal power production	**y**
5.2	**Main category - Primary (virgin) metal production**	
5.2.1	Primary extraction and processing of mercury	**n**
5.2.2	Gold and silver extraction with the mercury-amalgamation process	**n**
5.2.3	Zinc extraction and initial processing	**y**
5.2.4	Copper extraction and initial processing	**y**
5.2.5	Lead extraction and initial processing	**y**
5.2.6	Gold extraction and initial processing by other processes than mercury amalgamation	**n**
5.2.7	Aluminium extraction and initial processing	**n**
5.2.8	Extraction and processing of other non-ferrous metals	**n**
5.2.9	Primary ferrous metal production	**y**
5.3	**Main category - Production of other minerals and materials with mercury impurities**	
5.3.1	Cement production	**y**
5.3.2	Pulp and paper production	**n**
5.3.3	Lime production and light weight aggregate kilns	**y**
5.3.4	Others minerals and materials	**n**
5.4	**Main category – Intentional use of mercury as an auxiliary material in industrial processes**	
5.4.1	Chlor-alkali production with mercury-technology	**n**
5.4.2	VCM (vinyl-chloride-monomer) production with mercury-dichloride (HgCl2) as catalyst	**n**
5.4.3	Acetaldehyde production with mercury-sulphate (HgSO4) as catalyst	**n**
5.4.4	Other production of chemicals and polymers with mercury compounds as catalysts	**n**

Cat. no.	Source category	Source presence (y/n/?)
5.5	**Main category - Consumer products with intentional use of mercury**	
5.5.1	Thermometers with mercury	**y**
5.5.2	Electrical and electronic switches, contacts and relays with mercury	**y**
5.5.3	Light sources with mercury	**y**
5.5.4	Batteries containing mercury	**y**
5.5.6	Biocides and pesticides	**n**
5.5.7	Paints	**n**
5.5.8	Pharmaceuticals for human and veterinary uses	**n**
5.5.8	Cosmetics and related products	**n**
5.6	**Main category - Other intentional products/process uses**	
5.6.1	Dental mercury-amalgam fillings	**y**
5.6.2	Manometers and gauges	**y**
5.6.3	Laboratory chemicals and equipment	**y**
5.6.4	Mercury metal use in religious rituals and folklore medicine	**n**
5.6.5	Miscellaneous product uses, mercury metal uses and other sources	**n**
5.7	**Main category - Production of recycled metals**	
5.7.1	Production of recycled mercury (“secondary production)	**n**
5.7.2	Production of recycled ferrous metals (iron and steel)	**y**
5.7.3	Production of other recycled metals	**n**
5.8	**Main category – Waste incineration**	
5.8.1	Incineration of municipal/general waste	**n**
5.8.2	Incineration of hazardous waste	**n**
5.8.3	Incineration of medical waste	**y**
5.8.4	Sewage sludge incineration	**n**
5.8.5	Informal waste burning	**y**
5.9	**Main category - Waste deposition/landfilling and waste water treatment**	
5.9.1	Controlled landfills/deposits	**y**
5.9.2	Diffuse deposition under some control	**n**
5.9.3	Informal local deposition of industrial production waste	**n**
5.9.4	Informal dumping of general waste	**y**
5.9.5	Waste water system/treatment	**y**
5.10	**Main category - Cremation and cemeteries**	
5.10.1	Crematoria	**n**
5.10.2	Cemeteries	**y**
	Main category - Potential hot spots	
	Closed/abandoned chlor-alkali production sites	**y**
	Other sites of former chemical production where mercury compounds are/were produced (pesticides, biocides, pigments etc.), or mercury or compounds were used as catalysts (VCM/PVC etc.)	**n**

Cat. no.	Source category	Source presence (y/n/?)
	Closed production sites for manufacturing of thermometers, switches, batteries and other products	n
	Closed pulp and paper manufacturing sites (with internal chlor-alkali production or former use of mercury-based slimicides)	n
	Tailings/residue deposits from mercury mining	n
	Tailings/residue deposits from artisanal and large scale gold mining	n
	Tailings/residue deposits from other non-ferrous metal extraction	y
	Sites of relevant accidents	n
	Dredging of sediments	n
	Sites of discarded district heating controls (and other fluid controls) using mercury pressure valves	n
	Sites of previous recycling of mercury ("secondary" mercury production)	n

The results of the inventory on the mercury releases show that the total mercury release in the country for the year of 2013 is 3.282,77 kg. The most significant category within the inventory is **"Waste deposition/landfilling and waste water treatment"**. This source contributed with 45% of the total mercury releases or 1,476.8 kg Hg/y. The second most significant source of mercury release in the country is the **"Waste incineration and burning"** with total release of 382,90 kg Hg/y (12%), following by **"Extraction and use of fuels/energy sources"** and **"Production of recycled metals"** with release of 343,83 kg Hg/y (10%) and 299,91kg Hg/y (9%), respectively (see Figure 3).

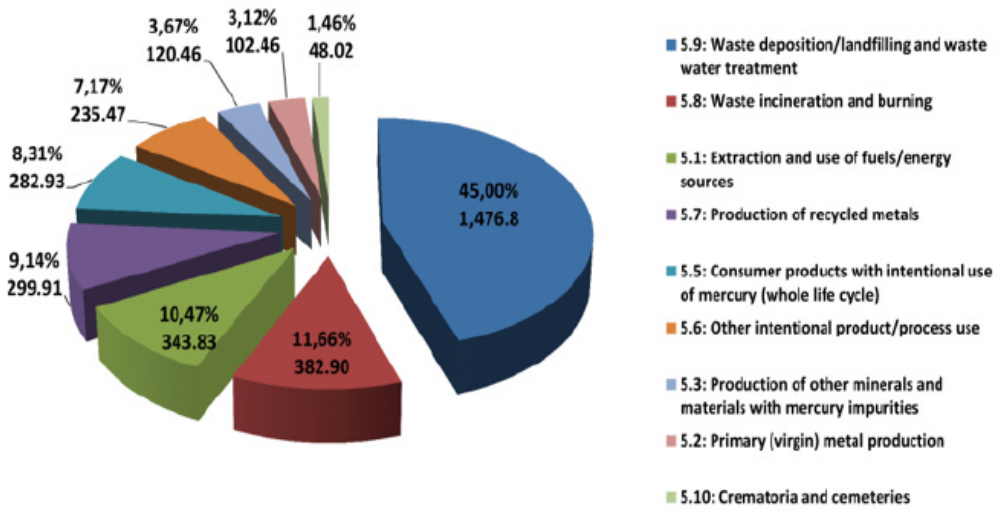


Figure 3 Mercury releases per category (per cent and kg)

An aggregated presentation of the results for the main groups of mercury release sources is presented in Table 2 below.

Table 2 Summary of mercury inventory results

Source category	Calculated Hg output, Kg/y							
	Air	Water	Land	By-products and impurities	General waste	Sector specific treatment /disposal	Total releases by source category	Percent of total releases *3*4
5.1: Extraction and use of fuels/energy sources	218.06	0.00	0.00	0.00	0.00	125.76	343.83	10%
5.2: Primary (virgin) metal production	56.75	1.05	38.93	0.00	0.00	5.74	102.46	3%
5.3: Production of other minerals and materials with mercury impurities*1	116.64	0.00	0.00	3.82	0.00	0.00	120.46	4%
5.4: Intentional use of mercury in industrial processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0%
5.5: Consumer products with intentional use of mercury (whole life cycle)	24.41	47.47	7.64	0.00	193.41	0.00	272.93	8%
5.6: Other intentional product/process use*2	1.16	121.65	10.92	8.19	49.40	44.16	235.47	7%
5.7: Production of recycled metals	98.97	0.00	101.97	0.00	98.97	0.00	299.91	9%
5.8: Waste incineration and burning	382.90	0.00	0.00	0.00	0.00	0.00	382.90	12%
5.9: Waste deposition/ landfilling and waste water treatment*3*4	326.45	849.71	3,319.74	0.00	36.61	24.66	4.557,16	45%
5.10: Crematoria and cemeteries	0.00	0.00	48.02	0.00	0.00	0.00	48.02	1%
SUM OF QUANTIFIED RELEASES*3*4	**1,225.34**	**488.92**	**977.79**	**12.01**	**378.39**	**200.32**	**3,282.77**	**100%**

Notes: *1 Includes production of cement, pulp and paper, lime and light weight aggregates. *2 Includes dental amalgam fillings, manometers and gauges, lab chemicals and equipment, Hg use in religious rituals and folklore medicine, and miscellaneous product uses. *3: The estimated quantities include mercury in products which has also been accounted for under each product category. To avoid double counting, the release to land from informal dumping of general waste has been subtracted automatically in the TOTALS. *4: The estimated input and release to water include mercury amounts which have also been accounted for under each source category. To avoid double counting, releases to water from waste water system/treatment have been subtracted automatically in the TOTALS.

The sub-category with the highest amount of mercury released in the society for 2013 is "**Informal dumping of general waste"** with 3,186.78 kg, followed by "**Controlled landfills"** dep-

osition with 777.15 kg and "**Waste water system treatment"** with 593.24 kg.

The summary of the mercury releases per sub-categories is presented in Table 3.

Table 3 Summary of mercury releases (overleaf)

					Calculated Hg output, Kg/y					
C	Sub-C	Source category	Exists? (y/n/?)	Calcu-lat. Hg input to society	Air	Water	Land	By-pro-ducts and im-purities	Geeral waste	Sector specific treat-ment/ disposal
5.1		**Source category: Extraction and use of fuels/ energy sources**								
	5.1.1	Coal combustion in power plants	**y**	291.69	167.10	0.00	0.00	0.00	0.00	124.59
	5.1.2	Other coal use	**y**	21.03	20.10	0.00	0.00	0.00	0.00	0.93
	5.1.3	Mineral oils - extraction, refining and use	**y**	1.97	1.73	0.00	0.00	0.00	0.00	0.24
	5.1.4	Natural gas - extraction, refining and use	**y**	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	5.1.5	Other fossil fuels - extrac-tion and use	**y**	0.52	0.52	0.00	0.00	0.00	0.00	0.00
	5.1.6	Biomass fired power and heat production	**y**	23.98	23.98	0.00	0.00	0.00	0.00	0.00
	5.1.7	Geothermal power production	**y**	4.63	4.63	0.00	0.00	0.00	0.00	0.00
5.2		**Source category: Primary (virgin) metal production**								
	5.2.1	Mercury (primary) extraction and initial processing (a	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00

					Calculated Hg output, Kg/y					
C	**Sub-C**	**Source category**	**Exists? (y/n/?)**	**Calcu-lat. Hg input to society**	**Air**	**Water**	**Land**	**By-pro-ducts and im-purities**	**Geeral waste**	**Sector specific treat-ment/ disposal**
	5.2.2	Gold (and silver) extraction with mercury amal-gamation pro-cesses	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.3.3	Zinc extraction and initial processing	**y**	19.52	0.98	0.49	18.05	0.00	0.00	0.00
	5.3.4	Copper extraction and initial processing	**y**	22.57	1.13	0.56	20.88	0.00	0.00	0.00
	5.3.5	Lead extraction and initial processing*5	**y**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.3.6	Gold extraction and initial pro-cessing by methods other than mercury amalgamation	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.3.7	Aluminium extraction and initial processing	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.3.8	Other non-fer-rous metals - extraction and processing	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.3.9	Primary ferrous metal production	**y**	60.38	54.64	0.00	0.00	0.00	0.00	5.74
5.3		**Source category: Production of other minerals and materials with mercury impurities**								

					Calculated Hg output, Kg/y					
C	**Sub-C**	**Source category**	**Exists? (y/n/?)**	**Calcu-lat. Hg input to society**	**Air**	**Water**	**Land**	**By-pro-ducts and im-purities**	**Geeral waste**	**Sector specific treat-ment/ disposal**
	5.3.1	Cement production	**y**	120.42	116.61	0.00	0.00	3.81	0.00	0.00
	5.3.2	Pulp and paper production	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.3.3	Production of lime and light weight aggregates	**y**	0.04	0.03	0.00	0.00	0.01	0.00	0.00
5.4		**Source category: Intentional use of mercury in industrial processes**		**0.00**						
	5.4.1	Chlor-alkali pro-duction with mercury-tech-nology	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.4.2	VCM production with mercury catalyst	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.4.3	Acetaldehyde production with mercury catalyst	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.4.4	Other production of chemicals and polymers with mercury	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.5		**Source category: Consumer products with intentional use of mercury**								
	5.5.1	Thermometers with mercury	**y**	158.22	15.82	47.47	0.00	-	94.93	0.00

					Calculated Hg output, Kg/y					
C	Sub-C	Source category	Exists? (y/n/?)	Calcu-lat. Hg input to society	Air	Water	Land	By-pro-ducts and im-purities	Geeral waste	Sector specific treat-ment/ disposal
	5.5.2	Electrical switches and re-lays with mer-cury	y	76.37	7.64	0.00	7.64	-	61.10	0.00
	5.5.3	Light sources with mercury	y	19.01	0.95	0.00	0.00	-	18.06	0.00
	5.5.4	Batteries with mercury	y	19.32	0.00	0.00	0.00	-	19.32	0.00
	5.5.5	Polyurethane with mercury catalysts	n	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.5.6	Biocides and pesticides with mercury	n	0.00	0.00	0.00	0.00	-	0.00	0.00
	5.5.7	Paints with mercury	n	0.00	0.00	0.00	0.00	-	0.00	0.00
	5.5.8	Cosmetics and related products with mercury	n	0.00	0.00	0.00	0.00	-	0.00	0.00
5.6		**Source cate-gory: Other intentional product/ process use**								
	5.6.1	Dental mercury-amal-gam fillings (b	y	129.59	0.12	87.01	10.92	8.19	11.67	11.67
	5.6.2	Manometers and gauges with mercury	y	10.32	1.03	3.10	0.00	0.00	6.19	0.00
	5.6.3	Laboratory chemicals and equipment with mercury	y	95.56	0.00	31.54	0.00	0.00	31.54	32.49

					Calculated Hg output, Kg/y					
C	**Sub-C**	**Source category**	**Exists? (y/n/?)**	**Calcu-lat. Hg input to society**	**Air**	**Water**	**Land**	**By-pro-ducts and im-purities**	**Geeral waste**	**Sector specific treat-ment/ disposal**
	5.6.4	Mercury metal use in religious rituals and folklore medicine	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.6.5	Miscellaneous product uses, mercury metal uses, and other sources	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.7		**Source category: Production of recycled metals ("secondary" metal production)**								
	5.7.1	Production of recycled mercury ("secondary production")	**n**	0.00	0.00	0.00	0.00	-	0.00	0.00
	5.7.2	Production of recycled ferrous metals (iron and steel)	**y**	299.91	98.97	0.00	101.97	0.00	98.97	0.00
	5.7.3	Production of other recycled metals	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.8		**Source category: Waste incineration*3**		**0.00**						
	5.8.1	Incineration of municipal/ general waste	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.8.2	Incineration of hazardous waste	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00

					Calculated Hg output, Kg/y					
C	**Sub-C**	**Source category**	**Exists? (y/n/?)**	**Calcu-lat. Hg input to society**	**Air**	**Water**	**Land**	**By-pro-ducts and im-purities**	**Geeral waste**	**Sector specific treat-ment/ disposal**
	5.8.3	Incineration of medical waste	**y**	7.49	7.49	0.00	0.00	0.00	0.00	0.00
	5.8.4	Sewage sludge incineration	**n**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.8.5	Informal waste burning	**y**	375.40	375.40	0.00	0.00	0.00	0.00	0.00
5.9		**Source cate-gory: Waste deposition/ landfilling and waste water treatment**								
	5.9.1	Controlled landfills/ deposits*3	**y**	777.15	7.77	0.08	769.30	0.00	0.00	0.00
	5.9.2	Diffuse disposal under some control	**n**	0.00	-	-	-	-	-	-
	5.9.3	Informal local disposal of industrial production waste	**n**	0.00	0.00	0.00	0.00	-	-	-
	5.9.4	Informal dumping of general waste*1*3	**y**	3,186.78	318.68	318.68	2,549.42	-	-	-
	5.9.5	Waste water system/ treatment*2	**y**	593.24	0.00	530.95	1.02	0.00	36.61	24.66
5.10		Source category: Crematoria and cemeteries		0.00						
	5.10.1	Crematoria/ cremation	**n**	0.00	0.00	0.00	0.00	-	0.00	0.00
	5.10.2	Cemeteries	**y**	48.02	0.00	0.00	48.02	-	0.00	0.00

C	Sub-C	Source category	Exists? (y/n/?)	Calcu-lat. Hg input to society	Calculated Hg output, Kg/y					
					Air	Water	Land	By-pro-ducts and im-purities	Geeral waste	Sector specific treat-ment/ disposal
								12.01	378.39	200.32
SUM OF QUANTIFIED INPUTS AND RELEASES *1*2*3*4				2,451.00	1,225.34	488.92	977.79			

Notes: (a and (b: See note text in the relevant sheets

*1: The estimated quantities include mercury in products which has also been accounted for under each product category.

To avoid double counting, the release to land from informal dumping of general waste has been subtracted automatically in the TOTALS.

*2: The estimated release to water include mercury amounts which have also been accounted for under each source category.

To avoid double counting release to water from waste water system/treatment have been subtracted automatically in the TOTALS.

*3: To avoid double counting of mercury inputs from waste and products in the input TOTAL, only 10% of the mercury input to waste incineration sources, waste deposition and informal dumping is included in the total for mercury inputs. These 10% represent approximately the mercury input to waste from materials which were not quantified individually in Inventory Level 1 of this Toolkit.

*4 To avoid double counting of mercury in products produced domestically and sold on the domestic market (including oil and gas), only the part of mercury inputs released from production are included in the input TOTAL.

*5 Emissions included in the calculations under Zinc extraction and initial processingsource category.

3.3 Releases per outputs

The leading output of the released mercury by all source categories/subcategories is in the **air,** with total amount of the 1,225.34 kg Hg/y (37,3%), following by **land** and **water** with 977.79 kg Hg/y (29.8%) and 488.92 kg Hg/y (14,9%), respectively (see Figure 4).

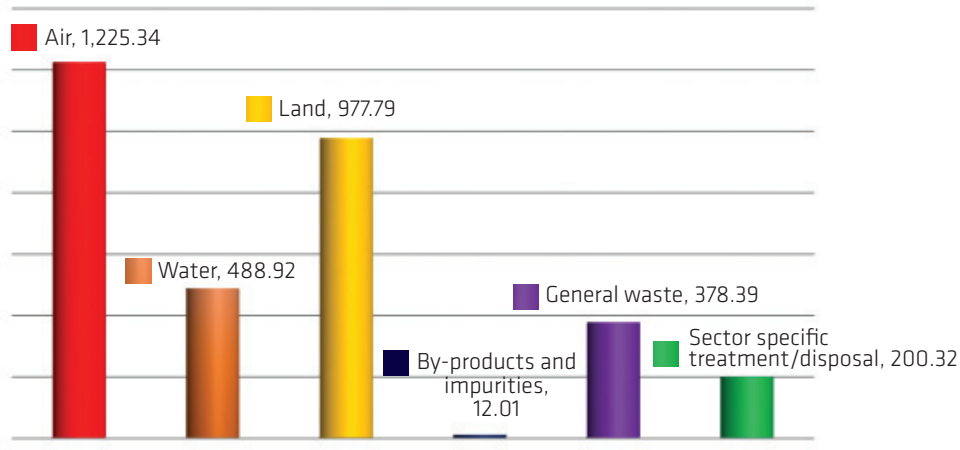


Figure 4 Mercury releases per output (kg)

The individual mercury release category contributing the highest mercury releases to the atmosphere is **"Waste incineration"** with amount of 382.9 kg Hg/y, followed by **"Waste deposition/landfilling and waste water treatment"** with 326.45 kg Hg/y and **"Extraction and use of fuels/energy sources"** with 218.06 kg Hg/y (see Figure 5).

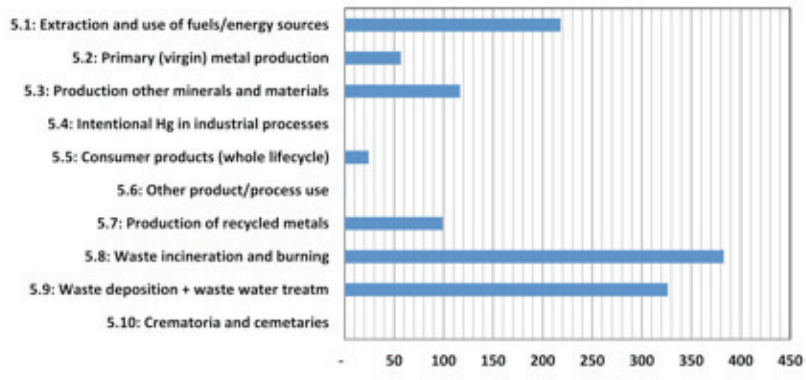


Figure 5 Mercury releases into air per category (kg)

The sub-category **"Informal waste burning"** counts for the highest release of mercury in the air with 375.4 kg Hg/y, followed by **"Informal dumping of general waste"** with 318.68 kg Hg/y and **"Coal combustion in power plants"** with 167.1 kg Hg/y (see Figure 6).

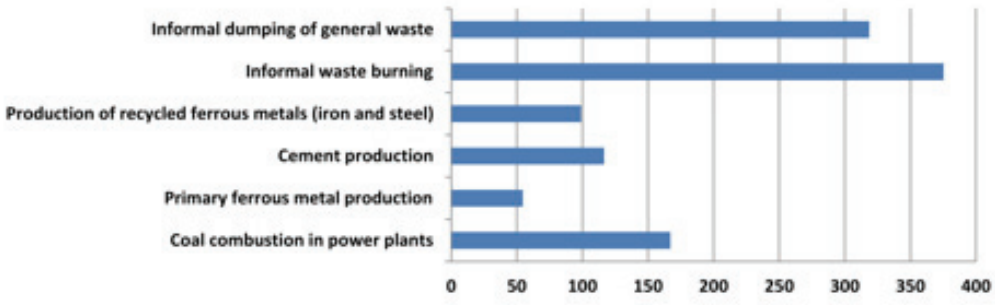


Figure 6 Mercury releases into air per top 6 sub-categories (kg)

The dominant source category that made the largest contribution of the mercury releases in the land is the "**Waste deposition/landfilling and waste water treatment"** with 3,319.74 kg Hg/y (see Figure 7).

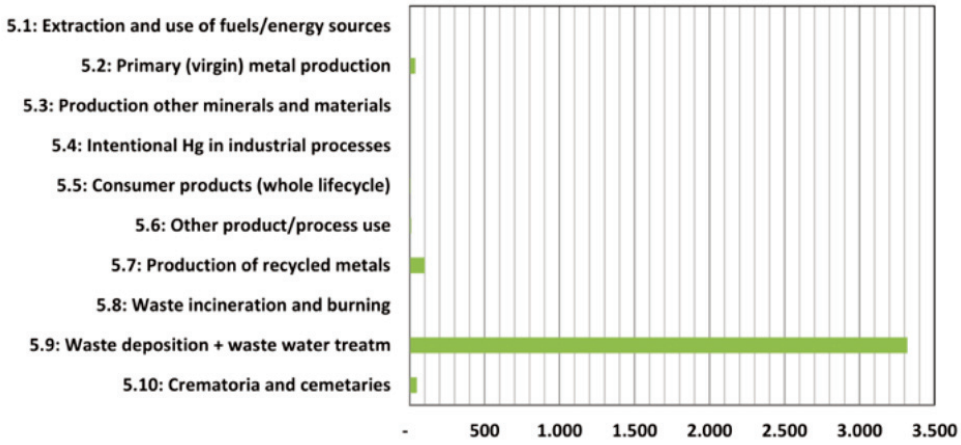


Figure 7 Mercury releases into land per category (kg)

The highest source categories of mercury releases to water are: "**Waste deposition/landfilling and waste water treatment"** with 849.71 kg Hg/y, followed by **"Other intentional product/process use"** with 121.65 kg Hg/y and **"Consumer products with intentional use of mercury"** with 47.47 kg Hg/y (see Figure 8).

