

International Mercury Treaty Enabling Activities Program (IMEAP)

Following the signing of the Minamata Convention on Mercury (the ‘mercury treaty’) in 2013 and the release of the IPEN Minamata Declaration on Toxic Metals, IPEN expanded its Mercury-Free Campaign and developed a broad program of treaty-enabling activities to be implemented in conjunction with IPEN Participating Organizations (POs). The International Mercury Treaty Enabling Activities Program (IMEAP) is geared toward raising awareness about the mercury treaty while generating data on key thematic elements of mercury pollution to help enable countries to implement the Minamata Convention.

IPEN launched IMEAP in early 2014 and continues to mobilise resources for IPEN POs to conduct activities that support implementation of the mercury treaty¹.

The key objectives of the IPEN IMEAP are:

1. *Preparing for Treaty Ratification & Implementation:* Creating synergies between NGOs in developing countries with ongoing UN agency or government-led mercury activities and NGO priority-setting.
2. *Enabling Activities to Prepare Countries for Treaty Ratification & Implementation:* Support to NGOs to carry out national and thematic mercury treaty activities.
3. *Communication of Issues Related to Mercury and Treaty Ratification & Implementation:* Global dissemination of project results & south-south collaboration.

The following project forms part of the overall IMEAP activities and contributes to the greater global understanding of mercury pollution issues while providing information that may contribute to Minamata Initial Assessments (MIA) and raise public awareness in preparation for early ratification of the Minamata Convention on Mercury.

¹ IPEN would like to acknowledge the financial contributions from the governments of Germany, Sweden and Switzerland, and the Swedish public development co-operation aid through the Swedish Society for Nature Conservation (SSNC) and other donors. The views herein shall not necessarily be taken to reflect the official opinion of any of these donors, including SSNC or its donors.

IPEN Mercury Treaty Enabling project- Czech Republic

NGO: Arnika – Toxics and Waste Programme

Date: August 15, 2015 (IMEAP: 2014 Phase)

Country: Czech Republic

Region: CEE

Title of project: Mercury in the Chemical Industry – a Toxic Legacy in the CEE Region

Summary

This report summarises a comprehensive project report by Arnika which can be accessed at <http://english.arnika.org/>. The project, conducted by NGO Arnika Association, investigates the status of mercury pollution in and around industrial facilities in the CEE region which are intentionally using mercury in their manufacturing processes such as chlor-alkali plants. These include current and legacy operations in the Czech Republic, Romania, Slovakia, Kazakhstan, and Albania which have caused high levels of mercury contamination on-site and in the surrounding environment. Many of these contaminated areas represent a serious hazard to human health and ecosystem integrity. Highlights of the report include the generation of comprehensive new sampling and biomonitoring data that can contribute to raising awareness of the hazards of mercury pollution in the CEE and prompt action on the clean up of contaminated sites. This new data can also contribute to the mercury inventories of a number of countries as part of their enabling activities for the mercury treaty. Another outcome of the project was to assess the ability of the mercury treaty to stop pollution from existing facilities and clean up legacy sites. In both respects the Convention was found to be weak. The project activities relate closely to articles 3,5,8,9,11,12,16,18 and 19 of the Minamata Convention on Mercury.

Describe the current state of reporting of mercury emissions and releases and applicable laws in your country (facility emissions reporting, PRTR systems etc) regarding emissions from chlor-alkali, VCM and other intentional industrial process uses of mercury:

- The Czech Republic has an operational PRTR system also known as the IRZ.
- The Integrated Pollution Prevention and Control law applies to industries in these jurisdictions.
- It is possible to access Annual Reports about industries meeting the IPPC permit requirements (each facility has to send a report to the regional authority each year)

Report the number of chlor-alkali and VCM plants (and other industrial processes intentionally using mercury) are there operating in your country:

1. Spolana Neratovice – chlor alkali plant
2. Spolchemie Ústí nad Labem – chlor alkali plant

Indicate if the chlor-alkali plants are scheduled for conversion to non-mercury processes or decommissioning:

Spolana Neratovice – June 2017 – probably replaced by membrane electrolysis

Spolchemie Ústí nad Labem – December 2015 - The new membrane based chlor-alkali plant is already constructed partly with financial support from the European Union (EU).

Describe the plans in place (if any) to manage the elemental mercury arising from any closure of these chlor-alkali plants:

Spolchemie:

The old environmental burden of mercury is part of a large decontamination project which started in 2005 and is planned to be finished in 2017. There is no clear plan known to us regarding surplus mercury recovered from the operation. There is nothing about it in publicly available documents.

Describe which facilities are claiming to use BAT/BEP or equivalent measures to control mercury releases and emissions:

After conversion both those facilities listed above. Spolchemie from early 2016 and Spolana from mid 2017.

Report any data indicating that industrial emissions and releases from these facilities are causing environmental or public health impacts:

Spolana:

The effect of Spolana Neratovice and other chemical factories on one species of fish in the River Labe was studied by Randák et al. (2009). They found that a mean mercury concentration in chub (*Leuciscus cephalus* L.) caught in the parts of the river close to the factory (Tab. 2) exceeded the threshold of 0.5 mg/kg wet weight (w.w.) established by the World Health Organisation (WHO) for total mercury in non-carnivorous fish (WHO 2004). The same was corroborated by an investigation of the Arnika Association in 2012 and by a scientific report of Žlábek et al. (2005). The mercury concentration as high as 1.58 mg/kg w.w. was found in muscle of a common bream (*Abramis brama*) during the investigation of the Arnika Association, a mean was 0.57 mg/ kg w.w. (Arnika Association and IPEN Heavy Metals Working Group 2013). The latest investigation (Musil et al. 2015) reported that different fish caught downstream from the waste-water outfall are highly contaminated by mercury with a significant contribution of methyl-mercury. In this report a mean mercury concentration in muscles of common bream (*Abramis brama*) was 0.98 mg/ kg w.w. Moreover mercury contamination was also found in fish from nearby Mlékojedy quarry lake. A mean mercury level in muscles of perch (*Perca fluviatilis*) caught in nearby Mlékojedy quarry lake was 0.63 mg/ kg w.w. Angling has a long history in the city of Neratovice and a local group of Czech Fishing Union continues to encourage fish population for angling in the Labe River and Mlékojedy quarry lake.