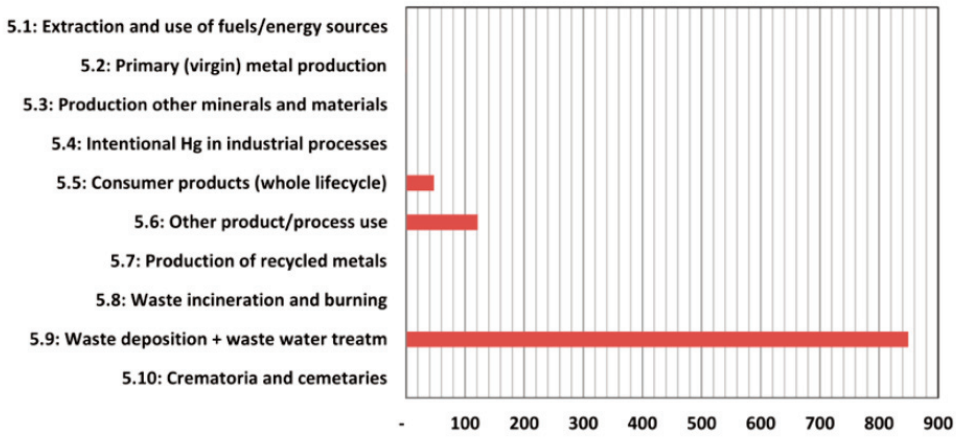


Figure 8 Mercury releases into water per category (kg)

The individual mercury release category contributing the highest mercury releases to the general waste output is "**Consumer products"** with amount of 193.41 kg Hg/y, followed by "**Production of recycled metals"** with 98.97 kg Hg/y, then "**Other intentional products"** and "**Waste deposition/landfilling and waste water treatment"** with 49.4 kg Hg/y and 36.61 kg Hg/y, respectively (see Figure 9).

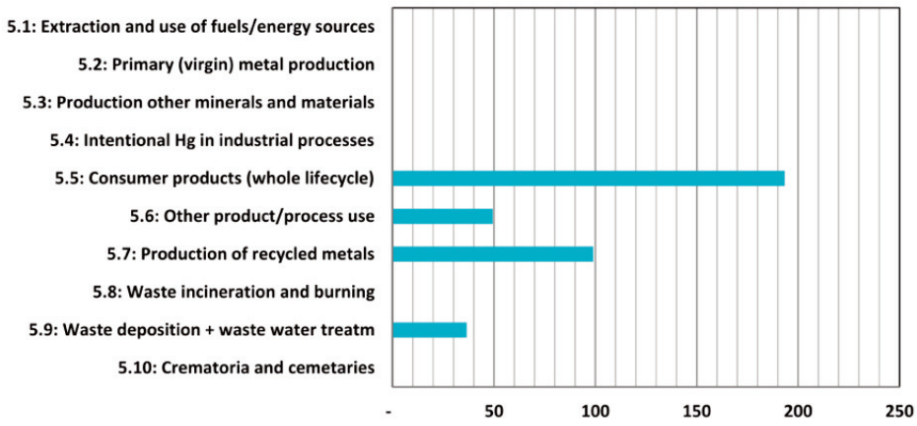


Figure 9 Mercury releases into general waste per category (kg)

The dominant source category that made the largest contribution of the mercury releases in the sector specific waste treatment/disposal output is the **"Extraction and use of fuels/energy sources"** with 125.76 kg Hg/y, followed by **"Other intentional product/process use"** with 44.16 kg Hg/y, then **"Waste deposition/landfilling and waste water treatment"** with 24.66 kg Hg/y and **"Primary (virgin) metal production"** with 5.74 kg Hg/y (see Figure 10).

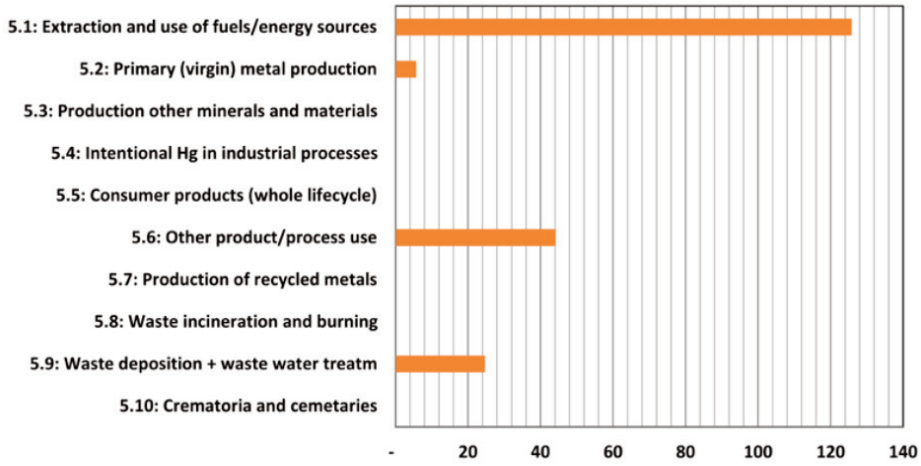


Figure 10 Mercury releases into sector specific waste treatment/disposal per category (kg)

There are two categories of the mercury releases in the by-products and impurities output, namely **"Other product/process use"** and **"Production of other minerals"** with 49.4 kg Hg/y and 36.61 kg Hg/y, respectively (see Figure 11).

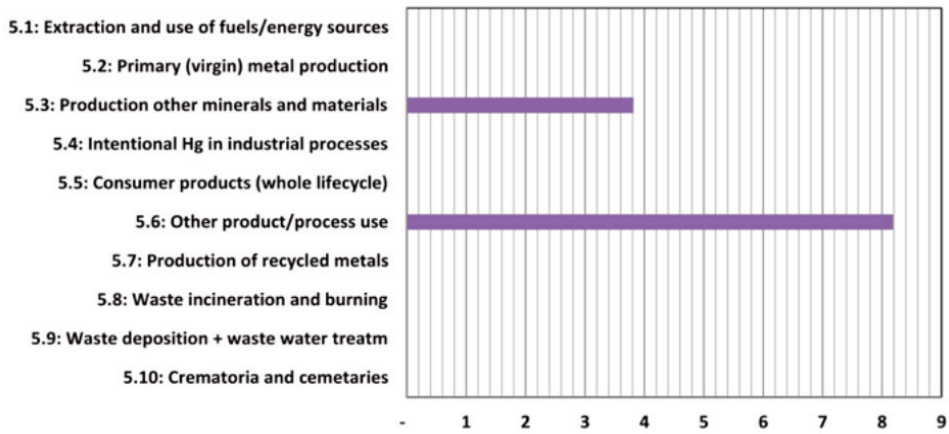


Figure 11 Mercury releases into by-products and impurities per category

3.4 Mercury inputs to society

The following non-waste source sub-categories made the highest inputs of new mercury to society: **"Production of recycled ferrous metals"**, followed by **"Coal combustion in power plants"**, **"Thermometers with mercury"**, **"Dental mercury amalgam fillings"** and the **"Cement production"**.

The following waste source sub-categories were found to be the major flows of mercury with waste and waste water: “Informal dumping of general waste”, “Controlled landfills/deposits”, “Waste water system/treatment”, and “Informal waste burning”.

A summary of the estimated mercury inputs to society by life cycle phases is presented in Table 4.

Table 4 Summary of mercury inputs to society by life phase

Category no.	Source category	Estimated Hg input, Kg Hg/y, by life cycle phase (as relevant)		
		Production phase*1	Use phase	Disposal phase
5.1	**Main category - Extraction and use of fuels/energy sources**			
5.1.1	Coal combustion in large power plants		291.69	
5.1.2	Other coal combustion		21.03	
5.1.3	Extraction, refining and use of mineral oil	0.08	1.89	
5.1.4	Extraction, refining and use of natural gas		0.01	
5.1.5	Extraction and use of other fossil fuels		0.52	
5.1.6	Biomass fired power and heat production		23.98	
5.1.7	Geothermal power production		4.63	
5.2	**Main category - Primary (virgin) metal production**			
5.2.3/5.2.5	Zinc/lead extraction and initial processing	19.52		
5.2.4	Copper extraction and initial processing	22.57		
5.2.9	Primary ferrous metal production		60.38	
5.3	**Main category - Production of other minerals and materials with mercury impurities**			
5.3.1	Cement production		120.42	
5.3.3	Lime production and light weight aggregate kilns	0.04		
5.5	**Main category - Consumer products with intentional use of mercury**			
5.5.1	Thermometers with mercury			158.22
5.5.2	Electrical and electronic switches, contacts and relays with mercury			76.37
5.5.3	Light sources with mercury			19.01
5.5.4	Batteries containing mercury			19.32
5.6	**Main category - Other intentional products/process uses**			
5.6.1	Dental mercury-amalgam fillings	2.5	45.20	81.88
5.6.2	Manometers and gauges			10.32
5.6.3	Laboratory chemicals and equipment			95.56

Category no.	Source category	Estimated Hg input, Kg Hg/y, by life cycle phase (as relevant)		
		Production phase*1	Use phase	Disposal phase
5.1	**Main category - Extraction and use of fuels/energy sources**			
5.7	**Main category - Production of recycled metals**			
5.7.2	Production of recycled ferrous metals (iron and steel)		299.91	
5.8	**Main category – Waste incineration**			
5.8.3	Incineration of medical waste			7.49
5.8.5	Informal waste burning			375.40
5.9	**Main category - Waste deposition/landfilling and waste water treatment**			
5.9.1	Controlled landfills/deposits			777.15
5.9.4	Informal dumping of general waste			3,186.78
5.9.5	Waste water system/treatment			593.24
5.10	**Main category - Cremation and cemeteries**			
5.10.2	Cemeteries			48.02

Notes: *1: Production phase includes raw material production.

Data gaps and recommendations for follow-up

Major data gaps were identified within following subcategories:

- Analysis and estimations in the Coal combustion in power plants sub-category does not correspond with the Toolkit's output distribution factors,
- No output distribution factors are given for Primary metal production, extraction and initial processing, i.e. for the mining and concentrating activities (ones were given based on expert's assumption),
- Analysis of the mercury presence in the marlstone performed for the needs of this Inventory Report differs from the ones performed earlier by the cement plant,
- Lack of background information for identification of the status for thermometers,
- Lack of precise data on the quantities of waste water collected and treated,
- No data on the mercury presence in the input materials (fuels, raw materials, products, etc.) and the output streams (waste, emissions, etc.) as the mercury analyses are not requested in the companies' monitoring activities.

Inventory for releases of priority hazardous substances constitute an important decision-making tool in the process of mitigating environmental impacts from the pollutants in question. The inventory identifies the relevant categories for the country, but should be considered as a first step as further assessment is necessary to confirm the potential priority problems.

This information can be used to determine which release source types are significant and which

sources should be addressed through release reduction initiatives.

The national inventory on mercury releases shall present a basis for establishing a national inventory of emissions from relevant sources, which is going to be an obligation for the country no later than five years after the date of entry into force of the Convention, in accordance with Article 8 of the Minamata Convention on Mercury.

4. INSTITUTIONAL AND LEGAL FRAMEWORK IN MERCURY MANAGEMENT

4.1 Institutional framework in the management of mercury

The management of chemicals in the Republic of Macedonia is the responsibility of several institutions that contribute, each in its segment, to adequate control, monitoring and, if necessary, their reduction or elimination, taking into account the overall life cycle of the chemicals or certain groups thereof.

A similar approach has been implemented in the case of mercury management, where different segments are treated by different institutions.

The Ministry of Environment and Physical Planning implements the obligations related to the adoption and / or harmonization of the national legislation with the provisions of the international agreements and the European mercury legislation. It is responsible for drafting of national strategies and action plans; inspection and implementation, including interventions at large polluters when necessary; and conducting all tasks related to monitoring, information systems and cadastres at national level.

Within the Ministry of Environment and Physical Planning there are several sectors / departments that are directly involved in the management of mercury:

- Macedonian Environmental Information Center, through the implementation of national ambient air quality legislation, as well as the UNECE Convention on Long-Range Transboundary Air Pollution / Heavy Metals Protocol, are actively involved in the monitoring of mercury emissions in the air.

- Sector for Industrial Pollution and Risk Management / Division of Chemicals and Industrial Accidents, directly involved in the management of certain chemicals and chemical groups including the mercury. This sector works on the production of strategic documents related to national benchmarks in chemical management, control, reduction and elimination. The control of the import and export of these chemicals is carried out through the use of an electronic tool, special software EXIM which provides an opportunity for complete insight into the segments of the country's chemicals supply.

- State Environmental Inspectorate performs on-site inspection for the purpose of determining the implementation of the national legislation related to environmental protection, in accordance with the Law on Chemicals and Inspection Supervision over the conditions of production and trade of chemicals in relation to the protection of the environment.

- Waste Management Sector, is responsible for waste management in accordance with the provisions of the Law on Waste Management, as well as other legislation related to mercury including the management of electrical and electronic equipment and waste electrical and electronic equipment. The department also participates in the issuance of A - integrated environmental permits.

4.2 Other responsible governmental institutions

The Ministry of Health and its Sector for Chemicals is responsible for the implementation of the Law on Chemicals and its by-laws including the List of prohibitions and restrictions on the use of chemicals and products. In addition, the Ministry of Health carries out medical surveillance of workers at risk of exposure to mercury and mercury compounds through 45 authorized institutions. Its work is defined by appropriate legislation and regularly monitored by the State Sanitary and Health Inspectorate.

The Ministry of Agriculture, Forestry and Water Economy through its Phytosanitary Administration implements procedures that provide plant protection as well as prevention and control of the pollution of agricultural products with nitrates and other chemical preparations and pesticides.

The Customs Administration of the Republic of Macedonia carries out control of the import / export of chemicals, as well as products / equipment containing chemicals at the border crossings of the Republic of Macedonia. In addition to on-site controls, the Customs Administration also administers the EXIM system which enables electronic submission of requests and obtaining licenses for different types of goods including chemicals and products.

Through its Sector for Mineral Resources, the Ministry of Economy carries out control of the import / export of mineral resources and cooperates with the private sector and industry in the activities related to the exploitation of mineral resources.

The Ministry of Foreign Affairs works with multilateral organizations and reaffirms the position for strengthening multilateralism, as well as promotion of the economic interests of the Republic of Macedonia abroad, providing greater involvement in the projects of the international economic organizations.

The units of Local self-government participate in the implementation of several laws related to environmental protection, including environmental impact assessment, integrated environmental permits, waste management.

Table 5 Overview of institutions participating in the process of mercury management in the Republic of Macedonia

INSTITUTION	SECTOR/DIVISION	CONTRIBUTION TO MERCURY MANAGEMENT IN THE COUNTRY
MINISTRY OF ENVIRONMENT AND PHYSICAL PLANNING	Macedonian Environmental Information Center	Implementation of the Convention on Long-Range Transboundary Air Pollution. The activities are aimed at monitoring the emissions of harmful chemicals, including heavy metals in all environmental media.
	Sector for Industrial Pollution and Risk Management / Division of Chemicals and Industrial Accidents	Provides permanent participation in the management of chemicals including heavy metals. Among other activities, the following can be treated as a priority of the Division • control of import / export of certain groups of chemicals, • initiation of ratifications of international agreements in the field of chemicals, • implementation of the provisions of the international and national legislation in the field of chemicals under the authority of the Ministry of Environment and Physical Planning planning, • Prevention of industrial accidents with the presence of hazardous substances.
	Sector for Industrial Pollution and Risk Management	Control of reduction and elimination of the application and emissions / releases of chemicals, heavy metals in IPPC applications.
	Waste Management Sector	Control in waste management. The department participates in the issuance of A - integrated environmental permits. The department participates in the issuance of A - integrated environmental permits.
INCPECTION COUNCIL OF THE REPUBLIC OF MACEDONIA	State Environmental Inspectorate	On-site control of chemicals management in the field of environmental protection and implementation of the legal provisions for the management of industrial chemicals.

MINISTRY OF HEALTH	Sector of chemicals	Transposition of EU legislation (REACH Regulation 1907/2006, Regulation 1272/2008 on the classification, labeling and packaging of substances and mixtures and others) in the national legislation and its implementation. In terms of transposition of the REACH Regulation, prohibitions and restrictions on mercury and other heavy metals are also provided.
	Institute of Public Health	Detection of the impact of chemicals, specifically mercury and other heavy metals on human health including mercury analyzes in human samples and other media that potentially affect health. Analyzes of pesticide residues, heavy metals in primary agricultural products upon harvesting.
	Agency for food and veterinary	Monitoring program for monitoring residues from pesticides and heavy metals in food and products Analyzes of pesticide residues, heavy metals and other chemicals in primary agricultural products upon harvest.
MINISTRY OF AGRICULTURE, FORESTRY AND WATER ECONOMY	**Phytosanitary Administration**	Plant protection, seeds and new forms of reproduction, and has the authority to prevent and control nitrate and other chemical contamination, including pesticides that are applied in the agricultural industry.
CUSTOMS ADMINISTRATION	Customs Tariff Unit, Laboratory, Value, Origin and TARIC	Control of the import / export of chemicals at the border crossings of the Republic of Macedonia. POPs at the border crossings on the territory of the Republic of Macedonia. As a practical and efficient tool for facilitating the supply of goods, including chemicals, the EXIM system enables electronic submission of requests and obtaining import and export permits, which reduces the duration of the procedure and enables quick communication with the applicant.

MINISTRY OF ECONOMY	Mineral resources sector	Control of the import / export of mineral resources in accordance with the Law on Mineral Resources. Cooperation with the private sector, industry around the
MINISTRY OF FOREIGN AFFAIRS	Directorate for multilateral relations	Intensifying the activities and strengthening the position of the Republic of Macedonia in multilateral organizations in order to reaffirm the position for strengthening multilateralism.
	Directorate for economical diplomacy	Promotion of the economic interests of the Republic of Macedonia abroad, providing greater involvement in the projects of the international economic organizations, aimed primarily at increasing the economic growth.
LOCAL SELF-GOVERNMENT UNITS	Municipalities	They perform works of public interest of local importance that the municipality has the right to perform in their area in accordance with the law and is responsible for execution.

4.3 Legal framework in the management of mercury

The legal framework for mercury management in the Republic of Macedonia is incomplete and partially included in several legal frameworks and by-laws. There is no special national legislation incorporating the provisions of the Minamata Convention and EU Regulation 1102/2008 on the banning of mercury and certain mercury compounds and mixtures and the safe storage of mercury.

The Convention, in terms of its structure, is divided into several chapters directly related to the management and reduction of mercury from most sectors where it finds a particular application.

The introductory chapters (Convention Objective, Definitions) are not incorporated in national legislation, except some certain definitions that are incorporated in the definitions of the Law on Environment.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Goal	No
Definition	Law on Environment („Official Gazette of Republic of Macedonia" No. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10, 124/10, 51/11, 123/12, 93/13, 187/13, 42/14, 44/15, 129/15, 192/15 and 39/16)

Furthermore, in the chapter on sources for mercury supply and trade only the provision related to the export of mercury is completely covered by Chapter IX of the Law on Chemicals, which prescribes the procedure of the Rotterdam Convention on the Prior Informed Consent on the basis of prior notification of certain dangerous chemicals and pesticides in international trade.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Sources for mercury supply and trade	Law on Chemicals („Official Gazette of Republic of Macedonia " No. 145/10, 53/11, 164/2013, 116/2015, 149/2015)

Provisions related to mercury-added products are partially incorporated in several national framework laws and by-laws.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Mercury – added products	Law on Chemicals; List of restrictions and prohibitions on the use of chemicals ('Official Gazette of the Republic of Macedonia' No. 31/14); Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment ('Official Gazette of the Republic of Macedonia' No. 6/2012, 163/2013, 146/2015, 39/2016); List of types of products belonging to the categories of electrical and electronic equipment ('Official Gazette of the Republic of Macedonia' No. 133/12); List of equipment which does not include measures for prohibition and restrictions on placing on the market in the Republic of Macedonia electrical and electronic equipment, as well as the maximum values for concentrations of hazardous substances, the deadlines for which certain hazardous substances are allowed to be present in electrical and electronic equipment, its component parts and materials equipment(„Official Gazette of the Republic of Macedonia„ No. 2/13); Law on the Safety of Cosmetic Products („Official Gazette of the Republic of Macedonia" No. 55/2007, 47/11, 150/15); List of substances that can not be used in cosmetic products („Official Gazette of the Republic of Macedonia' No.89/10); Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators („Official Gazette of the Republic of Macedonia" No. 140/10, 47/11, 148/11, 39/12, 163/13, 146/15, 39/16)

Production processes using mercury or mercury compounds are partly covered by several acts of national legislation including the Law on Environment, the Law on Ambient Air Quality, the Law on Waters and the by-laws thereof, as well as the Law on Ratification of the Protocol to the Convention on Long-Range Transboundary Air Pollution for Heavy Metals, ratified by the Parliament of the Republic of Macedonia in 2010.

Production processes using mercury or mercury compounds and Artisanal or small scale gold mining according to the gap analysis of the national mercury management legislation are not covered at all by the existing provisions in the national legislation.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Production processes using mercury or mercury compounds	Law on Ambient Air Quality ('Official Gazette of the Republic of Macedonia' No. 67/04, 92/07, 35/10, 47.11, 59/12, 163/13, 10/15, 146/15) ; Law on Waters ('Official Gazette of the Republic of Macedonia' No. 161/09, 17/11, 47/11, 136/11, 6/12, 39/12, 163/13, 146/15, 39/16); Law on Ratification of the Protocol to the Convention on Long-Range Transboundary Air Pollution for Heavy Metals ('Official Gazette of the Republic of Macedonia' No. 135/10); Rulebook on hazardous and harmful substances and substances and their emission standards that can be discharged into the sewage system or in a drainage system, in surface or underground water bodies, as well as in coastal lands and water habitats (Official Gazette of the Republic of Macedonia No. 108 / 11); Rulebook on the manner of transmission of the information from the monitoring of the discharged wastewater, as well as the form and the content of the template with which the data is submitted (Official Gazette of the Republic of Macedonia No. 108/11); Rulebook on the methodology, reference measurement methods, method and parameters of waste water monitoring, including sludge from the treatment of urban waste water (Official Gazette of the Republic of Macedonia No. 108/11); Rulebook on the conditions, manner and limit values for emission for discharge of waste water after their purification, the manner of their calculation, taking into account the special requirements for protection of the protection zones (Official Gazette of the Republic of Macedonia No. 81/11); List of pollutants and substances ('Official Gazette of the Republic of Macedonia' No. 122/11); ^ Rulebook on the manner and procedure for using the sludge, the maximum values of concentrations of heavy metals in the soil in which the sludge is used, concentration values of heavy metals in the sludge, in accordance with its purpose and the maximum annual quantities of heavy metals that can be introduced into the soil (Official Gazette of the Republic of Macedonia No. 73/11); Rulebook on substances for which limit values in A integrated permit is mandatory (Official Gazette of the Republic of Macedonia No. 72/10)
Artisanal and small-scale gold mining	No

The control and reduction of emissions of mercury and mercury compounds into the atmosphere through measures for control of emission from point sources is to a certain extent included in environmental laws and the quality of ambient air, while discharges to other environmental media (soil and water) is partially covered by the Law on Environment and the Law and by-laws in the area of water.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Emissions	Law on ambient air quality; Rulebook on the limit values for the permitted levels of emissions and types of pollutants in the waste gases and vapors emitted by stationary sources in the air ('Official Gazette of the Republic of Macedonia' No. 141/10); Law on Ratification of the Protocol to the Convention on Long-Range Transboundary Air Pollution for Heavy Metals; Law on Environment
Releases	Law on Environment; Law on Waters; Rulebook on dangerous and harmful substances and substances and their emission standards that can be released into the sewage system or in a drainage system, in surface or underground water bodies, as well as in coastal lands and aquatic habitats; Rulebook on the manner of transmission of the information from the monitoring of the discharged wastewater, as well as the form and the content of the template with which the data is submitted; Rulebook on the methodology, reference measurement methods, method and parameters of waste water monitoring, including sludge from the treatment of urban wastewater; Rulebook on the conditions, manner and emission limit values for the discharge of wastewater after their purification, the manner of their calculation, taking into account the special requirements for protection of the protection zones; List of pollutants and substances.

The temporary storage of mercury, which is not waste mercury, is completely regulated by the new Law on Chemicals from 2010 and the Rulebook on the detailed conditions regarding the space and equipment to be fulfilled by the legal entities that trade in dangerous chemicals (2008). The basis of the said Rulebook is contained in the old Law on Environment from 2007, but it is still in force.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Environmentally sound interim storage of mercury, other than waste mercury	Law on Chemicals; Rulebook on the detailed conditions regarding the space and equipment to be fulfilled by the legal entities that trade with dangerous chemicals (Official Gazette of the Republic of Macedonia No. 132/2008)
Mercury wastes	Law on waste management (Official Gazette of the Republic of Macedonia No. 68/2004, 71/2004, 107/2007, 102/2008, 143/2008, 82/2009, 124/2010, 51/2011, 123/2012, 147/2013, 163/2013, 51/2015, 146/2015, 192/2015, 39/2016, 63/2016)

Mercury-contaminated sites are not included in existing national legislation.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Contaminated sites	No

Promotion of health aspects through the development and implementation of strategies and programs for identifying the population at risk, especially the vulnerable categories, as well as the preparation and realization of scientifically based educational and preventive programs for professionals exposed to mercury and mercury compounds, providing adequate services

for the prevention and protection of the health of the human population, treatment and care for the living population, are to a certain extent included in the provisions of the Law on Health Protection and the Law on Safety and Health at Work.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Health aspects	The Law on Health Protection (Official Gazette of the Republic of Macedonia No. 43/12, 145/12, 87/13, 164/13, 39/14, 43/14, 132/14, 188/14, 10/15, 61 / 15, 154/15, 192/15); Law on Safety and Health at Work (Official Gazette of the Republic of Macedonia No. 53/13 - revised text); Rulebook on minimum requirements for the safety and health of employees from the risks related to exposure to chemicals No. (Official Gazette of the Republic of Macedonia No. 46/2010); Decree on the type, manner, scope and price list of the health examinations of the employees ('Official Gazette of the Republic of Macedonia' No. 60/2013); Rulebook on the List of Occupational Diseases (Official Gazette of the Republic of Macedonia No. 88/2004)

The provisions of the Convention related to the exchange of information, as well as information, awareness and education of the public are generally included in the Law on Environment and the Law on Health Protection (epidemiological information on the effects on the human health due to exposure to mercury and mercury compounds). The obligation to develop an implementation plan does not exist in national legislation.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Information exchange	Law on Environment, Law on Health protection
Public information, awareness and education	Law on Environment
Research Development and Monitoring	Law on Environment
Implementation plans	No

The annexes to the Convention are related to the relevant provisions of the Convention and national legislation where they have been transposed.

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Annex A Mercury-added products	Law on Chemicals; List of restrictions and prohibitions on the use of chemicals; Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment; List of types of products belonging to the categories of electrical and electronic equipment; List of equipment which does not include measures for prohibition and restrictions on placing on the market in the Republic of Macedonia on electrical and electronic equipment as well as the maximum values for the concentration of hazardous substances, the deadlines allowed for the presence of certain hazardous substances in electrical and electronic equipment, its constituents and materials equipment; Law on the Safety of Cosmetic Products; List of substances that can not be used in cosmetic products; Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION
Annex B Manufacturing processes in which mercury or mercury compounds are used	Law on Ratification of the Protocol to the Convention on Long-Range Transboundary Air Pollution for Heavy Metals
Annex C Artisanal and small-scale gold mining	No
Annex D List of point sources of emissions of mercury and mercury compounds to the atmosphere	Law on ambient air quality; Rulebook on limit values for permitted levels of emissions and types of pollutants in waste gases and vapors emitted by stationary sources in the air; Law on Ratification of the Protocol to the Convention on Long-Range Transboundary Air Pollution for Heavy Metals
Annex E Arbitration and conciliationprocedures	Not transposed / international provision

4.4 List of policy documents related to mercury management

In order to make link between all the existing strategic and planning documents that included mercury presence and/or management in their contents, a list of policy documents related to mercury management was developed within the reporting period. It is comprised of ten documents (including the description of its linkage with mercury management) in several area of environment protection (air quality, water management, contaminated sites, waste management):

1. **Eptisa/DHI: Development of remediation plans with financial requirements for elimination of industrial hotspots, FEASIBILITY STUDY – Volume I – OHIS Plant (2007)**

The Study treats the mercury contamination in the OHIS plant giving overview on environmental impact evaluation of existing contamination and remediation technique to solve the problem with mercury contaminated site.

2. **Deconta/Enacon: Old Environmental Burdens in Chemical Plant OHIS, Skopje, Feasibility Study for Soil Remediation and Management of Waste Contaminated with Mercury (2008)**

This feasibility study proposes and assesses alternative remedial actions aiming at reducing and/or eliminating risks related to the existence mercury contamination hot spot – i.e. the facility of former electrolysis plant and wastes resulting from prospective pull down of former electrolysis plant.

3. **Deconta/Enacon: Old Environmental Burdens in Chemical Plant OHIS, Skopje, Risk Assessment (2008)**

Potential risk to the human health and environment was assessed in the study including risk posed by the wastes resulted from prospective pull down of former electrolysis plant.

4. **National Action Plan for Ratification and Implementation of the Protocol on Heavy Metals, Protocol on POPs and Gothenburg Protocol to Convention on Long-range Transboundary Air Pollution (2010)**

The document contains complete situation report in regard transposition and implementation of the Protocol on Heavy Metals and action plan with timescales and institutions responsible for implementation.

5. **Draft-report on strategic environment impact assessment and Water strategy for the Republic of Macedonia (2011)**

The draft-document contains some data on hydropower sector impact on the environment. A brief part is linked with mercury impact saying that the increased amount of deposit can produce large amounts of mercury that poses a serious threat to the fishes.

6. **Annual report on processed data for quality of the environment (2015)**

The Report contains part on the air quality and heavy metals (including mercury) emissions in 2014. It includes mercury sources and emissions in 2014 and mercury impact on human population, flora and fauna.

7. **Informative report on the inventory of the Republic of Macedonia for the period 1990 – 2014**

The inventory of the mercury emissions in air for the defined period is covered by the Report. Additionally, the Report describes the trend, key mercury sources as well as data and emission factors that are applied for the mercury emissions calculations.

8. **National Plan for Waste Management (2009 – 2015)**

In the chapter on current situation with waste management in Macedonia (Existing waste streams and practice of waste management) the waste containing mercury is mentioned in construction and demolition waste / including excavated soil from contaminated sites. Additionally, the measures for the Plan realization contain part on host spots remediation where the mercury contamination in the OHIS factory is taken in consideration. The waste batteries and accumulators containing mercury are included in the quantitative targets for specific waste streams in the period of 6 years.

9. **Plan for management of waste electric and electronic equipment (WEEE) in the Republic of Macedonia with Feasibility Study for period 2013-2020.**

The Plan covers most of the aspects linked with WEEE management including WEEE containing mercury: EU and national legislation on WEEE management and its impact on WEEE management; aspects of the current WEEE management (collection, storage, recycling), national policies in this area; hazardous substances contained in WEEE; economic assessment

(implementation costs); scenario for WEEE generation in period 2011 – 2020; impact of the WEEE management in period 2011-2020; policy for WEEE management in the Republic of Macedonia; waste equipment movement; costs of WEE management.

10. National Plan for ambient air protection in the Republic of Macedonia for period 2013 – 2018

The Plan has a short part within the country situation report (implementation of the obligations to the international treaties) containing information that the initial inventory of heavy metals (including mercury) was developed in 2011. The inventory was defined in accordance to the provision of the Protocol on Heavy Metals under the Convention on the Long Range Transboundary Air Pollution.

5. HEALTH ASPECTS OF MERCURY, USE AND EFFECTS

5.1. General information about Hg and its impact on human health.

Mercury is a naturally occurring element that is found in air, water and soil. Exposure to mercury, even small amounts, may cause serious health problems. Mercury is considered by WHO (Mercury and health Updated March 2017) as one of the top ten chemicals or groups of chemicals of major public health concern.

Mercury exists in various forms: elemental (or metallic) and inorganic (to which people may be exposed through their occupation); and organic (e.g., methylmercury, to which people may be exposed through their diet). These forms of mercury differ in their degree of toxicity and in their effects on the nervous, digestive and immune systems, and on lungs, kidneys, skin and eyes. Health effects of mercury exposure:

Elemental and methyl mercury are toxic to the central and peripheral nervous systems. The inhalation of mercury vapour can produce harmful effects on the nervous, digestive and immune systems, lungs and kidneys, and may be fatal. The inorganic salts of mercury are corrosive to the skin, eyes and gastrointestinal tract, and may induce kidney toxicity if ingested.

People may be exposed to mercury in any of its forms under different circumstances. However, exposure mainly occurs through consumption of fish and shellfish contaminated with methyl mercury and through worker inhalation of elemental mercury vapours during industrial processes.

The chemical and physical properties vary with the form of mercury. **Elemental mercury (Hg^0)** is also known as colloidal mercury, liquid silver, quicksilver, and hydrargyrum. It has a relative molecular mass of 200.59, a melting point of - 38.87 °C, a boiling point of 356.72 °C, and a density of 13.534 g/cm3 at 25 °C. It is relatively insoluble in water (56 μg /litre at 25 °C). Elemental mercury is soluble in lipids and nitric acid, soluble in pentane (2.7 mg/litre), insoluble in hydrochloric acid, and soluble in sulfuric acid upon boiling. Metal mercury is a glossy, silver-like metal, which at room temperature is in liquid state (Figure 12).



Figure 12 Elemental mercury

Due to its viscosity and high specific gravity, it is easily split into small caps, which increases the evaporation surface. It is easy to steam, and the degree of evaporation increases with the rise of the outside temperature. The vapors are colorless, flavored and odorless and are slightly heavier than the air. After inhalation of steam of metallic mercury there is metallic taste in the mouth.

5.2 Routes of Exposure

■ *Inhalation*

Inhalation of mercury vapor is the primary route of exposure to elemental mercury. Inhaled vapor is almost completely absorbed by the lungs about up to 80%. Neither liquid mercury nor mercury vapor has an odor and thus, chemical odor provides no warning of hazardous concentrations. Mercury vapor is heavier than air and may therefore accumulate in poorly ventilated or low-lying areas.

Children exposed to the same levels of mercury vapor as adults may receive larger doses because they have greater lung surface area: body weight ratios and increased minute volumes: weight ratios. In addition, they may be exposed to higher levels than adults in the same location because of their short stature and the higher levels of mercury vapor found nearer to the ground.

■ *Skin/Eye Contact*

Elemental mercury vapor is very slowly absorbed through the skin in high concentrations, but causes irritation of both skin and eyes and may produce contact dermatitis.

■ *Ingestion*

Elemental mercury, a liquid at room temperature, is essentially nontoxic when ingested because virtually none (less than 0.1%) is absorbed. Anatomic gastrointestinal abnormalities such as enteric fistulas or intestinal perforation can sequester sufficient quantities of ingested elemental mercury to allow significant oxidation and subsequent absorption.

■ *Intravenous application (in suicide attempt)*

5.3 Main sources of elemental mercury exposure

Most human exposure to biologically significant amounts of elemental mercury occurs in the workplace. The mercury is used: in the production of chlorine gas by electrolysis of the cooking salt, where mercury is used as a cathode (chlor-alkali electrolysis); for extraction of gold; for the production of many physical measuring instruments - thermometers, barometers, sphygmomanometers; in the manufacture of batteries, electric and fluorescent lamps; in dentistry, in production of amalgam fillings; **Occupational (professional)** mercury exposures generally occur when workers *inhale* elemental mercury vapours. Some dermal absorption may occur from *skin contact* with contaminated air, but the extent is low (less than 3% of the inhaled dose).

Common exposures: When most exposures to metallic mercury occur, they occur because mercury is released from a container, or from a product or device that breaks. If the mercury is not immediately contained or cleaned up, it can evaporate, becoming an invisible, odorless, toxic vapor. Exposures may occur when people breathe this vapor and inhale it into their lungs. Poorly ventilated, warm, indoor spaces are of particular concern in cases of airborne mercury vapors. Note that where metallic mercury generally is contained in glass or metal, it does not pose a risk unless the product is damaged or broken and mercury vapors are released.

In other instances, metallic mercury is *accidentally swallowed*. It is not uncommon for children to break fever **thermometers** in their mouths. When a thermometer containing mercury breaks in a child's mouth and the child might have swallowed some mercury, be aware that the mercury poses a low risk in comparison to breathing mercury vapor.

Other consumer products: Metallic mercury is often found in **school laboratories**. It is also in some **thermometers, barometers, switches, thermostats, and electrical switches**.

Dental fillings: Mercury is used in dentistry in dental amalgam, also known as "silver filling". Dental amalgam is a direct filling material used in restoring teeth. It is made up of approximately 40-50% mercury, 25% silver, and 25-35% a mixture of copper, zinc and tin. Amalgam use is declining because the incidence of dental decay is decreasing, and because better substitute materials are available for restoring teeth.

5.4 Health Effects of Exposures to Mercury

Mercury is a neurotoxin. How someone's health may be affected by an exposure to mercury depends on a number of factors:

- the form of mercury (for example, methylmercury or elemental (metallic) mercury)
- the amount of mercury in the exposure;
- the age of the person exposed (the fetus is the most vulnerable)
- how long the exposure lasts
- how the person is exposed — breathing, eating, skin contact, etc.
- the health of the person exposed

The effects of mercury exposure can be very severe, subtle, or may not occur at all, depending on the factors above.

5.5 Elemental (Metallic) Mercury Effects

Exposures to metallic mercury most often occur when metallic mercury is spilled, or when products that contain metallic mercury break, so that mercury is exposed to the air. If you are concerned about your exposure to metallic mercury, you should consult your physician.

Metallic mercury mainly causes health effects when inhaled as a vapor where it can be absorbed through the lungs (Figure 13).

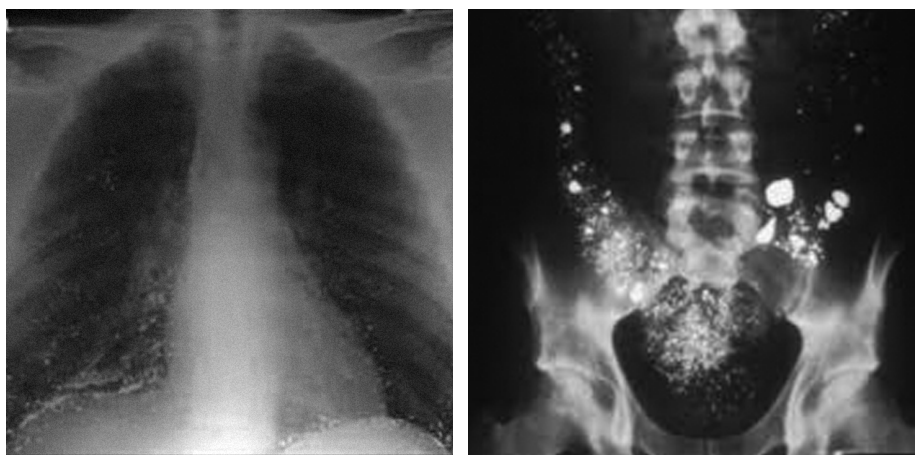


Figure 13 Inhaled and accidentally swallowed mercury

Symptoms of acute exposure (poisoning) include: pharyngitis, laryngitis, tracheitis and bronchitis, rhinorrhoea, scratching of the throat, hoarseness, cough and chest pain. In inhalation of higher concentrations, toxic lung edema develops with dyspnoea, chest tightness, cough with foam sputum, spasm, cyanosis, hypotension, tachycardia, and oliguria. The absorbed mercury causes CNS excitability with the onset of psychomotor restlessness and tremor.

Symptoms of prolonged exposures . In chronic poisoning with elemental mercury, the CNS is primarily damaged. Initial symptoms are not specific: fatigue, anorexia, and weight loss. Over time, characteristic neurological and psychological changes occur. A characteristic neurological manifestation of chronic mercury poisoning is tremor. The tremor is intentional (small and fast), initially localized to the hands, and over time it becomes generalized, rude and irregular. Due to tremor in the tongue, speech becomes difficult to understand, and the movements of the legs and hands are dysfunctional. The characteristic psychological impairment, the so-called erethism, are manifested with personality changes,irritability, forgetfulness, difficult communication with the environment, etc.

5.6 Toxo-kinetics and mechanism of toxic action

Approximately 80% of inhaled elemental mercury is absorbed through the lungs by rapid diffusion. In contrast, only 0.01% of elemental mercury is absorbed through the gastrointestinal tract, possibly because of its enterogastric conversion to divalent mercury and subsequent binding to sulfhydryl groups. Dermal absorption of elemental mercury is limited and contributes approximately 2.6% of the absorbed mercury following exposure to elemental mercury vapour in the air; the other 97.4% occurs through inhalation.

The absorbed mercury with the bloodstream is distributed to all tissues and organs, and preponderantly accumulates in the kidneys, liver, spleen and thyroid gland. Although many small amounts of mercury are deposited in the brain, it is important that once deposited mercury is very difficult to eliminate from the brain. The mercury easily passes through the hematopoietic and placental barrier. Because of this, significant accumulation of mercury in the fetus can occur, in concentrations that are significantly higher than those in the mother's blood. This may result in the occurrence of congenital developmental anomalies. The mercury is excreted in the urine, faeces, saliva, breast milk, tears, i.e. practically through all human secretions and excreta. The biological half-life of elimination of mercury is 60 days. Mercury binds to sulphydryl, carboxylic and thiol groups of many enzymes, and blocks their activity, as well as the function of cell membranes.

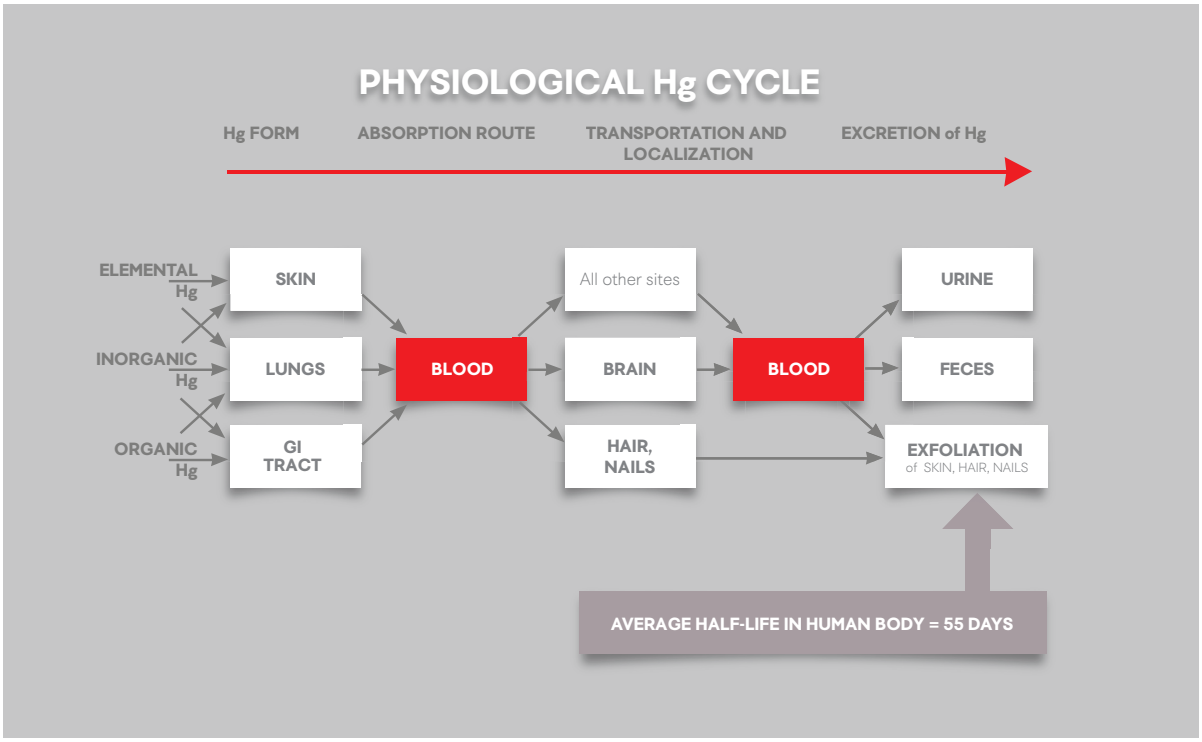


Figure 14 Physiological Hg Cycle

5.7 How to avoid contamination from elemental mercury at our homes

Cleaning Up Household Spills of Elemental Mercury

What NEVER to Do After a Mercury Spill

- Never use a vacuum cleaner to clean up mercury. The vacuum will put mercury into the air and increase exposure.
- Do not wash mercury contaminated clothing, rugs or other fabrics in the washing machine. The washing machine and wastewater may become contaminated.
- Never use a broom to clean up mercury. It will break the mercury into smaller droplets and spread them.
- Never pour mercury down a drain. It may lodge in the plumbing and cause future problems during plumbing repairs. If discharged, it can cause pollution of the septic tank or sewage treatment plant.
- Never walk around if your shoes might be contaminated with mercury. Contaminated clothing can also spread mercury around.

Recommended clean-up procedures

- Although a spill of a small amount of mercury is highly unlikely to cause any health problems, it is best to be prepared when handling mercury and to avoid direct contact with the skin, eyes or mouth.
- Isolate the area – get children and pets out of the room where the breakage occurred so that the beads of mercury are not accidentally eaten or tracked throughout the home. Open windows in the room and allow fresh air to flow.
- Gather the clean-up kit:
    - a pair of disposable latex or plastic gloves
    - zip lock bags and a large sealable container
    - hard card, rigid paper or cardboard to scrape surfaces
    - paper towel to pick-up and handle pieces of glass
    - sticky tape or masking tape to clean carpets or rugs and to seal the waste in the disposal bag
    - a larger sealable bag or rigid container for all wastes
    - a torch or small light source is useful as beads of mercury will reflect light, making them easier to see.
    - Ventilation period – by the time the first 2 steps are completed, enough time will have passed to allow for any vapours from the small amount of mercury that is present to have dispersed.
- *Put on the gloves and collect visible balls or droplets of mercury using the card or tape and put these into the disposal bag. Carefully collect pieces of glass or other broken materials – take care not to cut yourself or puncture the gloves.*
- *Dispose of the used gloves and all the clean-up materials in the disposal bag, seal it, label clearly, and store it away from children or pets until it can be taken to a household hazardous waste disposal facility.*

5.8 How to avoid professional contamination from elemental mercury

Prevention:

1 technical and technological measures for collective protection,

2 technical measures for personal protection,

3 preventive medical examinations (previous medical examinations, periodic medical examinations, targeted reviews).

This chapter was prepared in close consultation with Doc. Dr. *Lidija Petkovska, Univesrity clinic of Toxicology, Medical Faculty, University" St. Cyril and Methodius", Skopje, Macedonia.*

6. IDENTIFICATION OF POPULATIONS AT RISK AND GENDER DIMENSIONS

6.1 Preliminary preview of potential populations at risk and potential health risks

Chemicals and their sound management contribute to sustainable human development through the production and use of life-saving medicines, purification agents for treating drinking water supplies, and agricultural chemicals (e.g., pesticides and fertilizers) that boost on-farm productivity. The improper labeling, storage, and use of chemicals is a significant cause of poisoning in developing countries.

Mercury occurs naturally in the environment and also is used as a chemical and produced through industrial processes, such as combustion, metal mining and smelting. In spite of its potential risks, mercury continues to be used in a variety of products and processes all over the world because of its unique properties. For example, it is the only metal that exists in liquid form at room temperature. Elemental mercury is used in artisanal and small-scale mining of gold and silver; chlor-alkali production; vinyl chloride monomer production, and in products (such as manometers for pressure measurement and control, thermometers, electrical switches, fluorescent lamp bulbs, and dental amalgam fillings). Mercury compounds are used in some batteries, pharmaceuticals, paints, and as laboratory reagents and industrial catalysts. Mercury can be released to air, water, and soils during production and uses or after disposal of the mercury-containing products and wastes. Mercury is also released during natural processes (such as volcanoes and leaching from certain soils).

According the “WHO/UNEP Guidance for Identifying Populations at Risk from Mercury Exposure” mercury is distributed throughout the environment by both natural and anthropogenic (human) processes. Mercury exists in three different forms:

a. elemental (with the chemical symbol of Hg0),

b. ionic mercury (also known as inorganic mercury with the chemical symbol of Hg (II) or Hg2+) which in nature exists as Hg (II) mercuric compounds or complexes in solution and

c. organic mercury with methylmercury (with the chemical symbol of MeHg) being the most important and exposures can occur through breathing, eating or swallowing and skin contact.

All humans are exposed to some low levels of mercury. The factors that determine the occurrence and severity of adverse health effects include: the chemical form of mercury; the dose;

the age or developmental stage of the person exposed (the fetus is considered to be the most susceptible); the duration of exposure; and, the route of exposure (inhalation, ingestion, and dermal contact). Dietary patterns can increase exposure to a fish-eating population when fish and seafood are contaminated with mercury.

The primary targets for toxicity of mercury and mercury compounds are the nervous system, the kidneys, and the cardiovascular system. It is generally accepted that developing organ systems (such as the fetal nervous system) are the most sensitive to toxic effects of mercury. Fetal brain mercury levels appear to be significantly higher than in maternal blood and the developing central nervous system of the fetus is currently regarded as the main system of concern as it demonstrates the greatest sensitivity. Other systems that may be affected include the respiratory, gastrointestinal, hematologic, immune, and reproductive systems.

Effects on the nervous system (especially the developing nervous system) appear to be the most sensitive toxicological endpoint observed following exposure to elemental mercury and methyl mercury, while damage to the kidneys is the key end-point in exposure to inorganic mercury compounds.

Generally there are two susceptible sub populations, namely, those who are more sensitive to the effects of mercury and those who are exposed to higher levels of mercury. The fetus, the newborn and children are especially susceptible to mercury exposure because of the sensitivity of the developing nervous system. In addition to in utero exposures, neonates can be further exposed by consuming contaminated breast milk. Thus, new mothers, pregnant women, and women who might become pregnant should be particularly aware of the potential danger of methyl mercury. Individuals with diseases of the liver, kidney, nervous system, and lung are also at higher risk of suffering from the toxic effects of mercury. The other sub population that may be at greater risk to mercury toxicity are those exposed to higher levels of methyl mercury due to fish and seafood consumption (such as recreational anglers and subsistence fishers, as well as those who regularly eat large amounts of fish and other seafood). Besides fish and shellfish, exposure can also be significant in populations consuming meat (muscle and organs) from marine mammals (such as seals and whales). Individuals with dental amalgams generally have greater exposure to elemental mercury than those who do not.

The range of damage associated with mercury exposure can involve the brain, spinal cord, heart, kidney, liver and the cardiovascular and respiratory systems. Specifically, mercury has been associated with developmental delays, various forms of cancer, infertility, impaired vision and speech, muscle weakness and incoordination and cardiovascular disease, adverse effects on pregnancy and the unborn child.

The type of mercury most toxic to humans is methyl mercury. It is in this form that mercury accumulates in fresh and salt water fish and shellfish, making the consumption of these animals – especially larger fish that have lived longer and have had more time to build up mercury in their bodies – the primary source of human exposure. In addition, the consumption of marine

mammals, such as seal, who feed on sources of food with concentrations of mercury also pose health risks for humans.

When it enters into water, this mercury converts to the toxic methyl mercury, which is then absorbed by fish through the aquatic environment.

Regarding the human health, mercury is particularly dangerous for three reasons: it is toxic, it does not break down in the environment, and it can build up, or "bio accumulate" in living systems over time. People are exposed to methyl mercury mainly through their diet, especially through the consumption of freshwater and marine fish and consumption of other animals that consume fish (such as marine mammals). People may be exposed to elemental or inorganic mercury through inhalation of ambient air during occupational activities, and from dental amalgams.

Occupational exposures can occur where mercury or mercury compounds are produced, used in processes, or incorporated in products. Occupational exposures have been reported from (among others) chlor-alkali plants, mercury-based small-scale gold and silver mining, refineries, thermometer and sphygmomanometer factories, dental clinics with poor mercury handling practices, and production of mercury-based chemicals. Exposures to elemental mercury or inorganic mercury forms can also occur due to use of some skin lightening creams and soaps, the presence of mercury in some traditional medicines, and due to various accidental mercury spills in homes, schools or other locations. Minor exposures to other forms of organic mercury may result from the use of thimerosal (ethylmercury thio salicylate) as a preservative in some vaccines and other pharmaceuticals.

6.2 Assessment of potential gender dimensions related to the management of mercury

According the UNDP Guidance Document "Chemicals Management", the levels of exposure to toxic chemicals as well as the resulting impacts on human health are determined by social as well as biological factors. Social factors, primarily gender-determined occupational roles, have a direct impact on human exposure to toxic chemicals, including the kinds of chemicals encountered as well as the level and frequency of such exposures. At the same time, biological factors notably size and physiological differences between women and men and between adults and children also influence susceptibility to health damage from exposure to toxic chemicals.

Several factors, including differences in occupational roles, household responsibilities, and biological susceptibility, impact gender differences in exposure to toxic chemicals and the resulting health impacts.

Women may be at greater risk from hazardous ingredients and chemicals contained in cleaning agents, professional cosmetic and personal care products or used in textile processing.

In the health care sector, women generally represent the majority of the workers (e.g., nurses, pharmacy workers), which increases their chances of exposure to chemical agents used in medical procedures. Many chemical products or products that contain concentrations of toxic chemicals are used in households for cleaning (e.g., washing and cleaning agents), personal care (e.g., cosmetics and personal products such as soaps, creams, and shampoos), and pest control (e.g., rat poison, garden insecticides, etc.). Because women and girls usually assume responsibility for cleaning and household management, they are the ones more likely to be exposed to toxic chemicals found in cleaners, insecticides, and the like. Women and girls also tend to use more cosmetics and personal care products than men, and so are more likely to be affected by any dangerous ingredients or adulteration of such products.

While exposure to mercury is known to occur via atmospheric, agricultural soil and waterway pollution, paints, and product waste, a less well-known but also important source of exposure for women is through the application of cosmetics. Many face creams purporting to have skin lightening properties have been found to contain mercurial ingredients. Since levels of such ingredients may be below specified regulatory limits, they are not declared on the labels of cosmetic products but they may have impacts on women, ranging from minor issues such as skin rashes, to more major implications, such as damage to the brain, nervous system, kidneys and the unborn child.

The following table shows specific examples of using different mercury-containing products/source of exposure and what effect they have on health.

Table 5 presents examples of adverse health effects as a result of the exposure or use of mercury-containing products.

Table 6 Associated adverse health effects related to use and source of exposure

SUBSTANCE	USE AND SOURCE OF EXPOSURE	ASSOCIATED ADVERSE HEALTH EFFECTS
Mercury	Cosmetics use: Skin lightening creams and soaps, eye make-up and eye make-up remover (phenyl mercuric salts) Industrial, medical and household use: Artisanal gold mining; chlorine and caustic soda production, batteries, vapor lamps, switches, thermometers, dental amalgam fillings Exposure: Methyl mercury in fish (especially predatory fish), inhalation of mercury vapor, dermal uptake	Skin rashes, damage to the nervous system and kidneys. The developing child is more susceptible than adults. Methyl mercury and mercury vapor is neurotoxic, possibly carcinogenic. Metallic mercury and inorganic mercury compounds are nephrotoxic.

The level and kind of chemical exposures at the workplace often differs by gender because women and men generally work at different tasks. Depending on social circumstances in particular communities, men may be at greater risk of exposure to toxic chemicals used for instance in artisanal gold mining (such as toxic mercury vapors that are released when gold is extracted

from ore), tannery operations and mechanical workshops (through exposure to toxic solvents being released from paints).

Women often experience relatively higher physiological susceptibility to the impacts of toxic chemical exposure, especially in connection with reproductive cycles. At particular stages of their lives, such as pregnancy, lactation, and menopause, women's bodies undergo rapid physiological change, making them more vulnerable to health damage from toxic chemicals. Women's exposure to pesticides can be the cause of miscarriages, premature births, birth defects, and low birth weight (WHO 2004). A substantial portion (up to 33 %) of a woman's chemical burden can be passed on to her baby during gestation (through the placenta) as well as via breastfeeding. Moreover, because of their special reproductive roles, women are biologically engineered to carry greater reserves of fatty tissue throughout their life cycles, making them generally more vulnerable than men to the impacts of fat-soluble chemicals (such as Persistent Organic Pollutants—POPs) that bio accumulate in fatty tissues.

Gender-based analysis helps for better understand the ways in which environmental contaminants pose different biological risks for women and men and also to understand the critical need for recognizing female and male vulnerabilities in environmental planning and policy.

Mercury exposure represents health risks for everyone, but more affects women, women's bodies tend to have more fat than men's. Given that mercury adheres to fat and accumulates over time, the average woman stands to absorb a much larger amount of mercury in her lifetime and suffer a greater impact from even a single mercury exposure than the average man. Mercury pollution not only affects women themselves, but bio accumulated mercury can also be passed on to children, both to a fetus in utero and to an infant through breastfeeding.

Gender Equality in Macedonia is guaranteed in the Constitution and included in subsequent laws. Throughout the 1990s, the advancement regarding gender equality was dominantly in the sphere of economic and social rights. In 1997 the Unit for the Promotion of Gender Equality was formed, and in 1999 the First National Gender Equality Plan was enacted (European Commission 2011: 3). Furthermore, the country has made a major step forward in terms of gender equality with the adoption of the Law on Equal Opportunities of Women and Men. The gender equality in the country has been also fostered throughout the process of approximation of the Macedonian legislation with the EU acquis, particularly in the area of labor relations where Macedonia incorporated directive addressing issues of equal pay and equal treatment of women and men at work (Law on Labor Relations, Official Gazette, No 62, July 28, 2005 in CRPM 2008). Renewed National Action Plan for Gender Equality was adopted in May 2007, and it was in part developed from the Law on Equal Opportunities (European Commission 2011: 4). Regarding the international gender commitments – Macedonia is a signing country of the Beijing Platform and Action Plan - which are strategic documents adopted at the International Conference on Women held in Beijing in 1995. Furthermore, the Convention on Elimination of All Forms of Discrimination (CEDAW) was put in effect in 1991, and additionally, the Optional Protocol to the Convention was ratified. With the ratification of the Optional Protocol, the country

recognized the competence of the CEDAW Committee, and in that way enabled its citizens to refer to the Committee in case of an infringement of the rights established in the Convention. Additionally, Macedonia ratified the European Convention for the Protection of Human Rights and Fundamental Freedoms. Hence, tailoring the NIP Update in a gender sensitive manner is aligned to the overall national plans and priorities regarding gender equality.

According to the latest population estimates (for 2016) the total population of the Republic of Macedonia is 2 073 702 inhabitants. The gender structure shows approximately equal participation of both genders (49.9% women and 50.1% men).

The employment rate for women in the Republic of Macedonia in 2016 was 33.8 %, which is significantly lower than the employment rate of 52.3 % for men. The activity rate for women population, at 43.8 % was lower, while men had a significantly higher rate of 69.2 %.

Employed people by sectors of activity and gender for 2016 are shown in Table 6.

Table 7 Employed persons by sectors of activity and gender, 2016

SECTORS	WOMAN (%)	MEN (%)
Manufacturing	45.7	54.3
Electricity, gas, steam and air conditioning supply	16.1	83.9
Professional scientific and technical activities	45.4	54.5
Administrative and support service activities	33.5	66.5
Human health and social work activities	75.5	24.5

Most of the women in the Republic of Macedonia are employed in the textile and food industry, while men are employed in the mining, construction and energy sectors.

7. AWARENESS/UNDERSTANDING OF WORKERS AND THE PUBLIC; AND EXISTING TRAINING AND EDUCATION OPPORTUNITIES OF TARGET GROUPS AND PROFESSIONALS

7.1 Identification of relevant stakeholders and their engagement related to Minamata Convention requirement

In order to design proper stakeholder engagement processes, MoEPP need a clear understanding of who are the relevant stakeholders and how and why they would be engaged. *A stakeholder analysis can help to identify: the interests of all stakeholders, who may affect or be affected by mercury release, key sectors/peoples for information distribution, and communication planning & stakeholder management strategy, ways to reduce negative impacts on people health especially vulnerable groups.*

The first stage of the stakeholder analysis is to identify who are the relevant stakeholders related to Minamata Convention requirement. The next step is to understand how to engage all relevant stakeholders in order to improve the way of communication among them by providing relevant information. Thereare a number of relevant key stakeholders regarding the Minamata Convention requirement, identified according their roles and responsibilities in the process of usage, released, regulation, monitoring and other function related Minamata requirements.

Following stakeholder groups are identified as a relevant for Minamata Convention requirements:

- National institutions
- Industry
- Small and medium production/service facilities
- Local and regional authorities
- Multinational organizations/Civil society and Media
- International financial institutions / international organizations
- Consumers/ General population.

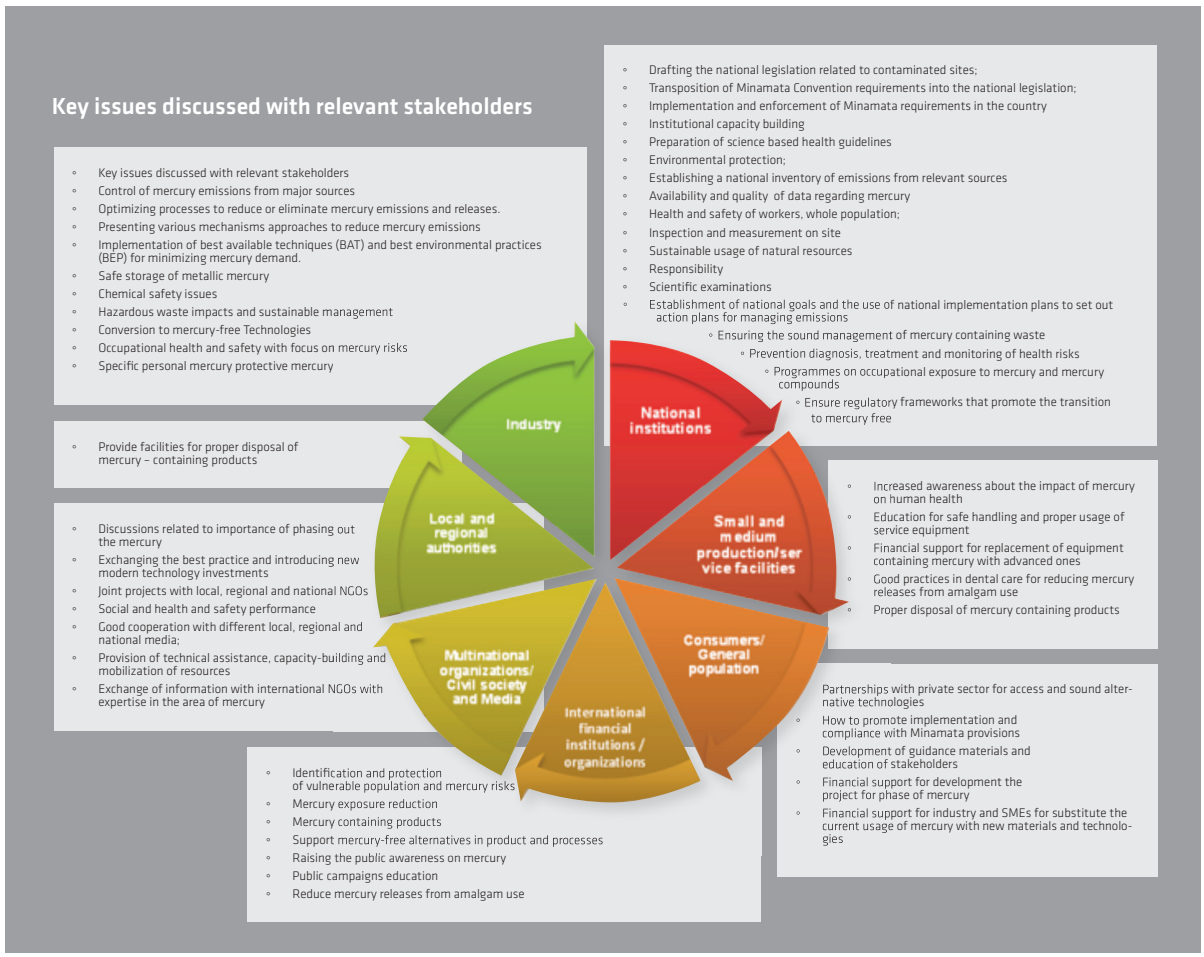
Relevant stakeholders in the Republic of Macedonia related to the process of phasing out of mercury are presented in Table 8.

Table 8 Relevant stakeholders in the Republic of Macedonia

NATIONAL INSTITUTIONS	**Government of Republic of Macedonia:** - Ministry of Environment and Physical Planning ◦ Macedonian Environmental Information Center (MEIC), ◦ Sector for Industrial Pollution and Risk Management : • Unit for Chemicals and Industrial Accidents, • Unit for Integrated Pollution Prevention and Control, ◦ Sector for waste management ◦ National Steering Committee (NSC) for Chemicals and Waste - Ministry of Health: ◦ Sector for chemicals, ◦ Institute of Public Health - Drug Agency - Ministry of Agriculture, Forestry and Water Economy (MAFWE) ◦ Phytosanitary administration - Ministry of Economy: ◦ Sector for Mineral Resources, - Ministry of Foreign Affairs: ◦ Directorate for Multilateral Relations, ◦ Directorate for Economic Diplomacy - Ministry of Finance - Ministry of Labor and Social Policy, - State Environmental inspectorate, - State Labor Inspectorate, - Customs Administration: ◦ Department of Customs Tariff, ◦ Laboratory, Value, Origin and TARIC **Academic institutions and research facilities:** - Faculty of mining, geology and polytechnics - Stip - Faculty of technology and metallurgy - Skopje - Faculty of mechanical science - Faculty of civil engineering - Faculty of Medicine - Faculty of Pharmacy - Accredited laboratories - Certification bodies **State institutions:** - Secretariat for Legislation of RM - National Hydrometeorogical Center - Food and veterinary Agency - State Statistical Office - Civil protection centers

INDUSTRY	- Workers; - Primary metal production facilities: ◦ Extraction of lead, zinc, copper and primary ferrous production facilities; - Production of other minerals and materials with mercury impurities: ◦ Production of cement and limestone - Sector for use of fuels/energy sources: ◦ Coal combustion in large power plants, ◦ Production of mineral oil and gas ◦ Usage of other fossil fuels, ◦ Biomass fired power and heat production, ◦ Geothermal power production; - Consumer production with intentional use of mercury: ◦ Thermometers with mercury, ◦ Facilities for production of lights with mercury, ◦ electrical and electronic switches, ◦ contacts and relays with mercury, ◦ batteries containing mercury, ◦ Chemicals Laboratory and ◦ equipment containing mercury - Waste incineration: ◦ Incineration of medical waste; ◦ Informal incineration of waste; - Waste deposition/landfilling and waste water treatment: ◦ Controlled landfills/deposits; ◦ Informal dumping of general waste; ◦ Waste water system/treatment - Production of recycled metals (Production of recycled ferrous metals (iron and steel); - Identified hot spots: ◦ Closed/abandoned chlorine-alkali production sites; ◦ Tailings/residue deposits from other non-ferrous metal extraction; - Pharmaceutical production company - Production of cosmetics containing mercury
SMALL AND MEDIUM PRODUCTION/SERVICE FACILITIES	- Hazardous waste collecting contractors - Maintenance of equipment/measuring and control devices - Production of paints - Recyclers of Hg containing wastes; - Holders of recovered mercury; - Dental clinics (application, use and disposal of dental amalgam fillings) - Pharmacy stores; - Medical facilities;
LOCAL AND REGIONAL AUTHORITIES	- ZELS (Association of local self-governmnets) - Units of Local self-government (84 Municipalities)

MULTINATIONAL ORGANIZATIONS/ CIVIL SOCIETY AND MEDIA	- Chamber of commerce of RM, - Union of Trade Unions of the Republic of Macedonia - Trade Union of Industry, Energy and Mining, NGOs - National TVs, National newspapers - National radio stations - Consumer organization of RM - Macedonian Dental Chamber
INTERNATIONAL FINANCIAL INSTITUTIONS / INTERNATIONAL ORGANIZATIONS	WB, EBRD, GEF, UNIDO, UNDP, UNEP, WHO, FAO - Secretariat of Stockholm Convention, Minamata Convention secretariat, EU
CONSUMERS / GENERAL POPULATION	- Consumers of commercial products that contains mercury - Consumer of food contaminated with mercury



7.2 Roles and responsibilities of key stakeholder

STAKEHOLDERS	ROLES AND RESPONSIBILITIES
NATIONAL INSTITUTIONS	Adoption and harmonization of national legislation with the provisions of international agreements and European legislation regarding mercury; Prohibitions and restrictions on the use of chemicals (mercury and other heavy metals) and products according the REACH Regulation; Issuing permits for export/import of chemicals; Monitoring of mercury emissions in the air; Monitoring of the releases of the chemicals (mercury) into environment Monitoring of the environmental media (water quality, air quality, soil pollution) Preparation of strategic documents related to the management of chemicals, their control, reduction and elimination Reduce global mercury releases to air, water, and land Implementation of national legislation related to the protection of the environment, production and trading of chemicals. Waste management regulation Control of the export/import of mercury and products/equipment containing mercury on the border crossing of RM Regulation of custom procedure during the import of chemicals, equipment, spare parts and other products containing mercury Reporting according the obligation of country regarding the Convention on Long-Range Trans boundary Air Pollution Control of the foodsafety Checkups on public health
INDUSTRY	Procurement of materials containing mercury needed for the production process; Production of different products or by – products containing mercury and handling with the mercury containing chemicals as a raw materials or waste; Mercury storage and disposal; Working of the production facilities according the A or B IPPC Permit and defined conditions and introduction of BAT/BEP; Keeping records on export/import and storage of the chemicals containing mercury and submitting to the competent authority; Finding solution to invest in cleaner and more effective techniques that do not require mercury, resulting in improved control of releases of mercury and other pollutants
SMALL AND MEDIUM PRODUCTION/SERVICE FACILITIES	Managing with hazardous waste (containing mercury) according the national legislation; Maintenance of equipment/measuring and control devices containing mercury and selecting the hazardous waste; Recycling of Hg containing wastes; Application, use and disposal of dental amalgam fillings from dental clinics.

LOCAL AND REGIONAL AUTHORITIES	Issuing B IPPC Permits; Inspection of the installation with B IPPC; Providing facilities for proper disposal of mercury-containing products; Effective and regular communication with competent authorities regarding the implementation of the requirements of Minamata convention on local level;
MULTINATIONAL ORGANIZATIONS/ CIVIL SOCIETY AND MEDIA	Providing information regarding funding of projects related to mercury phasing out; Conducting campaigns for awareness raising of population with regard to health effects and environmental impact from mercury usage; Publishing results from the examinations of the mercury negative impact on human health and increasing the public awareness about the importance of phasing out of the mercury; Environmental protection and health and safety of the population and workers in the industries related to mercury usage
INTERNATIONAL FINANCIAL INSTITUTIONS / INTERNATIONAL ORGANIZATIONS	Support governments to Invest in cleaner and more effective techniques that do not require mercury, resulting in improved control of releases of mercury and other pollutants. Providing financial support and resources for trainings and raising public awareness about the importance of mercury phasing out; Potential funding sources for implementation of activities for clean-up of 16 identified contaminated sites in the Republic of Macedonia (according their priority); Support the Government of the Republic of Macedonia to implement the Minamata Convention
CONSUMERS / GENERAL POPULATION	To be Informed about the negative impact and consequences from mercury release on human health and environment; Increased public awareness for buying mercury-free products; Be aware of mercury dangers from the contaminated food, products and usage of cosmetics containing mercury;

7.3 Level of Engagement

The appropriate approaches for involving stakeholder groups on different levels of influence and importance are shown in the following **Error! Reference source not found..**

The three levels of engagement could be used:

- **INFORM** - Short or long term relationship with stakeholders “We will keep you informed”. Inform or educate stakeholders
- **INVOLVE** - Long term relationship with stakeholders – considered stakeholder aspirations and concerns.

- **EMPOWER** - Including the stakeholders in decision, development of alternatives and identification of solution. Long term relationship with stakeholders "We will implement what we will decide together".

Each level has its own stakeholder participation goal, promises to the stakeholders and relevant methods and techniques for stakeholder engagement.

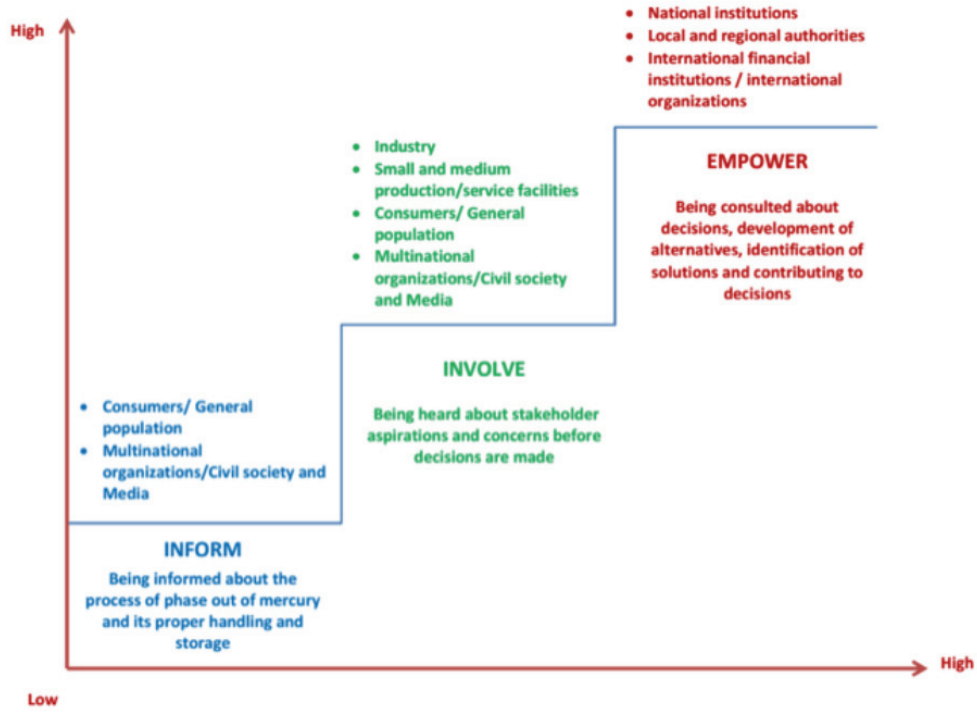


Figure 15 Level of stakeholders importance/influence on the process of mercury phasing out

7.4 Stakeholder Engagement Methods and Techniques

After the defining the level of engagement for each stakeholder group within the process of phasing out of mercury, the appropriate approaches, methods and techniques would be applied for stakeholder engagement. The well-known approaches and techniques for stakeholder involvement were adopted by the Team in order to achieve the open and transparent stakeholder involvement.

The applied methods and techniques are presented in Table 8.

Table 9 Methods anf technics of stakeholder involvement

LEVEL OF ENGAGEMENT	GOAL FOR ENGAGEMENT	COMMUNICATION	ENGAGEMENT APPROACH AND METHODS
Inform	Inform and educate all stakeholders related to human health risks of mercury usage and release and precautionary measures to be taken	One – way, no invitation to reply	• Link to the Ministry of Environment and Physical Planning/ Unit of POPs web site (http://pops.org.mk/main_mak.html) • Official event "Week of phasing out of mercury" • Press release/Media coverage • Informative meetings • Distribution of promotional material (brochures, leaflets, etc.)
Involve	Work directly with the stakeholder groups throughout the process to ensure that concerns and aspirations are understood and considered	Two-way or multi-way engagement	• Establishment of Advisory body (participation of different stakeholders members) • Regular advisory meetings; • Technical meetings; • Meetings with different focus groups; • Workshops; • Partnerships; • Multi-stakeholder initiatives; • Invitation letter for cooperation;
Empower	Decision making, development of alternatives and identification of the most proper solution	Decisions delegated to stakeholders; Two-way or multi-way engagement: joint learning, decision making and actions	• Steering Committee meetings • Technical meetings • Preparation of National Action plan for phasing out of mercury • Detailed analysis of existing situation regarding the mercury (concentrations in air, water, soil, food, humans).

7.5 Public information awareness and education

Taking into consideration the health and environmental effects of mercury and mercury compounds, the interest and awareness of the public and workers should be increased through their involvement in the process of phasing out of mercury.

The competent authority (MoEPP) should provide education, training and public awareness related to the effects of exposure to mercury and mercury compounds on human health and the environment in collaboration with relevant intergovernmental and non-governmental organizations.

Regarding the insufficient data on national level on mercury related issues, it could be relevant to be prepared the Communication Strategies for different identified stakeholder groups.

Each Strategy would be consist of: defined focus group, key issues to be discussed with identified stakeholders, methods and technics of communication, financial resources for implementation of the Strategy, human resources needed and benefits for the population.

a) Public awareness campaign for Consumers/ General population

The objective of this campaign is to raise the public awareness on mercury and mercury compounds especially because there are no sufficient data on potential risks and impacts from exposure andto protect human health and the environment from the risks posed by the unsound use, management and release of mercury. It is very important the population to become aware of the presence of mercury and their impact and what should be done to avoid exposure of mercury and mercury compounds.

In the frame of this campaign would be organized public events for informing the consumers about the harmful impact of mercury on human health and environment, and also would be emphasized the products with mercury and alternatives for their replacement. Competent authority will prepare informational package of materials (leaflets, brochures, info on the web page of the MoEPP and other relevant institutions, etc.) that will be distributed on the workshops with the public to be aware for the mercury.

Implementation of projects for public raising about the risks from mercury exposure with NGOs and other interested associations will results with the prepared different Studies:

- Mercury Risk assessment Study;
- Communication Strategy for phasing out of mercury;
- Mercury Alternatives products and processes Study.

In the frame of this campaign for public raising also would be prepared few leaflets regarding mercury:

I. “Mercury around us” with information about the mercury containing products which can be identified around us: mercury lamps, batteries, thermometers, switches and relays, and recommendations on alternatives for such products and their disposal when they will become waste.

II. “Impact on the health from different sources of mercury” will contain general information about mercury impact on health and the main sources of human body contamination (fish, dental amalgam fillings, food etc.).

b) Training and education campaigns for Industry Sector

The training and educational campaigns for key Industry Sector on national level should be focused on the following issues: the health of the workers (OH&S) and environmental impacts of mercury, the proper disposal of mercury-containing products, chemical safety issues, hazardous waste impacts and sustainable management, occupational health and safety with

focus on mercury risks, mandatory use of specific mercury personal protective equipment, financial implications of the replacement of the existing equipment, etc.

Different industry sectors will be trained on how to report regarding the usage and storage of mercury, what parameters are considered for reporting, potential emissions of mercury in the environment, transfer of international experiences from other countries which fulfilled the obligation from the MINAMATA convention requirements and introducing the mercury free technologies.

c) Training and education campaigns for small and medium production/service facilities

As well as the importance of the Industry Sector, the small and medium production/service facilities are very important stakeholder group related to mercury because of the direct contact of stakeholders with mercury and the potential for their release in the environment and endangering the health of workers and population. Main objective of the public awareness campaign for this group will be the importance of phasing out of mercury in products and eliminate releases during product life-cycles via environmentally sound production, transportation, storage, and disposal processes.

These stakeholders should be educate for the impact of the mercury on human health and environment, safe handling and proper usage of the equipment containing mercury, mercury containing products, handling and storage of the mercury containing waste streams (especially with the emphasis to the informal waste collectors), mercury-free alternatives for each subsector separately; use of cost-effective and clinically effective mercury-free alternatives for dental restoration (instead of use of amalgam), sound management of dental waste etc.

d) Presentation of the project activities in front of international financial institutions

The objective is to provide financial support of the national institutions for implementation and compliances with the Minamata provisions and development project for phase out of the mercury.

Providing incentives from the international financial institutions/organizations for support of the SMEs and Industry Sector for substitute the current usage of mercury with new alternative materials and technologies.

e) Public awareness campaign for Multinational organizations/Civil society and Media

Preparation of the Communication Strategy for Multinational organizations/Civil society and Media will contribute forcomprehensive communication with these stakeholders, defining the key issues to be discussed, technics and channels of communication, financial resources and benefits for the stakeholders.

Different project would be realized as a result of cooperation with different multinational organizations and NGOs from the country and abroad. The main focus would be exchange of information with expertise in the area of mercury and phasing out.

Capacity building, technical assistance and technology transfer

Capacity-building, technical assistance and technology transfer would be delivered through national cooperation and multilateral means and through partnerships, including partnerships involving the private sector.

The capacity building, technical assistance and technology transfer is intended especially for the national institutions and local and regional authorities regarding: legal aspects, institutional aspects, enforcement aspects and partnerships, and also for the industry and small and medium production/service facilities as the most important production sector which work with mercury or produce products containing mercury.

a) Capacity building, technical assistance and technology transfer for National institutions

National institutions as stakeholder group are the main carriers for implementation of the requirements of the MINAMATA convention and transposition in the national legislation, so specific capacity building trainings/workshops and mercury tailored events and workshops as well as site visits should be organized and implement. The best approach is to launch the "Reduce Mercury" Capacity Building Program. This Program would be consisting of legal aspects, institutional, enforcement, stakeholder engagement (partnerships).

Legal aspects (relevant for MoEPP, Ministry of health, Ministry of Agriculture, Forestry and Water Economy,Ministry of Finance, Secretariat for Legislation of RM) would include: GAP analysis, transpositions of legislation with international experience from other countries, cooperation with the the Secretariat to support the transposition of legislation, study of Ministries representatives to other countries for exchange of information related to relevant legislation.

Institutional aspects would include: workshops for strengthening the capacity of the administration; organizing workshops for BATs and BEPs for industry, which will result with the preparation of the Study including BATs and BEPs for relevant industry sectors in RM, partnership with the Secretariat of Minamata Convention for financial and technical support of industry.

Enforcement aspects: strengthening the capacities of the State Environmental inspectorate, Food and veterinary Agency, Custom, State Labor Inspectorate) related to mercury releases in the environment, impact on human health and food, as well as regular implementation of the national legislation.

Stakeholder engagement/partnerships aspects: making partnerships with other relevant institutions from other countries for the exchange of experience in transposing the requirements of the convention; joint projects for phase out of mercury with other relevant intergovernmental and non-governmental organizations from the country and international ones.

b) Capacity building and technical assistance to local and regional authorities

Local and regional authorities are also one of the main stakeholder groups with the need

for institutional capacity building through organizing trainings/workshops related to the mercury and negative impacts on the health and environment.

Also the capacities of Inspectorates on local level should be strengthen related to mercury releases in the environment, as well as regular implementation of the national legislation and transposition of the requirement of the Convention on local and regional level and implementation of BATs and BEPs for industry on local level (regulated with the B IPPC permit).

The local and regional authority's capacities should be strengthen through the site visits to other countries with more knowledge about mercury and exchange of experience and technical assistance.

Providing financial support for local and regional authorities is necessary in order to be able to purchase facilities for proper disposal of mercury containing products located in the frame of the separate municipalities.

a) Capacity building, technical assistance and technology transfer to industry and small and medium production/service facilities

Capacity building for the Industry sector and small and medium production/service facilities is very important in order to be in compliance with the regulation related to mercury after the transposition of the requirements of the Convention.

Also, exchange of experience and technical assistance from other countries for conversion to mercury – free technologies for each of the sub – sectors is essential. Practical experience on the whole process of phasing out of the mercury from processes and products is necessary.

Providing financial support (credit lines) from national institutions/international financial institutions for industry sector for replacement of the technology using mercury with alternative mercury free technology, as well as for implementation of the BAT and BEP for minimizing mercury demands.

Regarding the health aspects of the workers and population, capacity building should be provided to medical centers, dental clinics, and pharmacy stores for proper handling with products and equipment containing mercury and sound management of medical waste. Also it is necessary to strengthen their capacities in terms of training of the professionals in relation to alternative technologies and materials that can be used instead of mercury and mercury-containing products and best management practices. Establishment of good cooperation with the WHO for exchange of information considering health related issues (reducing the mercury use; switching to non-mercury thermometers and sphygmomanometers in health care; implementing safe handling, use and disposal of mercury-containing products and waste; promoting use of clean energy sources that do not rely on burning of coal, etc.)

8. KEY PRIORITY SECTORS - MAINSTREAMING OF MERCURY PRIORITIES - INTEGRATION OF SOUND MANAGEMENT OF CHEMICALS IN THE NATIONAL, REGIONAL OR SECTORIAL DEVELOPMENT.

In order to define the key priority sectors several aspects should be considered. One of the main guides for identification of the key priority sectors is the mercury inventory and identification of emissions and resources.

The results of the inventory on the mercury releases show that the total mercury release in the country for the year of 2013 is 3.282,77 kg. The most significant category within the inventory is “Waste deposition/landfilling and waste water treatment”. This source contributed with 45% of the total mercury releases or 1,476.8 kg Hg/y. The second most significant source of mercury release in the country is the “Waste incineration and burning” with total release of 382,90 kg Hg/y (12%), following by “Extraction and use of fuels/energy sources” and “Production of recycled metals” with release of 343,83 kg Hg/y (10%) and 299,91kg Hg/y (9%), respectively. So, the leading output of the released mercury by all source categories/subcategories is in the air, with total amount of the 1,225.34 kg Hg/y (37,3%), following by land and water with 977.79 kg Hg/y (29.8%) and 488.92 kg Hg/y (14,9%), respectively.

Having in mind the above the key industrial sectors could be listed in accordance to the estimated/measured emissions/releases in the defined media presented in Table 9.

Table 10 Key industrial sectors listed in accordance to the estimated / measured emissions / releases

Source category	Calculated Hg output, Kg/y							
	Air	Water	Land	By-products and impurities	General waste	Sector specific treatment /disposal	Total releases by source category	Percent of total releases *3*4
Waste deposition/ landfilling and waste water treatment*3*4	326.45	849.71	3,319.74	0.00	36.61	24.66	4.557,16	45%
Waste incineration and burning	382.90	0.00	0.00	0.00	0.00	0.00	382.90	12%
Extraction and use of fuels/energy sources	218.06	0.00	0.00	0.00	0.00	125.76	343.83	10%

Source category	Calculated Hg output, Kg/y							
	Air	Water	Land	By-products and impurities	General waste	Sector specific treatment /disposal	Total releases by source category	Percent of total releases *3*4
Production of recycled metals	98.97	0.00	101.97	0.00	98.97	0.00	299.91	9%
Consumer products with intentional use of mercury (whole life cycle)	24.41	47.47	7.64	0.00	193.41	0.00	272.93	8%
Other intentional product /process use*2	1.16	121.65	10.92	8.19	49.40	44.16	235.47	7%
Other intentional product/process use*2	1.16	121.65	10.92	8.19	49.40	44.16	235.47	7%
Production of other minerals and materials with mercury impurities*1	116.64	0.00	0.00	3.82	0.00	0.00	120.46	4%
Primary (virgin) metal production	56.75	1.05	38.93	0.00	0.00	5.74	102.46	3%
Crematoria and cemeteries	0.00	0.00	48.02	0.00	0.00	0.00	48.02	1%
SUM OF QUANTIFIED RELEASES*3*4	**1,225.34**	**488.92**	**977.79**	**12.01**	**378.39**	**200.32**	**3,282.77**	**100%**

The table above shows that several sectors seriously participate in the environmental pollution caused by mercury emissions and releases, starting from waste treatment/management as the main source category, through the metal production and cemeteries as the last category.

Identification of the relevant stakeholders, starting from directrly exposed professionals to the public in general, and their roles and responsibilities, must be considered and acctualy facilitates the definition of the key priority sectors.

However, not only industry, but also the other business sectors participate in the causing and managing the mercury pollution and mercury itself. The key sectors could be divided in several groups as follows:

- National institutional set-up (national institutions, local and regional authorities)
- Business sector (industry, small and medium production/service facilities)
- General public (NGOs, consumers / general population civil, society and media)
- International support (multinational organizations, international financial institutions/ international organizations)

The representatives from above sectors actively participated in the process of MIA development and raised several problems linked with mercury management and elimination. They defined general steps and recommendations to be further developed and considered in future national actions for mercury management:

- The Government to mobilize and allocate funds for further improvements towards reduction and elimination of emissions and releases.
- The Government to make efforts to establish an inventory system and to develop a detailed inventory after the Ratification.
- To improve the capacities of monitoring and reporting of mercury in different media
- There is a need for interministerial coordination to control the import of mercury products.
- To build the capacities and strengthen the institutions for sound management of waste which is the major source category according to the results of the National Inventory of Mercury Releases.
- To develop a plan for involving the stakeholders including the general population.

Appling the above given recommendations, the sectors and related stakeholders are to be advised to undertake concrete steps and actions towards sound mercury management and reduction/elimination of the mercury pollution. In this direction several focal activities for each sector could be undertaken as the priority ones in order to facilitate and improve the mercury management in the country. Thus, the discussion and focus is put on several topics:

1. **National institutional set-up (national institutions, local and regional authorities):**
    - Drafting the national legislation related to contaminated sites;
    - Transposition of Minamata Convention requirements into the national legislation;
    - Implementation and enforcement of Minamata requirements in the country;
    - Institutional capacity building
    - Preparation of science based health guidelines
    - Environmental protection;
    - Establishing a national inventory of emissions from relevant sources;
    - Availability and quality of data regarding mercury;
    - Health and safety of workers/entire population;
    - Inspection and measurement on site;

- Sustainable usage of natural resources;
- Responsibility;
- Scientific examinations;
- Establishment of national goals and the use of national implementation plans to set out action plans for managing emissions
- Ensuring the sound management of mercury-containing waste
- Prevention, diagnosis, treatment and monitoring of health risks
- Programmes on occupational exposure to mercury and mercury compounds
- Ensure regulatory frameworks that promote the transition to mercury-free products

2. Business sector (industry, small and medium production/service facilities):

- Control of mercury emissions from major sources
- Optimizing processes to reduce or eliminate mercury emissions and releases.
- Presenting various mechanisms and approaches to reduce mercury emissions
- Implementation of best available techniques (BAT) and best environmental practices (BEP) for minimizing ercury demand,
- Safe storage of metallic mercury
- Chemical safety issues
- Hazardous waste impacts and sustainable management
- Conversion to mercury-free technologies
- Occupational health and safety with focus on mercury risks
- Specific personal mercury protective equipment
- Increased awareness about the impact of mercury on human health
- Education for safe handling and proper usage of service equipment
- Financial support for replacement of equipment containing mercury with advanced ones
- Good practices in dental care for reducing mercury releases from amalgam use
- Proper disposal of mercury-containing products

3. General public (NGOs, consumers / general population civil, society and media):

- Identification and protection of vulnerable population and mercury risks
- Mercury exposure reduction
- Mercury containing products
- Support mercury-free alternatives in product and processes

- Raising the public awareness on mercury
- Public campaigns and education
- Reduce mercury releases from dental amalgam use

4. **International support (multinational organizations, international financial institutions/ international organizations)**
   - Technology investments
   - Joint projects with local, regional and national NGOs
   - Social and health and safety performance
   - Good cooperation with different local, regional and national media
   - Provision of technical assistance, capacity-building and mobilization of resources
   - Exchange of information with international NGOs with expertise in the area of mercury
   - Partnerships with private sector for access and sound alternative technologies
   - How to promote implementation and compliance with MInamata provisions
   - Development of guidance materials and education of stakeholders
   - Financial support for development the project for phase out of mercury
   - Financial support for industry and SMEs to substitute the current usage of mercury with new materials and technologies

The above listed key sectors and preliminary priority actions are to be discussed and compiled by the stakeholders in the phase of development of Implementation plan in accordance to the Article 20 of the Minamata Convention. The future implementation plan should contain list of national priorities for mercury management and elimination that will be basis for preparation of action plan for mercury management and phase-out. In order to facilitate the mainstreaming of mercury priorities in national strategic planning and their integration of sound management of chemicals in the national, regional or sectorial development, a list of policy documents related to mercury management was developed:

1. **Eptisa/DHI: Development of remediation plans with financial requirements for elimination of industrial hotspots, FEASIBILITY STUDY – Volume I – OHIS Plant (2007)**

The Study treats the mercury contamination in the OHIS plant giving overview on environmental impact evaluation of existing contamination and remediation technique to solve the problem with mercury contaminated site.

2. **Deconta/Enacon: Old Environmental Burdens in Chemical Plant OHIS, Skopje, Feasibility Study for Soil Remediation and Management of Waste Contaminated with Mercury (2008)**

This feasibility study proposes and assesses alternative remedial actions aiming at reducing and/or eliminating risks related to the existence mercury contamination hot spot – i.e. the facility of former electrolysis plant and wastes resulting from prospective pull down of former electrolysis plant.

3. **Deconta/Enacon: Old Environmental Burdens in Chemical Plant OHIS, Skopje, Risk Assessment (2008)**

Potential risk to the human health and environment was assessed in the study including risk posed by the wastes resulted from prospective pull down of former electrolysis plant.

4. **National Action Plan for Ratification and Implementation of the Protocol on Heavy Metals, Protocol on POPs and Gothenburg Protocol to Convention on Long-range Transboundary Air Pollution (2010)**

The document contains complete situation report in regard transposition and implementation of the Protocol on Heavy Metals and action plan with timescales and institutions responsible for implementation.

5. **Draft-report on strategic environment impact assessment and Water strategy for the Republic of Macedonia (2011)**

The draft-document contains some data on hydropower sector impact on the environment. A brief part is linked with mercury impact saying that the increased amount of deposit can produce large amounts of mercury that poses a serious threat to the fishes.

6. **Annual report on processed data for quality of the environment (2015)**

The Report contains part on the air quality and heavy metals (including mercury) emissions in 2014. It includes mercury sources and emissions in 2014 and mercury impact on human population, flora and fauna.

7. **Informative report on the inventory of the Republic of Macedonia for the period 1990 – 2014**

The inventory of the mercury emissions in air for the defined period is covered by the Report. Additionally, the Report describes the trend, key mercury sources as well as data and emission factors that are applied for the mercury emissions calculations.

8. **National Plan for Waste Management (2009 – 2015)**

In the chapter on current situation with waste management in Macedonia (Existing waste streams and practice of waste management) the waste containing mercury is mentioned in construction and demolition waste / including excavated soil from contaminated sites. Additionally, the measures for the Plan realization contain part on host spots remediation where the mercury contamination in the OHIS factory is taken into consideration. The waste batteries and accumulators containing mercury are included in the quantitative targets for specific waste streams in the period of 6 years.

9. Plan for management of waste electric and electronic equipment (WEEE) in the Republic of Macedonia with Feasibility Study for period 2013-2020.

The Plan covers most of the aspects linked with WEEE management including WEEE containing mercury: EU and national legislation on WEEE management and its impact on WEEE management; aspects of the current WEEE management (collection, storage, recycling), national policies in this area; hazardous substances contained in WEEE; economic assessment (implementation costs); scenario for WEEE generation in period 2011 – 2020; impact of the WEEE management in period 2011-2020; policy for WEEE management in the Republic of Macedonia; waste equipment movement; costs of WEE management.

10. National Plan for ambient air protection in the Republic of Macedonia for period 2013 – 2018

The Plan has a short part within the country situation report (implementation of the obligations to the international treaties) containing information that the initial inventory of heavy metals (including mercury) was developed in 2011. The inventory was defined in accordance to the provision of the Protocol on Heavy Metals under the Convention on the Long Range Transboundary Air Pollution.

The list should be updated during the implementation plan development. The above listed documents as well the future ones could be used for mainstreaming of mercury priorities and integration of sound management of chemicals in the national, regional or sectorial development in the phase of implementation plan development and its implementation. The identified key sectors representatives are introduced with the existing policy documents and will be involved in the mainstreaming and integration process. The opportunity of updating the existing national plan for SAICM implementation will be used to mainstream the mercury issue in the document and in the general national chemical management including scheme for synergy of Basel, Rotterdam and Stockholm Conventions.

9. FUTURE STEPS TOWARD RATIFICATION AND IMPLEMENTATION OF THE MINAMATA CONVENTION

The development of MIA report was acctualy a starting point for rafication of the Minamata Convention on Mercury.

In accordance to the Macedonian administrativie rules, there is a special procedure to be conducted in case of ratification an international treaty.

The procedure foresees few steps:

- The competent authority or focal point responsible for future treaty implementation (Ministry of Environment and Physical Planning in case of Minamata Convention) approachs the Government with information about the intention to ratify the certain international agreement. The information should be accompanied with official opinions by the relevant institutions (ussualy institutions involved in the agreement implementation);
- After adoption of the treaty by the Macedonian Government, the treaty is sent to the Macedonian Parliament for the final ratification;
- The Ministry of Foreign Affairs deposits duly executed instrument of ratification with the Depositary (Secretary-General of the United Nations).

The Minamata initial assessment report will be used as a comprehensive information to be presented to the Macedonian Government and Parliament in the course of the ratification process. The report gives data that will provide authorities with initial picture about mercury presence and management in the country. It will also inform about key sectors to be considered with the special attention and priority activities that will enable quick start-up of the Convention implementation.

After ratification of the Minamata Convention (tentative period November – December 2018) the Ministry of Environment and Physical Planning will continue to work on development of Implementation plan in accordance to the Article 20 of the Minamata Convention. It is planned to approach the Specific International Programme with the proposal for development of the above mentioned Implementation Plan. The Plan will give brief situation report on mercury management in the country, national priorities for mercury management and elimination and national action for mercury management and elimination. The Plan development will take two years and its actions will cover the period 2020-2025.

10. REFERENCES

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11. ANNEX 1 GAP ANALYSIS ON MERCURY MANAGEMENT IN THE RM

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION		Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Objective						
Article 1	The objective of this Convention is to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.	No		No	Ministry of Environment and Physical Planning (MoEPP)	/
Definitions						
Article 2 paragraph 1 (a)	For the purposes of this Convention: (a) "Artisanal and small-scale gold mining" means gold mining conducted by individual miners or small enterprises with limited capital investment and production;	No		No	MoEPP, Ministry of Economy (MoE)	/
Article 2 paragraph 1(b)	(b) "Best available techniques" means those techniques that are the most efective to prevent and, where that is not practicable, to reduce emissions and releases of mercury to air, water and land and the impact of such emissions and releases on the environment as a whole, taking into account economic and technical considerations for a given Party or a given facility within the territory of that Party. In this context: (i) "Best" means most efective in achieving a high general level of protection of the environment as a whole; (ii) "Available" techniques means, in respect of a given Party and a given facility within the territory of that Party, those techniques developed on a scale that allows implementation in a relevant industrial sector under economically and technically viable conditions, taking into consideration the costs and benefits, whether or not those techniques are used or developed within the territory of that Party, provided that they are accessible to the operator of the	Law on Environment (Official Gazzette of the Republic of Macedonia no. 53/05, 81/05, 24/07, 159/08, 83/09, 48/10, 124/10, 51/11, 123/12, 93/13, 187/13, 42/14, 44/15, 129/15, 192/15 and 39/16), Article 5 paragraph 1 point 39		Yes	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
	facility as determined by that Party; and (iii) "Techniques" means technologies used, operational practices and the ways in which installations are designed, built, maintained, operated and decommissioned;				
Article 2 paragraph 1(c)	(c) "Best environmental practices" means the application of the most appropriate combination of environmental control measures and strategies;	No	No	MoEPP	/
Article 2 paragraph 1(d)	(d) "Mercury" means elemental mercury (Hg(0), CAS No. 7439-97-6);	No	No	MoEPP, Ministry of Health	/
Article 2 paragraph 1(e)	(e) "Mercury compound" means any substance consisting of atoms of mercury and one or more atoms of other chemical elements that can be separated into diferent components only by chemical reactions;	No	No	MoEPP, Ministry of Health	/
Article 2 paragraph 1(f)	(f) "Mercury-added product" means a product or product component that contains mercury or a mercury compound that was intentionally added;	No	No	MoEPP, Ministry of Health	/
Article 2 paragraph 1(g)	(g) "Party" means a State or regional economic integration organization that has consented to be bound by this Convention and for which the Convention is in force;	/	Not to be transposed	/	International procedure
Article 2 paragraph 1(h)	(h) "Parties present and voting" means Parties present and casting an affirmative or negative vote at a meeting of the Parties;	/	Not to be transposed	/	International procedure
Article 2 paragraph 1(i)	(i) "Primary mercury mining" means mining in which the principal material sought is mercury;	No	No	MoEPP, MoE	/
Article 2 paragraph 1(j)	(j) "Regional economic integration organization" means an organization constituted by sovereign States of a given region to which its member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to this Convention; and	No	Not to be transposed	/	International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 2 paragraph 1(k)	(k) "Use allowed" means any use by a Party of mercury or mercury compounds consistent with this Convention, including, but not limited to, uses consistent with Articles 3, 4, 5, 6 and 7.	No	No	MoEPP, Ministry of Health	/
Mercury supply sources and trade					
Article 3 paragraph 1 (a)	For the purposes of this Article: (a) References to "mercury" include mixtures of mercury with other substances, including alloys of mercury, with a mercury concentration of at least 95 per cent by weight; and	No	No	MoEPP, Ministry of Health	/
Article 3 paragraph 1 (b)	(b) "Mercury compounds" means mercury (I) chloride (known also as calomel), mercury (II) oxide, mercury (II) sulphate, mercury (II) nitrate, cinnabar and mercury sulphide.	No	No	MoEPP, Ministry of Health	/
Article 3 paragraph 2 (a)	The provisions of this Article shall not apply to: (a) Quantities of mercury or mercury compounds to be used for laboratory-scale research or as a reference standard; or	Law on Chemicals (Official Gazzette of the Republic of Macedonia no. 145/10, 53/11, 164/2013, 116/2015, 149/2015), Article 6 paragraph 3 point 1	Partially	Ministry of Health (MoH)	/
Article 3 paragraph 2 (b)	(b) Naturally occurring trace quantities of mercury or mercury compounds present in such products as non-mercury metals, ores, or mineral products, including coal, or products derived from these materials, and unintentional trace quantities in chemical products; or	No	No	MoEPP, MoE, MoH	/
Article 3 paragraph 2 (c)	(c) Mercury-added products.	No	No	MoH	/
Article 3 paragraph 3	Each Party shall not allow primary mercury mining that was not being conducted within its territory at the date of entry into force of the Convention for it.	No	No	MoEPP, MoE	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 3 paragraph 4	Each Party shall only allow primary mercury mining that was being conducted within its territory at the date of entry into force of the Convention for it for a period of up to fifteen years after that date. During this period, mercury from such mining shall only be used in manufacturing of mercury-added products in accordance with Article 4, in manufacturing processes in accordance with Article 5, or be disposed in accordance with Article 11, using operations which do not lead to recovery, recycling, reclamation, direct re-use or alternative uses.	No	No	MoEPP, MoE	/
Article 3 paragraph 5 (a)	Each Party shall: (a) Endeavour to identify individual stocks of mercury or mercury compounds exceeding 50 metric tons, as well as sources of mercury supply generating stocks exceeding 10 metric tons per year, that are located within its territory;	No	No	MoEPP, MoH	/
Article 3 paragraph 5 (b)	Take measures to ensure that, where the Party determines that excess mercury from the decommissioning of chlor-alkali facilities is available, such mercury is disposed of in accordance with the guidelines for environmentally sound management referred to in paragraph 3 (a) of Article 11, using operations that do not lead to recovery, recycling, reclamation, direct re-use or alternative uses.	No	No	MoEPP	/
Article 3 paragraph 6 (a)	6. Each Party shall not allow the export of mercury except: (a) To a Party that has provided the exporting Party with its written consent, and only for the purpose of: (i) A use allowed to the importing Party under this Convention; or (ii) Environmentally sound interim storage as set out in Article 10; or	Law on Chemicals (Official Gazzette of the Republic of Macedonia no. 145/10, 53/11), Chapter IX	Partially	MoEPP, MoH	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 3 paragraph 6 (b)	(i) The non-Party has measures in place to ensure the protection of human health and the environment and to ensure its compliance with the provisions of Articles 10 and 11; and (ii) Such mercury will be used only for a use allowed to a Party under this Convention or for environmentally sound interim storage as set out in Article 10.	No	No	MoEPP, MoH	/
Article 3 paragraph 7	An exporting Party may rely on a general notification to the Secretariat by the importing Party or non-Party as the written consent required by paragraph 6. Such general notification shall set out any terms and conditions under which the importing Party or non-Party provides its consent. The notification may be revoked at any time by that Party or non-Party. The Secretariat shall keep a public register of all such notifications.	No	No	MoEPP, MoH	/
Article 3 paragraph 8	Each Party shall not allow the import of mercury from a non-Party to whom it will provide its written consent unless the non-Party has provided certication that the mercury is not from sources identified as not allowed under paragraph 3 or paragraph 5 (b).	No	No	MoEPP, MoH	/
Article 3 paragraph 9	A Party that submits a general notication of consent under paragraph 7 may decide not to apply paragraph 8, provided that it maintains comprehensive restrictions on the export of mercury and has domestic measures in place to ensure that imported mercury is managed in an environmentally sound manner. The Party shall provide a notification of such decision to the Secretariat, including information describing its export restrictions and domestic regulatory measures, as well as information on the quantities and countries of origin of mercury imported from non-Parties. The Secretariat shall maintain a public register of all such notifications. The Implementation and Compliance Committee shall review and evaluate	No	No	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
	any such notications and supporting information in accordance with Article 15 and may make recommendations, as appropriate, to the Conference of the Parties.				
Article 3 paragraph 10	The procedure set out in paragraph 9 shall be available until the conclusion of the second meeting of the Conference of the Parties. After that time, it shall cease to be available, unless the Conference of the Parties decides otherwise by simple majority of the Parties present and voting, except with respect to a Party that has provided a notication under paragraph 9 before the end of the second meeting of the Conference of the Parties.	/	Not to be transposed	/	International procedure
Article 3 paragraph 11	Each Party shall include in its reports submitted pursuant to Article 21 information showing that the requirements of this Article have been met.	No	No	MoEPP	/
Article 3 paragraph 12	The Conference of the Parties shall at its first meeting provide further guidance in regard to this Article, particularly in regard to paragraphs 5 (a), 6 and 8, and shall develop and adopt the required content of the certification referred to in paragraphs 6 (b) and 8.	/	Not to be transposed		International procedure
Article 3 paragraph 13	The Conference of the Parties shall evaluate whether the trade in specic mercury compounds compromises the objective of this Convention and consider whether specic mercury compounds should, by their listing in an additional annex adopted in accordance with Article 27, be made subject to paragraphs 6 and 8.	/	Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Mercury-added products				
Article 4 paragraph 1	Each Party shall not allow, by t aking appropriate measures, the manufacture, import or export of mercury-added products listed in Part I of Annex A after the phase-out date specied for those products, except where an exclusion is specied in Annex A or the Party has a registered exemption pursuant to Article 6.	Partially	MoH, MoEPP	/
	Law on Chemicals, Article 8 paragraph (1), point 4; List of restrictions and bans for the chemical application (Official Gazzette of the Republic of Macedonia no. 31/14); Law on Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment Management (Official Gazzette of the Republic of Macedonia no. 2334/2012, 38/2012, 77/2012, 110/2012, 133/2012, 133/2012, 2/2013, 9/2013, 127/2013, 13/2014, 32/2014), Article 9 paragraph 1 and paragraph 3, Article 41 paragraph 4, List of the products types which belong to the electrical and electronic equipment categories (Official Gazzette of the Republic of Macedonia no. 133/12); List of the equipment excluded from the measures for banning and restrictions for EEE putting on the market in the Republic of Macedonia as well as maximum concentrations values of the hazardous substances and deadlines by which the presence of certain hazardous substances in the EEE, its components and materials is allowed, Official Gazzette of the Republic of Macedonia no. 2/13); Law on Cosmetic Products Safety Official Gazzette of the Republic of Macedonia no. 55/2007, 47/11, 150/15); List of substances not allowed to be used in cosmetic products, (Official Gazzette of the Republic of Macedonia no. 89/10) Law on batteries and accumulators and waste batteries and accumulators management (Official Gazzette of the Republic of Macedonia no. 140/10, 47/11, 148/11, 39/12, 163/13, 146/15, 39/16)) Article 8, paragraph 1 (a), 2 and 3			

MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 4 paragraph 2 (a, b, c, d)	A Party may, as an alternative to paragraph 1, indicate at the time of ratification or upon entry into force of an amendment to Annex A for it, that it will implement dierent measures or strategies to address products listed in Part I of Annex A. A Party may only choose this alternative if it can demonstrate that it has already reduced to a de minimis level the manufacture, import, and export of the large majority of the products listed in Part I of Annex A and that it has implemented measures or strategies to reduce the use of mercury in additional products not listed in Part I of Annex A at the time it notes the Secretariat of its decision to use this alternative. In addition, a Party choosing this alternative shall: (a) Report at the first opportunity to the Conference of the Parties a description of the measures or strategies implemented, including a quantification of the reductions achieved; (b) Implement measures or strategies to reduce the use of mercury in any products listed in Part I of Annex A for which a de minimis value has not yet been obtained; (c) Consider additional measures to achieve further reductions; and (d) Not be eligible to claim exemptions pursuant to Article 6 for any product category for which this alternative is chosen. No later than five years after the date of entry into force of the Convention, the Conference of the Parties shall, as part of the review process under paragraph 8, review the progress and the efectiveness of the measures taken under this paragraph.	No	No	MoH, MoEPP	Debatable provision related to international procedure
Article 4 paragraph 3	Each Party shall take measures for the mercury-added products listed in Part II of Annex A in accordance with the provisions set out there in.	No	No	MoEPP, MoH	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 4 paragraph 4	The Secretariat shall, on the basis of information provided by Parties, collect and maintain information on mercury-added products and their alternatives, and shall make such information publicly available. The Secretariat shall also make publicly available any other relevant information submitted by Parties.	/	Not to be transposed		International procedure
Article 4 paragraph 5	Each Party shall take measures to prevent the incorporation into assembled products of mercury-added products the manufacture, import and export of which are not allowed for it under this Article.	No	No	MoEPP, MoH	/
Article 4 paragraph 6	Each Party shall discourage the manufacture and the distribution in commerce of mercury-added products not covered by any known use of mercury-added products prior to the date of entry into force of the Convention for it, unless an assessment of the risks and benefits of the product demonstrates environmental or human health benefits. A Party shall provide to the Secretariat, as appropriate, information on any such product, including any information on the environmental and human health risks and benefits of the product. The Secretariat shall make such information publicly available.	Law on Chemicals, Article 8 paragraph (1), point 4; List of restrictions and bans for the chemical application; Law on Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment Management, Article 9 paragraph 1 and paragraph 3, Article 41 paragraph 4; List of the products types which belong to the electrical and electronic equipment categories; List of the equipment excluded from the measures for banning and restrictions for EEE putting on the market in the Republic of Macedonia as well as maximum concentrations values of the hazardous substances and deadlines by which the presence of certain hazardous substances in the EEE, its components and materials is allowed; Law on Cosmetic Products Safety; List of substances not allowed to be used in cosmetic products; Law on batteries and accumulators and waste batteries and accumulators management, Article 8, paragraph 1 (a), 2 and 3, Article 10 paragraph 1, 2, 3, Article 46 paragraph 1 (1), Article 54 paragraph 1 (5)	Partially	MoEPP, MoH	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 4 paragraph 7	Any Party may submit a proposal to the Secretariat for listing a mercury-added product in Annex A, which shall include information related to the availability, technical and economic feasibility and environmental and health risks and benefits of the non-mercury alternatives to the product, taking into account information pursuant to paragraph 4.	/	Not to be transposed		International procedure
Article 4 paragraph 8	No later than five years after the date of entry into force of the Convention, the Conference of the Parties shall review Annex A and may consider amendments to that Annex in accordance with Article 27.	/	Not to be transposed		International procedure
Article 4 paragraph 9 (a, b, c)	In reviewing Annex A pursuant to paragraph 8, the Conference of the Parties shall take into account at least: (a) Any proposal submitted under paragraph 7; (b) The information made available pursuant to paragraph 4; and (c) The availability to the Parties of mercury-free alternatives that are technically and economically feasible, taking into account the environmental and human health risks and benefits	/	Not to be transposed		International procedure
Manufacturing processes in which mercury or mercury compounds are used					
Article 5 paragraph 1	For the purposes of this Article and Annex B, manufacturing processes in which mercury or mercury compounds are used shall not include processes using mercury-added products, processes for manufacturing mercury-added products or processes that process mercury-containing waste.	No	No	MoEPP, MoE	/
Article 5 paragraph 2	Each Party shall not allow, by taking appropriate measures, the use of mercury or mercury compounds in the manufacturing processes listed in Part I of Annex B after the phase-out date specified in that Annex for the individual processes, except where the Party has a registered exemption pursuant to Article 6.	Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution/ Protocol on Heavy Metals (Official Gazzette of the Republic of Macedonia no. 135/10), Article 2	Partially	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 5 paragraph 3	Each Party shall take measures to restrict the use of mercury or mercury compounds in the processes listed in Part II of Annex B in accordance with the provisions set out there in.	No	No	MoEPP, MoE	/
Article 5 paragraph 4	The Secretariat shall, on the basis of information provided by Parties, collect and maintain information on processes that use mercury or mercury compounds and their alternatives, and shall make such information publicly available. Other relevant information may also be submitted by Parties and shall be made publicly available by the Secretariat.	/	Not to be transposed		International procedure
Article 5 paragraph (a)	Each Party with one or more facilities that use mercury or mercury compounds in the manufacturing processes listed in Annex B shall: (a) Take measures to address emissions and releases of mercury or mercury compounds from those facilities;	Law on Environment, Law on Ambient Air Quality (Official Gazzette of the Republic of Macedonia no. 67/04, 92/07, 35/10, 47.11, 59/12, 163/13, 10/15, 146/15); Law on Waters (Official Gazette of the Republic of Macedonia no. 161/09, 17/11, 47/11, 136/11, 6/12, 39/12, 163/13, 146/15, 39/16); Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2; Rulebook on hazardous and harmful materia and substances that could be released in sewage or to the drainage systems, to the surface and ground water bodies, as well as to coastal areas and wetlands (Official Gazzette of the Republic of Macedonia no. 108/11); Rulebook on the manner of information transmission of the monitoring of the discharged waste waters, as well as the form and the content of the template for data submission (Official Gazzette of the Republic of Macedonia no. 108/11); Rulebook on the methodology, reference measurement methods, manner and parameters of waste waters monitoring, including the sludge from the purification of urban waste waters (Official Gazzette of the Republic of Macedonia no. 108/11); Rulebook on the conditions, manner and emission limit values for the discharge of waste waters after their purification,	Partially	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
		the manner of their calculation, taking into account the special requirements for protection of the protective zones (Official Gazzette of the Republic of Macedonia no. 81/11); List of the hazardous materias and substances (Official Gazzette of the Republic of Macedonia no. 122/11); Rulebook on the manner and procedure for using the sludge, the maximum values of the heavy metal concentrations in the soil in which the sludge is used, the values of the concentrations of heavy metals in the sludge in accordance to its purpose and the maximum annual quantities of heavy metals that can be imported in the soil (Official Gazzette of the Republic of Macedonia no. 73/11)			
Article 5 paragraph 5 (b)	Include in its reports submitted pursuant to Article 21 information on the measures taken pursuant to this paragraph; and	/	Not to be transposed		International procedure
Article 5 paragraph 5 (c)	Endeavour to identify facilities within its territory that use mercury or mercury compounds for processes listed in Annex B and submit to the Secretariat, no later than three years after the date of entry into force of the Convention for it, information on the number and types of such facilities and the estimated annual amount of mercury or mercury compounds used in those facilities. The Secretariat shall make such information publicly available.	/	Not to be transposed		International procedure
Article 5 paragraph 6	Each Party shall not allow the use of mercury or mercury compounds in a facility that did not exist prior to the date of entry into force of the Convention for it using the manufacturing processes listed in Annex B. No exemptions shall apply to such facilities.	No	No	MoEPP, MoE	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 5 paragraph 7	Each Party shall discourage the development of any facility using any other manufacturing process in which mercury or mercury compounds are intentionally used that did not exist prior to the date of entry into force of the Convention, except where the Party can demonstrate to the satisfaction of the Conference of the Parties that the manufacturing process provides signifiant environmental and health benefits and that there are no technically and economically feasible mercury-free alternatives available providing such benefits.	No	No	MoEPP, MoE	/
Article 5 paragraph 8	Parties are encouraged to exchange information on relevant new technological developments, economically and technically feasible mercury-free alternatives, and possible measures and techniques to reduce and where feasible to eliminate the use of mercury and mercury compounds in, and emissions and releases of mercury and mercury compounds from, the manufacturing processes listed in Annex B.	No	No	MoEPP, MoE	/
Article 5 paragraph 9	Any Party may submit a proposal to amend Annex B in order to list a manufacturing process in which mercury or mercury compounds are used. It shall include information related to the availability, technical and economic feasibility and environmental and health risks and benefits of the non-mercury alternatives to the process.	/	Not to be transposed		International procedure
Article 5 paragraph 10	No later than five years after the date of entry into force of the Convention, the Conference of the Parties shall review Annex B and may consider amendments to that Annex in accordance with Article 27.	/	Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 5 paragraph 11	In any review of Annex B pursuant to paragraph 10, the Conference of the Parties shall take into account at least: (a) Any proposal submitted under paragraph 9; (b) The information made available under paragraph 4; and (c) The availability for the Parties of mercury-free alternatives which are technically and economically feasible taking into account the environmental and health risks and benefits	/	Not to be transposed		International procedure
Exemptions available to a Party upon request					
Article 6 paragraph 1(a, b)	Any State or regional economic integration organization may register for one or more exemptions from the phase-out dates listed in Annex A and Annex B, hereafter referred to as an "exemption", by notifying the Secretariat in writing: (a) On becoming a Party to this Convention; or (b) In the case of any mercury-added product that is added by an amendment to Annex A or any manufacturing process in which mercury is used that is added by an amendment to Annex B, no later than the date upon which the applicable amendment enters into force for the Party. Any such registration shall be accompanied by a statement explaining the Party's need for the exemption	/	Not to be transposed		International procedure
Article 6 paragraph 2	An exemption can be registered either for a category listed in Annex A or B or for a sub-category identified by any State or regional economic integration organization.	/	Not to be transposed		International procedure
Article 6 paragraph 3	Each Party that has one or more exemptions shall be identified in a register. The Secretariat shall establish and maintain the register and make it available to the public.	/	Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 6 paragraph 4 (a, b, c)	The register shall include: (a) A list of the Parties that have one or more exemptions; (b) The exemption or exemptions registered for each Party; and (c) The expiration date of each exemption.	/	Not to be transposed		International procedure
Article 6 paragraph 5	Unless a shorter period is indicated in the register by a Party, all exemptions pursuant to paragraph 1 shall expire five years after the relevant phase-out date listed in Annex A or B.	/	Not to be transposed		International procedure
Article 6 paragraph 6 (a, b, c)	The Conference of the Parties may, at the request of a Party, decide to extend an exemption for five years unless the Party requests a shorter period. In making its decision, the Conference of the Parties shall take due account of: (a) A report from the Party justifying the need to extend the exemption and outlining activities undertaken and planned to eliminate the need for the exemption as soon as feasible; (b) Available information, including in respect of the availability of alternative products and processes that are free of mercury or that involve the consumption of less mercury than the exempt use; and (c) Activities planned or under way to provide environmentally sound storage of mercury and disposal of mercury wastes. An exemption may only be extended once per product per phase-out date.	/	Not to be transposed		International procedure
Article 6 paragraph 7	A Party may at any time withdraw an exemption upon written notification to the Secretariat. The withdrawal of an exemption shall take efect on the date specified in the notication.	/	Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 6 paragraph 8	Not withstanding paragraph 1, no State or regional economic integration organization may register for an exemption after five years after the phase-out date for the relevant product or process listed in Annex A or B, unless one or more Parties remain registered for an exemption for that product or process, having received an extension pursuant to paragraph 6. In that case, a State or regional economic integration organization may, at the times set out in paragraphs 1 (a) and (b), register for an exemption for that product or process, which shall expire ten years after the relevant phase-out date.	/	Not to be transposed		International procedure
Article 6 paragraph 9	No Party may have an exemption in e¬ect at any time after 10 years after the phase-out date for a product or process listed in Annex A or B.	/	Not to be transposed		International procedure

Artisanal and small-scale gold mining

Article 7 paragraph 1	The measures in this Article and in Annex C shall apply to artisanal and small-scale gold mining and processing in which mercury amalgamation is used to extract gold from ore.	No	No	MoEPP, MoE	/
Article 7 paragraph 2	Each Party that has artisanal and small-scale gold mining and processing subject to this Article within its territory shall take steps to reduce, and where feasible eliminate, the use of mercury and mercury compounds in, and the emissions and releases to the environment of mercury from, such mining and processing.	No	No	MoEPP, MoE	/
Article 7 paragraph 3 (a)	Each Party shall notify the Secretariat if at any time the Party determines that artisanal and small-scale gold mining and processing in its territory is more than insignificant. If it so determines the Party shall: (a) Develop and implement a national action plan in accordance with Annex C;	/	Not to be transposed	MoEPP, MoE	International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 7 paragraph 3 (b)	Submit its national action plan to the Secretariat no later than three years after entry into force of the Convention for it or three years after the notification to the Secretariat, whichever is later; and	/	Not to be transposed	MoEPP, MoE	International procedure
Article 7 paragraph 3 (c)	Thereafter, provide a review every three years of the progress made in meeting its obligations under this Article and include such reviews in its reports submitted pursuant to Article 21.	/	Not to be transposed	MoEPP, MoE	International procedure
Article 7 paragraph 4 (a)	Parties may cooperate with each other and with relevant intergovernmental organizations and other entities, as appropriate, to achieve the objectives of this Article. Such cooperation may include: (a) Development of strategies to prevent the diversion of mercury or mercury compounds for use in artisanal and small-scale gold mining and processing;	No	No	MoEPP, MoE	/
Article 7 paragraph 4 (b)	Education, outreach and capacity-building initiatives;	No	No	MoEPP, MoE	/
Article 7 paragraph 4 (c)	Promotion of research into sustainable non-mercury alternative practices;	No	No	MoEPP, MoE	/
Article 7 paragraph 4 (d)	Provision of technical and financial assistance;	No	No	MoEPP, MoE	/
Article 7 paragraph 4 (e)	Partnerships to assist in the implementation of their commitments under this Article; and	No	No	MoEPP, MoE	/
Article 7 paragraph 4 (f)	Use of existing information exchange mechanisms to promote knowledge, best environmental practices and alternative technologies that are environmentally, technically, socially and economically viable.	No	No	MoEPP, MoE	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Emissions					
Article 8 paragraph 1	This Article concerns controlling and, where feasible, reducing emissions of mercury and mercury compounds, often expressed as "total mercury", to the atmosphere through measures to control emissions from the point sources falling within the source categories listed in Annex D.	Law on Ambient Air Quality (Official Gazzette of the Republic of Macedonia no. 7/1976, 9/1976, 9/1976, 13/1976, 13/1976, 3/1990, 50/2005, 142/2007, 23/2009, 108/2009, 108/2009, 138/2009, 138/2009, 2/2010, 92/2010, 141/2010, 69/2011, 79/2011, 112/2011, 11/2012, 106/2012, 170/2012, 169/2013, 148/2014, 148/2014), Article 13; Rulebook on the limit values for allowed emission levels and different types of polluting substances in the waste gases and vapors emitted by the stationary sources in the air (Official Gazzette of the Republic of Macedonia no. 141/10), Annex 1 Table 4, Annex 2 Part 11A Table 12, Annex 2 Part 27A & 27B; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2 Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/
Article 8 paragraph 2 (a)	For the purposes of this Article: (a) "Emissions" means emissions of mercury or mercury compounds to the atmosphere;	Law on Ambient Air Quality, Article 4 paragraph 1 point 14; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/
Article 8 paragraph 2 (b)	"Relevant source" means a source falling within one of the source categories listed in Annex D. A Party may, if it chooses, establish criteria to identify the sources covered within a source category listed in Annex D so long as those criteria for any category include at least 75 per cent of the emissions from that category;	LaLaw on Ambient Air Quality, Article 4 paragraph b 1 point 17; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/
Article 8 paragraph 2 (c, (i))	"New source" means any relevant source within a category listed in Annex D, the construction or substantial modification of which is commenced at least one year after the date of: (i) Entry into force of this Convention for the Party concerned; or	Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 8 paragraph 2 (c, (ii))	(ii) Entry into force for the Party concerned of an amendment to Annex D where the source becomes subject to the provisions of this Convention only by virtue of that amendment;	/	Not to be transposed		International procedure
Article 8 paragraph 2 (d)	"Substantial modification" means modification of a relevant source that results in a significant increase in emissions, excluding any change in emissions resulting from by-product recovery. It shall be a matter for the Party to decide whether a modification is substantial or not;	No	No	MoEPP	/
Article 8 paragraph 2 (e)	"Existing source" means any relevant source that is not a new source;	No	No		/
Article 8 paragraph 2 (f)	"Emission limit value" means a limit on the concentration, mass or emission rate of mercury or mercury compounds, often expressed as "total mercury", emitted from a point source.	Law on Ambient Air Quality, Article 4 paragraph 1 point 6	Partially	MoEPP	/
Article 8 paragraph 3	A Party with relevant sources shall take measures to control emissions and may prepare a national plan setting out the measures to be taken to control emissions and its expected targets, goals and outcomes. Any plan shall be submitted to the Conference of the Parties within four years of the date of entry into force of the Convention for that Party. If a Party develops an implementation plan in accordance with Article 20, the Party may include in it the plan prepared pursuant to this paragraph.	Law on Ambient Air Quality, Article 23	Partially	MoEPP	/
Article 8 paragraph 4	For its new sources, each Party shall require the use of best available techniques and best environmental practices to control and, where feasible, reduce emissions, as soon as practicable but no later than five years after the date of entry into force of the Convention for that Party. A Party may use emission limit values that are consistent with the application of best available techniques.	Law on Environment, Article 104 paragraph 5, Article 107 paragraph 1, paragraph 4, subparagraph 6, paragraph 5; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 8 paragraph 5 (a)	For its existing sources, each Party shall include in any national plan, and shall implement, one or more of the following measures, taking into account its national circumstances, and the economic and technical feasibility and a¬fordability of the measures, as soon as practicable but no more than ten years after the date of entry into force of the Convention for it: (a) A quantified goal for controlling and, where feasible, reducing emissions from relevant sources;	Law on Ambient Air Quality, Article 23; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/
Article 8 paragraph 5 (b)	Emission limit values for controlling and, where feasible, reducing emissions from relevant sources;	Law on Ambient Air Quality, Article 23; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/
Article 8 paragraph 5 (c)	The use of best available techniques and best environmental practices to control emissions from relevant sources;	Law on Ambient Air Quality, Article 23; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/
Article 8 paragraph 5 (d)	A multi-pollutant control strategy that would deliver co-benefits for control of mercury emissions;	Law on Ambient Air Quality, Article 23	Partially	MoEPP	/
Article 8 paragraph 5 (e)	Alternative measures to reduce emissions from relevant sources.	Law on Ambient Air Quality, Article 23; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially		/
Article 8 paragraph 6	Parties may apply the same measures to all relevant existing sources or may adopt different measures in respect of different source categories. The objective shall be for those measures applied by a Party to achieve reasonable progress in reducing emissions over time.	Law on Ambient Air Quality, Article 1	Partially	MoEPP	/
Article 8 paragraph 7	Each Party shall establish, as soon as practicable and no later than five years after the date of entry into force of the Convention for it, and maintain thereafter, an inventory of emissions from relevant sources.	Law on Ambient Air Quality, Article 1 27-d; Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution /Protocol on Heavy Metals, Article 2	Partially	MoEPP	/

	MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION		Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 8 paragraph 8 (a, b)	The Conference of the Parties shall, at its 1st meeting, adopts guidance on: (a) Best available techniques and on best environmental practices, taking into account any difference between new and existing sources and the need to minimize cross-media effects; and (b) Support for Parties in implementing the measures set out in paragraph 5, in particular in determining goals and in setting emission limit values.	/		Not to be transposed		International procedure
Article 8 paragraph 9 (a, b)	The Conference of the Parties shall, as soon as practicable, adopt guidance on: (a) Criteria that Parties may develop pursuant to paragraph 2 (b); (b) The methodology for preparing inventories of emissions.	/		Not to be transposed		International procedure
Article 8 paragraph 10	The Conference of the Parties shall keep under review, and update as appropriate, the guidance developed pursuant to paragraphs 8 and 9. Parties shall take the guidance into account in implementing the relevant provisions of this Article.	/		Not to be transposed		International procedure
Article 8 paragraph 11	Each Party shall include information on its implementation of this Article in its reports submitted pursuant to Article 21, in particular information concerning the measures it has taken in accordance with paragraphs 4 to 7 and the effectiveness of the measures.	/		Not to be transposed		International procedure
Releases						
Article 9 paragraph 1	This Article concerns controlling and, where feasible, reducing releases of mercury and mercury compounds, often expressed as "total mercury", to land and water from the relevant point sources not addressed in other provisions of this Convention.	Law on Waters Chapter 6 (Emmissions and pollution control); Lista na pollutants and substances (Official Gazzette of the Republic of Macedonia no. 122/11)	Partially	MoEPP	/	
Article 9 paragraph 2 (a)	For the purposes of this Article: (a) "Releases" means releases of mercury or mercury compounds to land or water;	Law on Environment, Article 5, paragraph 1 paragraph 22	Partially	MoEPP	/	

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 9 paragraph 2 (b)	"Relevant source" means any signicant anthropogenic point source of release as identied by a Party that is not addressed in other provisions of this Convention;	Law on Waters, Article 4, paragraph 1 point 47	Partially	MoEPP	/
Article 9 paragraph 2 (c)	"New source" means any relevant source, the construction or substantial modication of which is commenced at least one year after the date of entry into force of this Convention for the Party concerned;	No	No	MoEPP	/
Article 9 paragraph 2 (d)	"Substantial modification" means modification of a relevant source that results in a significant increase in releases, excluding any change in releases resulting from by-product recovery. It shall be a matter for the Party to decide whether a modication is substantial or not;	No	No	MoEPP	/
Article 9 paragraph 2 (e)	"Existing source" means any relevant source that is not a new	No	No	MoEPP	/
Article 9 paragraph 2 (f)	"Release limit value" means a limit on the concentration or mass of mercury or mercury compounds, often expressed as "total mercury", released from a point source	Law on Environment, Article 5 paragraph 1 point 20; Law on Waters, Article 4 paragraph 1 point 34	Partially	MoEPP	/
Article 9 paragraph 3	Each Party shall, no later than three years after the date of entry into force of the Convention for it and on a regular basis thereafter, identify the relevant point source categories.	Law on Environment, Article 32 paragraph 1 subparagraph 2; Law on Waters, Article 161	Partially	MoEPP	/
Article 9 paragraph 4	A Party with relevant sources shall take measures to control releases and may prepare a national plan setting out the measures to be taken to control releases and its expected targets, goals and outcomes. Any plan shall be submitted to the Conference of the Parties within four years of the date of entry into force of the Convention for that Party. If a Party develops an implementation plan in accordance with Article 20, the Party may include in it the plan prepared pursuant to this paragraph.	Law on Environment, Article 61 paragraph, point 1, Article 62	Partially	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 9 paragraph 5 (a)	The measures shall include one or more of the following, as appropriate: (a) Release limit values to control and, where feasible, reduce releases from relevant sources;	Law on waters; Rulebook on hazardous and harmful materia and substances that could be released in sevage or to the drainage systems, to the surfase and ground water bodies, as well as to coastal areas and wetlands (Official Gazzette of the Republic of Macedonia no. 108/11); Rulebook on the manner of information transmission of the monitoring of the discharged waste waters, as well as the form and the content of the template for data submission (Official Gazzette of the Republic of Macedonia no. 108/11); Rulebook on the methodology, reference measurement methods, manner and parameters of waste waters monitoring, including the sludge from the purification of urban waste waters (Official Gazzette of the Republic of Macedonia no. 108/11); Rulebook on the conditions, manner and emission limit values for the discharge of waste waters after their purification, the manner of their calculation, taking into account the special requirements for protection of the protective zones (Official Gazzette of the Republic of Macedonia no. 81/11); List of the hazardous materias and substances (Official Gazzette of the Republic of Macedonia no. 122/11	Partially	MoEPP	/
Article 9 paragraph 5 (b)	The use of best available techniques and best environmental practices to control releases from relevant sources;	Law on Environment, Article 104 paragraph 5, Article 107 paragraph 1, paragraph 4, subparagraph 6, paragraph 5.	Partially	MoEPP	/
Article 9 paragraph 5 (c)	A multi-pollutant control strategy that would deliver co-benefits for control of mercury releases;	Law on Waters, Article 61 paragraph 1 point 1, Article 62	Partially	MoEPP	/
Article 9 paragraph 5 (d)	Alternative measures to reduce releases from relevant sources.	No	No	MoEPP	/
Article 9 paragraph 6	Each Party shall establish, as soon as practicable and no later than five years after the date of entry into force of the Convention for it, and maintain thereafter, an inventory of releases from relevant sources.	No	No	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 9 paragraph 7 (a)	The Conference of the Parties shall, as soon as practicable, adopt guidance on: (a) Best available techniques and on best environmental practices, taking into account any difference between new and existing sources and the need to minimize cross-media effects;	/	Not to be transposed		International procedure
Article 9 paragraph 7 (b)	The methodology for preparing inventories of releases…	/	Not to be transposed		International procedure
Article 9 paragraph 8	Each Party shall include information on its implementation of this Article in its reports submitted pursuant to Article 21, in particular information concerning the measures it has taken in accordance with paragraphs 3 to 6 and the effectiveness of the measures.	/	Not to be transposed		International procedure
Environmentally sound interim storage of mercury, other than waste mercury					
Article 10 paragraph 1	This Article shall apply to the interim storage of mercury and mercury compounds as defined in Article 3 that do not fall within the meaning of the definition of mercury wastes set out in Article 11.	No	No	MoH	/
Article 10 paragraph 2	Each Party shall take measures to ensure that the interim storage of such mercury and mercury compounds intended for a use allowed to a Party under this Convention is undertaken in an environmentally sound manner, taking into account any guidelines, and in accordance with any requirements, adopted pursuant to paragraph 3.	Law on Chemicals; Rulebook on the requirements in terms of space and equipment to meet the legal entities that trade in hazardous chemicals (Official Gazzette of the Republic of Macedonia no. 132/2008)	Yes	MoH	/
Article 10 paragraph 3	The Conference of the Parties shall adopt guidelines on the environmentally sound interim storage of such mercury and mercury compounds, taking into account any relevant guidelines developed under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and other relevant guidance. The Conference of the Parties may adopt requirements for interim storage in an additional annex to this Convention in accordance with Article 27.	/	Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 10 paragraph 4	Parties shall cooperate, as appropriate, with each other and with relevant intergovernmental organizations and other entities, to enhance capacity-building for the environmentally sound interim storage of such mercury and mercury compounds.	No	No	MoEPP, MoH	/
Mercury wastes					
Article 11 paragraph 1	The relevant definitions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal shall apply to wastes covered under this Convention for Parties to the Basel Convention. Parties to this Convention that are not Parties to the Basel	Law on Waste Management, Article 105	Partially	MoEPP	/
Article 11 paragraph 2 (a)	For the purposes of this Convention, mercury wastes means substances or objects: (a) Consisting of mercury or mercury compounds;	No	No	MoEPP	/
Article 11 paragraph 2 (b)	Containing mercury or mercury compounds; or	No	No	MoEPP	/
Article 11 paragraph 2 (c)	Contaminated with mercury or mercury compounds, in a quantity above the relevant thresholds defined by the Conference of the Parties, in collaboration with the relevant bodies of the Basel Convention in a harmonized manner, that are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law or this Convention. This definition excludes overburden, waste rock and tailings from mining, except from primary mercury mining, unless they contain mercury or mercury compounds above thresholds defined by the Conference of the Parties.	No	No	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 11 paragraph 3 (a)	Each Party shall take appropriate measures so that mercury waste is: (a) Managed in an environmentally sound manner, taking into account the guidelines developed under the Basel Convention and in accordance with requirements that the Conference of the Parties shall adopt in an additional annex in accordance with Article 27. In developing requirements, the Conference of the Parties shall take into account Parties' waste management regulations and programmes;	Law on Waste Management, Article 57, Article 105	Partially	MoEPP	/
Article 11 paragraph 3 (b)	Only recovered, recycled, reclaimed or directly re-used for a use allowed to a Party under this Convention or for environmentally sound disposal pursuant to paragraph 3 (a);	Law on Waste Management, Article 29 paragraph 1 point 4, 11, Article 105	Partially	MoEPP	/
Article 11 paragraph 3 (c)	For Parties to the Basel Convention, not transported across international boundaries except for the purpose of environmentally sound disposal in conformity with this Article and with that Convention. In circumstances where the Basel Convention does not apply to transport across international boundaries, a Party shall allow such transport only after taking into account relevant international rules, standards, and guidelines.	Law on Waste Management, Article 105	Partially	MoEPP	/
Article 11 paragraph 4	The Conference of the Parties shall seek to cooperate closely with the relevant bodies of the Basel Convention in the review and update, as appropriate, of the guidelines referred to in paragraph 3 (a).	/	Not to be transposed		International procedure
Article 11 paragraph 5	Parties are encouraged to cooperate with each other and with relevant intergovernmental organizations and other entities, as appropriate, to develop and maintain global, regional and national capacity for the management of mercury wastes in an environmentally sound manner.	No	No	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 12 sparagraph 1	Each Party shall endeavour to develop appropriate strategies for identifying and assessing sites contaminated by mercury or mercury compounds.	No	No	MoEPP	/
Article 12 paragraph 2	Any actions to reduce the risks posed by such sites shall be performed in an environmentally sound manner incorporating, where appropriate, an assessment of the risks to human health and the environment from the mercury or mercury compounds they contain.	No	No	MoEPP	/
Article12 paragraph 3 (a, b, c, d, e, f)	The Conference of the Parties shall adopt guidance on managing contaminated sites that may include methods and approaches for: (a) Site identification and characterization; (b) Engaging the public; (c) Human health and environmental risk assessments; (d) Options for managing the risks posed by contaminated sites; (e) Evaluation of benefits and costs; and (f) Validation of outcomes.	/	Not to be transposed		International procedure
Article 12 paragraph 4	Parties are encouraged to cooperate in developing strategies and implementing activities for identifying, assessing, prioritizing, managing and, as appropriate, remediating contaminated sites	No	No	MoEPP	/
Financial resources and mechanism					
Article 13 paragraph 1	Each Party undertakes to provide, within its capabilities, resources in respect of those national activities that are intended to implement this Convention, in accordance with its national policies, priorities, plans and programmes. Such resources may include domestic funding through relevant policies, development strategies and national budgets, and bilateral and multilateral funding, as well as private sector involvement.	No	No	MoEPP, MoE, MoH	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 13 paragraph 2	The overall effectiveness of implementation of this Convention by developing country Parties will be related to the effective implementation of this Article.	/	Not to be transposed		International procedure
Article 13 paragraph 3	Multilateral, regional and bilateral sources of financial and technical assistance, as well as capacity-building and technology transfer, are encouraged, on an urgent basis, to enhance and increase their activities on mercury in support of developing country Parties in the implementation of this Convention relating to financial resources, technical assistance and technology transfer.	/	Not to be transposed		International procedure
Article 13 paragraph 4	The Parties, in their actions with regard to funding, shall take full account of the specific needs and special circumstances of Parties that are small island developing States or least developed countries.	/	Not to be transposed		International procedure
Article 13 paragraph 5	A Mechanism for the provision of adequate, predictable, and timely financial resources is hereby defined. The Mechanism is to support developing country Parties and Parties with economies in transition in implementing their obligations under this Convention.	/	Not to be transposed		International procedure
Article 13 paragraph 6 (a, b)	The Mechanism shall include: (a) The Global Environment Facility Trust Fund; and (b) A specific international Programme to support capacity-building and technical assistance.	/	Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 13 paragraph 7	The Global Environment Facility Trust Fund shall provide new, predictable, adequate and timely financial resources to meet costs in support of implementation of this Convention as agreed by the Conference of the Parties. For the purposes of this Convention, the Global Environment Facility Trust Fund shall be operated under the guidance of and be accountable to the Conference of the Parties. The Conference of the Parties shall provide guidance on overall strategies, policies, programme priorities and eligibility for access to and utilization of financial resources. In addition, the Conference of the Parties shall provide guidance on an indicative list of categories of activities that could receive support from the Global Environment Facility Trust Fund. The Global Environment Facility Trust Fund shall provide resources to meet the agreed incremental costs of global environmental benefits and the agreed full costs of some enabling activities.	/	Not to be transposed		International procedure
Article 13 paragraph 8	In providing resources for an activity, the Global Environment Facility Trust Fund should take into account the potential mercury reductions of a proposed activity relative to its costs.	/	Not to be transposed		International procedure
Article 13 paragraph 9	For the purposes of this Convention, the Programme referred to in paragraph 6 (b) will be operated under the guidance of and be accountable to the Conference of the Parties. The Conference of the Parties shall, at its first meeting, decide on the hosting institution for the Programme, which shall be an existing entity, and provide guidance to it, including on its duration. All Parties and other relevant stakeholders are invited to provide financial resources to the Programme, on a voluntary basis.	/	Not to be transposed		International procedure
Article 13 paragraph 10	The Conference of the Parties and the entities comprising the Mechanism shall agree upon, at the first meeting of the Conference of the Parties, arrangements to give effect to the above paragraphs.	/	Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 13 paragraph 11	The Conference of the Parties shall review, no later than at its third meeting, and thereafter on a regular basis, the level of funding, the guidance provided by the Conference of the Parties to the entities entrusted to operationalize the Mechanism established under this Article and their effectiveness, and their ability to address the changing needs of developing country Parties and Parties with economies in transition. It shall, based on such review, take appropriate action to improve the effectiveness of the Mechanism.	/	Not to be transposed		International procedure
Article 13 paragraph 12	All Parties, within their capabilities, are invited to contribute to the Mechanism. The Mechanism shall encourage the provision of resources from other sources, including the private sector, and shall seek to leverage such resources for the activities it supports.	/	Not to be transposed		International procedure
Capacity-building, technical assistance and technology transfer					
Article 14 paragraph 1	Parties shall cooperate to provide, within their respective capabilities, timely and appropriate capacity-building and technical assistance to developing country Parties, in particular Parties that are least developed countries or small island developing States, and Parties with economies in transition, to assist them in implementing their obligations under this Convention.	No	Not applicable		The Republic of Macedonia is country with economy in transition
Article 14 paragraph 2	Capacity-building and technical assistance pursuant to paragraph 1 and Article 13 may be delivered through regional, subregional and national arrangements, including existing regional and subregional centres, through other multilateral and bilateral means, and through partnerships, including partnerships involving the private sector. Cooperation and coordination with other multilateral environmental agreements in the field of chemicals and wastes should be sought to increase the effectiveness of technical assistance and its delivery.	/	Not to be transposed		Regional/ international procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 14 paragraph 3	Developed country Parties and other Parties within their capabilities shall promote and facilitate, supported by the private sector and other relevant stakeholders as appropriate, development, transfer and diffusion of, and access to, up-to-date environmentally sound alternative technologies to developing country Parties, in particular the least developed countries and small island developing States, and Parties with economies in transition, to strengthen their capacity to effectively implement this Convention.	/	Not to be transposed		International procedure
Article 14 paragraph 4 (a, b, c)	The Conference of the Parties shall, by its second meeting and thereafter on a regular basis, and taking into account submissions and reports from Parties including those as provided for in Article 21 and information provided by other stakeholders: (a) Consider information on existing initiatives and progress made in relation to alternative technologies (b) Consider the needs of Parties, particularly developing country Parties, for alternative technologies; and (c) Identify challenges experienced by Parties, particularly developing country Parties, in technology transfer.	/	Not to be transposed		International procedure
Article 14 paragraph 5	The Conference of the Parties shall make recommendations on how capacity-building, technical assistance and technology transfer could be further enhanced under this Article.	/	Not to be transposed		International procedure
Implementation and Compliance Committee					
	1. A mechanism, including a Committee as a subsidiary body of the Conference of the Parties, is hereby established to promote implementation of, and review compliance with, all provisions of this Convention.				

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
	The mechanism, including the Committee, shall be facilitative in nature and shall pay particular attention to the respective national capabilities and circumstances of Parties.				
	2. The Committee shall promote implementation of, and review compliance with, all provisions of this Convention. The Committee shall examine both individual and systemic issues of implementation and compliance and make recommendations, as appropriate, to the Conference of the Parties.				
Article 15 paragraph 1, 2, 3, 4 (a, b, c), 5, 6	3. The Committee shall consist of 15 members, nominated by Parties and elected by the Conference of the Parties, with due consideration to equitable geographical representation based on the five regions of the United Nations; the first members shall be elected at the first meeting of the Conference of the Parties and thereafter in accordance with the rules of procedure approved by the Conference of the Parties pursuant to paragraph 5; the members of the Committee shall have competence in a field relevant to this Convention and reflect an appropriate balance of expertise.	/	Not to be transposed		International procedure
	4. The Committee may consider issues on the basis of:				
	(a) Written submissions from any Party with respect to its own compliance;				
	(b) National reports in accordance with Article 21; and				
	(c) Requests from the Conference of the Parties.				
	5. The Committee shall elaborate its rules of procedure, which shall be subject to approval by the second meeting of the Conference of the Parties; the Conference of the Parties may adopt further terms of reference for the Committee.				

	MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
	6. The Committee shall make every effort to adopt its recommendations by consensus. If all efforts at consensus have been exhausted and no consensus is reached, such recommendations shall as a last resort be adopted by a three-fourths majority vote of the members present and voting, based on a quorum of two-thirds of the members.				
Health aspects					
Article 16 paragraph 1 (a)	Parties are encouraged to: (a) Promote the development and implementation of strategies and programmes to identify and protect populations at risk, particularly vulnerable populations, and which may include adopting science-based health guidelines relating to the exposure to mercury and mercury compounds, setting targets for mercury exposure reduction, where appropriate, and public education, with the participation of public health and other involved sectors;	Law on Health Protection(Official Gazzette of the Republic of Macedonia no. 43/12, 145/12, 87/13, 164/13, 39/14, 43/14, 132/14, 188/14, 10/15, 61/15, 154/15, 192/15), Article 16 paragraph 2	Partially	MoH	/
Article 16 paragraph 1 (b)	Promote the development and implementation of science-based educational and preventive programmes on occupational exposure to mercury and mercury compounds;	Law on Health Protection, Article 16 paragraph 1 subparagraph 11, Article 26 paragraph 1 subparagraph 2, Article 30 paragraph 1 point 6; Law on safety and health at work (Official Gazzette of the Republic of Macedonia no. 53/13 – consolidate text; Article 5, 7, 9, 11, 12, 13); Rulebook on minimum requirements for the safety and health of employees against the risks related to exposure to chemical substances (Official Gazzette of the Republic of Macedonia no. 46/2010)	Partially	MoH	/
Article 16 paragraph 1 (c)	Promote appropriate health-care services for prevention, treatment and care for populations affected by the exposure to mercury or mercury compounds; and	Decree on the type, manner, scope and price list of the health examinations of the employees (Official Gazzette of the Republic of Macedonia no. 60/2013), Article 3, 4, 5, 7, Annex no. 5, part 3.1.6 and 3.1.7a Rulebook on the list of occupational diseases(Official Gazzette of the Republic of Macedonia no. 88/2004) Article 2 paragraph 1 (107)	Yes	MoH	/

	MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 16 paragraph 1 (d)	Establish and strengthen, as appropriate, the institutional and health professional capacities for the prevention, diagnosis, treatment and monitoring of health risks related to the exposure to mercury and mercury compounds.	No	No	MoH	/
Article 16 paragraph 2 (a, b)	The Conference of the Parties, in considering health-related issues or activities, should: (a) Consult and collaborate with the World Health Organization, the International Labour Organization and other relevant intergovernmental organizations, as appropriate; and (b) Promote cooperation and exchange of information with the World Health Organization, the International Labour Organization and other relevant intergovernmental organizations, as appropriate.	/	Not to be transposed		International procedure
Information exchange					
Article 17 paragraph 1 (a)	Each Party shall facilitate the exchange of: (a) Scientific, technical, economic and legal information concerning mercury and mercury compounds, including toxicological, ecotoxicological and safety information;	Law on Environment, Article 56 and Article 56-a	Partially	MoEPP	/
Article 17 paragraph 1 (b)	Information on the reduction or elimination of the production, use, trade, emissions and releases of mercury and mercury compounds;	Law on Environment, Article 56 and Article 56-a	Partially	MoEPP	/
Article 17 paragraph 1 (c, i, ii, iii)	Information on technically and economically viable alternatives to: (i) Mercury-added products; (ii) Manufacturing processes in which mercury or mercury compounds are used; and (iii) Activities and processes that emit or release mercury or mercury compounds; including information on the health and environmental risks and economic and social costs and benefits of such alternatives; and	Law on Environment, Article 56 and Article 56-a	Partially	MoEPP	/

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 17 paragraph 1 (d)	Epidemiological information concerning health impacts associated with exposure to mercury and mercury compounds, in close cooperation with the World Health Organization and other relevant organizations, as appropriate.	Law on Health Protection, Article2 paragraph 2	Partially	MoH	/
Article 17 paragraph 2	Parties may exchange the information referred to in paragraph 1 directly, through the Secretariat, or in cooperation with other relevant organizations, including the secretariats of chemicals and wastes conventions, as appropriate.	/	Not to be transposed		International procedure
Article 17 paragraph 3	The Secretariat shall facilitate cooperation in the exchange of information referred to in this Article, as well as with relevant organizations, including the secretariats of multilateral environmental agreements and other international initiatives. In addition to information from Parties, this information shall include information from intergovernmental and non-governmental organizations with expertise in the area of mercury, and from national and international institutions with such expertise.	/	Not to be transposed		International procedure
Article 17 paragraph 4	Each Party shall designate a national focal point for the exchange of information under this Convention, including with regard to the consent of importing Parties under Article 3.	No	No	MoEPP, MoH	/
Article 17 paragraph 5	For the purposes of this Convention, information on the health and safety of humans and the environment shall not be regarded as confidential. Parties that exchange other information pursuant to this Convention shall protect any confidential information as mutually agreed.	No	No	MoEPP, MoH	/
Public information, awareness and education					
	Each Party shall, within its capabilities, promote and facilitate:				
	(a) Provision to the public of available information on:				

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Article 18 paragraph 1 [a (i), (ii),(iii) (iv) (v); b]	(i) The health and environmental effects of mercury and mercury compounds; (ii) Alternatives to mercury and mercury compounds; (iii) The topics identified in paragraph 1 of Article 17; (iv) The results of its research, development and monitoring activities under Article 19; and (v) Activities to meet its obligations under this Convention; (b) Education, training and public awareness related to the effects of exposure to mercury and mercury compounds on human health and the environment in collaboration with relevant intergovernmental and non-governmental organizations and vulnerable populations, as appropriate.	Law on Environment, Article 56 and Article 56-a, Law on Chemicals, Article 8 paragraph 18	Partially	MoEPP, MoH	/
Article 18 paragraph 2	Each Party shall use existing mechanisms or give consideration to the development of mechanisms, such as pollutant release and transfer registers where applicable, for the collection and dissemination of information on estimates of its annual quantities of mercury and mercury compounds that are emitted, released or disposed of through human activities.	Law on Environment, Article 41	Yes	MoEPP	/
Research, development and monitoring					
	Parties shall endeavour to cooperate to develop and improve, taking into account their respective circumstances and capabilities: (a) Inventories of use, consumption, and anthropogenic emissions to air and releases to water and land of mercury and mercury compounds;				

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Article 19 paragraph 1 (a, b, c, d, e, f, g)	(b) Modelling and geographically representative monitoring of levels of mercury and mercury compounds in vulnerable populations and in environmental media, including biotic media such as fish, marine mammals, sea turtles and birds, as well as collaboration in the collection and exchange of relevant and appropriate samples; (c) Assessments of the impact of mercury and mercury compounds on human health and the environment, in addition to social, economic and cultural impacts, particularly in respect of vulnerable populations; (d) Harmonized methodologies for the activities undertaken under subparagraphs (a), (b) and (c); (e) Information on the environmental cycle, transport (including long-range transport and deposition), transformation and fate of mercury and mercury compounds in a range of ecosystems, taking appropriate account of the distinction between anthropogenic and natural emissions and releases of mercury and of remobilization of mercury from historic deposition; (f) Information on commerce and trade in mercury and mercury compounds and mercury-added products; and (g) Information and research on the technical and economic availability of mercury-free products and processes and on best available techniques and best environmental practices to reduce and monitor emissions and releases of mercury and mercury compounds.	Law on Environment, Article 32	Partially	MoEPP	/
Article 19 paragraph 2	Parties should, where appropriate, build on existing monitoring networks and research programmes in undertaking the activities identified in paragraph 1.	Law on Environment, Article 32	Partially	MoEPP	/

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Implementation plans					
Article 20 paragraph 1	Each Party may, following an initial assessment, develop and execute an implementation plan, taking into account its domestic circumstances, for meeting the obligations under this Convention. Any such plan should be transmitted to the Secretariat as soon as it has been developed.	No	No	MoEPP	/
Article 20 paragraph 2	Each Party may review and update its implementation plan, taking into account its domestic circumstances and referring to guidance from the Conference of the Parties and other relevant guidance.	No	No	MoEPP	/
Article 20 paragraph 3	Parties should, in undertaking work in paragraphs 1 and 2, consult national stakeholders to facilitate the development, implementation, review and updating of their implementation plans.	No	No	MoEPP	/
Article 20 paragraph 4	Parties may also coordinate on regional plans to facilitate implementation of this Convention.	No	No	MoEPP	/
Reporting					
Article 21 paragraph 1	Each Party shall report to the Conference of the Parties, through the Secretariat, on the measures it has taken to implement the provisions of this Convention and on the effectiveness of such measures and the possible challenges in meeting the objectives of the Convention.	No	No	MoEPP	/
Article 21 paragraph 2	Each Party shall include in its reporting the information as called for in Articles 3, 5, 7, 8 and 9 of this Convention.	No	No	MoEPP, MoH, MoE	/
Article 21 paragraph 3	The Conference of the Parties shall, at its first meeting, decide upon the timing and format of the reporting to be followed by the Parties, taking into account the desirability of coordinating reporting with other relevant chemicals and wastes conventions.	/	Not to be transposed		International procedure

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Article 21 paragraph 1	Each Party shall report to the Conference of the Parties, through the Secretariat, on the measures it has taken to implement the provisions of this Convention and on the effectiveness of such measures and the possible challenges in meeting the objectives of the Convention.	No	No	MoEPP	/
Article 21 paragraph 2	Each Party shall include in its reporting the information as called for in Articles 3, 5, 7, 8 and 9 of this Convention.	No	No	MoEPP, MoH, MoE	/
Article 21 paragraph 3	The Conference of the Parties shall, at its first meeting, decide upon the timing and format of the reporting to be followed by the Parties, taking into account the desirability of coordinating reporting with other relevant chemicals and wastes conventions.	/	Not to be transposed		International procedure
Effectiveness evaluation					
Article 22 paragraph 1	The Conference of the Parties shall evaluate the effectiveness of this Convention, beginning no later than six years after the date of entry into force of the Convention and periodically thereafter at intervals to be decided by it.	/	Not to be transposed		International procedure
Article 22 paragraph 2	To facilitate the evaluation, the Conference of the Parties shall, at its first meeting, initiate the establishment of arrangements for providing itself with comparable monitoring data on the presence and movement of mercury and mercury compounds in the environment as well as trends in levels of mercury and mercury compounds observed in biotic media and vulnerable populations.	/	Not to be transposed		International procedure
Article 22 paragraph 3 (a, b, c, d)	The evaluation shall be conducted on the basis of available scientific, environmental, technical, financial and economic information, including: (a) Reports and other monitoring information provided to the Conference of the Parties pursuant to paragraph 2;	/	Not to be transposed		International procedure
	(b) Reports submitted pursuant to Article 21;				
	(c) Information and recommendations provided pursuant to Article 15; and				
	(d) Reports and other relevant information on the operation of the financial assistance, technology transfer and capacity-building arrangements put in place under this Convention.				
Conference of the Parties					
Article 23 paragraph 1	A Conference of the Parties is hereby established.	/	Not to be transposed		International procedure
Article 23 paragraph 2	The first meeting of the Conference of the Parties shall be convened by the Executive Director of the United Nations Environment Programme no later than one year after the date of entry into force of this Convention. Thereafter, ordinary meetings of the Conference of the Parties shall be held at regular intervals to be decided by the Conference.	/	Not to be transposed		International procedure
Article 23 paragraph 3	Extraordinary meetings of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the Secretariat, it is supported by at least one third of the Parties.	/	Not to be transposed		International procedure
Article 23 paragraph 4	The Conference of the Parties shall by consensus agree upon and adopt at its first meeting rules of procedure and financial rules for itself and any of its subsidiary bodies, as well as financial provisions governing the functioning of the Secretariat.	/	Not to be transposed		International procedure

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Article 23 paragraph 4	The Conference of the Parties shall by consensus agree upon and adopt at its first meeting rules of procedure and financial rules for itself and any of its subsidiary bodies, as well as financial provisions governing the functioning of the Secretariat.	/	Not to be transposed		International procedure
Article23 paragraph 5 (a, b, c, d, e, f)	The Conference of the Parties shall keep under continuous review and evaluation the implementation of this Convention. It shall perform the functions assigned to it by this Convention and, to that end, shall: (a) Establish such subsidiary bodies as it considers necessary for the implementation of this Convention; (b) Cooperate, where appropriate, with competent international organizations and intergovernmental and non-governmental bodies; (c) Regularly review all information made available to it and to the Secretariat pursuant to Article 21; (d) Consider any recommendations submitted to it by the Implementation and Compliance Committee; (e) Consider and undertake any additional action that may be required for the achievement of the objectives of this Convention; and (f) Review Annexes A and B pursuant to Article 4 and Article 5.	/	Not to be transposed		International procedure

	MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Article 23 paragraph 6	The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State not a Party to this Convention, may be represented at meetings of the Conference of the Parties as observers. Any body or agency, whether national or international, governmental or non-governmental, that is qualified in matters covered by this Convention and has informed the Secretariat of its wish to be represented at a meeting of the Conference of the Parties as an observer may be admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.	/	Not to be transposed		International procedure
Secretariat					
Article 24 paragraph 1and 2 (a,b,c,d, e, f g)	1. A Secretariat is hereby established. 2. The functions of the Secretariat shall be: (a) To make arrangements for meetings of the Conference of the Parties and its subsidiary bodies and to provide them with services as required; (b) To facilitate assistance to Parties, particularly developing country Parties and Parties with economies in transition, on request, in the implementation of this Convention; (c) To coordinate, as appropriate, with the secretariats of relevant international bodies, particularly other chemicals and waste conventions; (d) To assist Parties in the exchange of information related to the implementation of this Convention; (e) To prepare and make available to the Parties periodic reports based on information received pursuant to Articles 15 and 21 and other available information;	/	Not to be transposed		International procedure

	MINAMATA CONVENTION ON MERCURY	EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
	(f) To enter, under the overall guidance of the Conference of the Parties, into such administrative and contractual arrangements as may be required for the effective discharge of its functions; and				
	(g) To perform the other secretariat functions specified in this Convention and such other functions as may be determined by the Conference of the Parties.				
Article 24 paragraph 3	The secretariat functions for this Convention shall be performed by the Executive Director of the United Nations Environment Programme, unless the Conference of the Parties decides, by a three-fourths majority of the Parties present and voting, to entrust the secretariat functions to one or more other international organizations.	/	Not to be transposed	International procedure	
Article 24 paragraph 4	The Conference of the Parties, in consultation with appropriate international bodies, may provide for enhanced cooperation and coordination between the Secretariat and the secretariats of other chemicals and wastes conventions. The Conference of the Parties, in consultation with appropriate international bodies, may provide further guidance on this matter.	/	Not to be transposed	International procedure	
Settlement of disputes					
	1. Parties shall seek to settle any dispute between them concerning the interpretation or application of this Convention through negotiation or other peaceful means of their own choice.				

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	2. When ratifying, accepting, approving or acceding to this Convention, or at any time thereafter, a Party that is not a regional economic integration organization may declare in a written instrument submitted to the Depositary that, with regard to any dispute concerning the interpretation or application of this Convention, it recognizes one or both of the following means of dispute settlement as compulsory in relation to any Party accepting the same obligation:				
	(a) Arbitration in accordance with the procedure set out in Part I of Annex E;				
	(b) Submission of the dispute to the International Court of Justice.				
Article 25	3. A Party that is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with paragraph 2.	/	Not to be transposed	International procedure	
	4. A declaration made pursuant to paragraph 2 or 3 shall remain in force until it expires in accordance with its terms or until three months after written notice of its revocation has been deposited with the Depositary.				
	5. The expiry of a declaration, a notice of revocation or a new declaration shall in no way affect proceedings pending before an arbitral tribunal or the International Court of Justice, unless the parties to the dispute otherwise agree.				
	6. If the parties to a dispute have not accepted the same means of dispute settlement pursuant to paragraph 2 or 3, and if they have not been able to settle their dispute through the means mentioned in paragraph 1 within twelve months following notification by one Party to another that a dispute exists between them, the dispute shall be submitted to a conciliation commission at the request of any party to the dispute. The procedure set out in Part II of Annex E shall apply to conciliation under this Article.				

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Amendments to the Convention					
Article 26	1. Amendments to this Convention may be proposed by any Party. 2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. The text of any proposed amendment shall be communicated to the Parties by the Secretariat at least six months before the meeting at which it is proposed for adoption. The Secretariat shall also communicate the proposed amendment to the signatories to this Convention and, for information, to the Depositary. 3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. 4. An adopted amendment shall be communicated by the Depositary to all Parties for ratification, acceptance or approval. 5. Ratification, acceptance or approval of an amendment shall be notified to the Depositary in writing. An amendment adopted in accordance with paragraph 3 shall enter into force for the Parties having consented to be bound by it on the ninetieth day after the date of deposit of instruments of ratification, acceptance or approval by at least three-fourths of the Parties that were Parties at the time at which the amendment was adopted. Thereafter, the amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits its instrument of ratification, acceptance or approval of the amendment.	/	Not to be transposed	International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION	Is it fully tranposed? (fully, partially, not to be transposed, not transposed)	Responsble institution (s)	Comment
Adoption and amendment of annexes					
Article 27	1. Annexes to this Convention shall form an integral part thereof and, unless expressly provided otherwise, a reference to this Convention constitutes at the same time a reference to any annexes there to. 2. Any additional annexes adopted after the entry into force of this Convention shall be restricted to procedural, scientific, technical or administrative matters. 3. The following procedure shall apply to the proposal, adoption and entry into force of additional annexes to this Convention: (a) Additional annexes shall be proposed and adopted according to the procedure laid down in paragraphs 1–3 of Article 26; (b) Any Party that is unable to accept an additional annex shall so notify the Depositary, in writing, within one year from the date of communication by the Depositary of the adoption of such annex. The Depositary shall without delay notify all Parties of any such notification received. A Party may at any time notify the Depositary, in writing, that it withdraws a previous notification of non -acceptance in respect of an additional annex, and the annex shall thereupon enter into force for that Party subject to subparagraph (c); and (c) On the expiry of one year from the date of the communication by the Depositary of the adoption of an additional annex, the annex shall enter into force for all Parties that have not submitted a notification of non-acceptance in accordance with the provisions of subparagraph (b).	/	Not to be transposed	International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION				Comment
	4. The proposal, adoption and entry into force of amendments to annexes to this Convention shall be subject to the same procedures as for the proposal, adoption and entry into force of additional annexes to the Convention, except that an amendment to an annex shall not enter into force with regard to any Party that has made a declaration with regard to amendment of annexes in accordance with paragraph 5 of Article 30, in which case any such amendment shall enter into force for such a Party on the ninetieth day after the date it has deposited with the Depositary its instrument of ratification, acceptance, approval or accession with respect to such amendment.					
	5. If an additional annex or an amendment to an annex is related to an amendment to this Convention, the additional annex or amendment shall not enter into force until such time as the amendment to the Convention enters into force.					
Right to vote						
Article 28	1. Each Party to this Convention shall have one vote, except as provided for in paragraph 2. 2. A regional economic integration organization, on matters within its competence, shall exercise its right to vote with a number of votes equal to the number of its member States that are Parties to this Convention. Such an organization shall not exercise its right to vote if any of its member States exercises its right to vote, and vice versa.	/		Not to be transposed		International procedure
Signature						
Article 29	This Convention shall be opened for signature at Kumamoto, Japan, by all States and regional economic integration organizations on 10 and 11 at the United Nations Headquarters in New York until 9 October 2014.	/		Not to be transposed		International procedure

MINAMATA CONVENTION ON MERCURY		EXISTING NATIONAL LEGISLATION				Comment
Ratification, acceptance, approval or accession						
Article 30	1. This Convention shall be subject to ratification, acceptance or approval by States and by regional economic integration organizations. It shall be open for accession by States and by regional economic integration organizations from the day after the date on which the Convention is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary. 2. Any regional economic integration organization that becomes a Party to this Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to this Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently. 3. In its instrument of ratification, acceptance, approval or accession, a regional economic integration organization shall declare the extent of its competence in respect of the matters governed by this Convention. Any such organization shall also inform the Depositary, who shall in turn inform the Parties, of any relevant modification of the extent of its competence. 4. Each State or regional economic integration organization is encouraged to transmit to the Secretariat at the time of its ratification, acceptance, approval or accession of the Convention information on its measures to implement the Convention.	No		No	MoEPP, Ministry of Foreign Affairs	/

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	5. In its instrument of ratification, acceptance, approval or accession, any Party may declare that, with regard to it, any amendment to an annex shall enter into force only upon the deposit of its instrument of ratification, acceptance, approval or accession with respect there to.				
Entry into force					
Article 31	1. This Convention shall enter into force on the ninetieth day after the date of deposit of the fiftieth instrument of ratification, acceptance, approval or accession. 2. For each State or regional economic integration organization that ratifies, accepts or approves this Convention or accedes thereto after the deposit of the fiftieth instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the ninetieth day after the date of deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession. 3. For the purposes of paragraphs 1 and 2, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of that organization.	/	Not to be transposed	International procedure
Reservations					
Article 32	No reservations may be made to this Convention.	/	Not to be transposed	International procedure
Withdrawal					
Article 33	1. At any time after three years from the date on which this Convention has entered into force for a Party, that Party may withdraw from the Convention by giving written notification to the Depositary.				

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	2. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the Depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.		transposed		procedure
Depositary					
Article 34	The Secretary-General of the United Nations shall be the Depositary of this Convention.	/	Not to be transposed		International procedure
Authentic texts					
Article 35	The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Depositary. IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Convention. Done at Kumamoto, Japan, on this tenth day of October, two thousand and thirteen.	/	Not to be transposed		International procedure
ANNEXES					
Annex A Mercury-added products					
Part I: Products subject to Article 4, paragraph 1		Law on Chemicals, Article 8 paragraph (1), point 4 List of restrictions and bans for the chemical application; Law on Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment Management, Article 9 paragraph 1 and paragraph 3, Article 41 paragraph 4, List of the products types which belong to the electrical and electronic equipment categories; List of the equipment excluded from the measures for banning and restrictions for EEE putting on the market in the Republic of Macedonia as well as maximum concentrations values of the hazardous substances and deadlines by which the presence of certain hazardous substances in	Partially	MoEPP, MoH	/

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	the EEE, its components and materials is allowed; Law on Cosmetic Products Safety; List of substances not allowed to be used in cosmetic products			
	Law on batteries and accumulators and waste batteries and accumulators management, Article 8 paragraph 1 (a), 2 and 3, Article 10 paragraph 1, 2, 3, Article 46 paragraph 1 (1), Article 54 paragraph 1 (5)			
Part II: Products subject to Article 4, paragraph 3	No	No		/
Annex B **Manufacturing processes in which mercury or mercury compounds are used**				
Part I: Processes subject to Article 5, paragraph 2	Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals (Official Gazzette of the Republic of Macedonia no. 135/10), Article 2	Partially	MoEPP	/
Part II: Processes subject to Article 5, paragraph 3	No	No	MoEPP, MoE	/
Annex C **Artisanal and small-scale gold mining**				
National action plans	No	No	MoEPP, MoE	/
Annex D List of point sources of emissions of mercury and mercury compounds to the atmosphere	Law on Ambient Air Quality, Article 13; Rulebook on the limit values for allowed emission levels and different types of polluting substances in the waste gases and vapors emitted by the stationary sources in the air,	Partially	MoEPP	/
	Annex1 Table 4, Annex 2 Part 11A Table 12, Annex 2 Part 27A and 27B			
	Law on Ratification of the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals (Official Gazzette of the Republic of Macedonia no. 135/10), Article 2			
Annex E Arbitration and conciliation procedures	/	Not to be transposed		International procedure