Spolchemie:

Due to operation of the mercury based chlor-alkali plant, both the surrounding environment and the chemical complex itself were heavily polluted with mercury. The mercury contamination is reported in soils in the area of Spolchemie, in sediments of the River Bílina, and in fish from both the River Labe and the River Bílina.

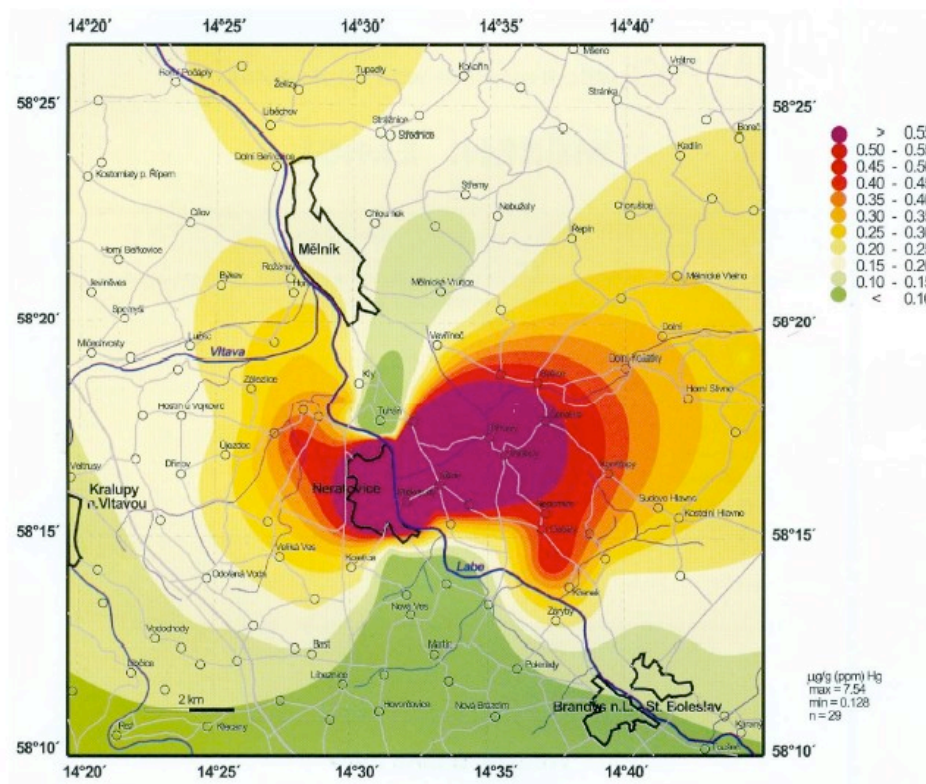
Many investigations were conducted to find out mercury levels in fish at sites on the River Labe downstream from the Spolchemie. Although mercury levels in fish were highly elevated in comparison with natural level of mercury, directly downstream from the Spolchemie mean mercury concentrations in fish did not exceeded the threshold of 0.5 mg/kg w.w. established by the WHO (WHO 2004) for total mercury in non-carnivorous fish. Randák et al. (2009) found that the mean mercury concentration in chub (*Leuciscus cephalus L.*) caught downstream of the factory was 0.26 mg/kg w.w. The similar mean value of 0.28 mg/kg w.w. was found in the investigation by the Arnika Association and IPEN in 2012 in muscle of common bream (*Abramis brama*) (Arnika Association and IPEN Heavy Metals Working Group 2013). If the stricter US EPA (US EPA 2001) reference dose of 0.22 mg/kg is used, eating fish from the River Labe downstream from the confluence with the River Bílina poses health risk. Moreover results of a scientific research by Žlábek et al. (2005) found that a mean mercury levels in common bream (*Abramis brama*) from the River Labe 20 km downstream from the Spolchemie exceeded the WHO limit (Fig. 3). It could be explained by mercury transport and accumulation in sediments to more downstream parts of the river.

Describe current baseline mercury consumption, emissions and release information and methods used to estimate it:

Spolana:

According to EuroChlor total mercury emissions and the waste disposal from the factory were 0.53 g per tonne of chlorine and 0.87 g per tonne of chlorine in 2013, respectively.

Arnika Association has measured high levels of mercury in outdoor air at some points on the edge of the chlor-alkali plant (Arnika Association and IPEN Heavy Metals Working Group 2013). Even more visible is the long-standing burden by mercury on the results of measurements by Suchara and Sucharová (2008) in oak bark.



Spolana Neratovice also contains an unresolved environmental burden – contamination of the old amalgam electrolysis (in operation from 1948 to 1975) by both mercury and dioxins. At least 250 tonnes of mercury were left at the former chlorine production site as a mercury contamination of several production buildings and an enormous amount of soil in the River Labe flooding area. Mercury concentrations found in the factory were ordinarily between 1500 and 3600 mg/kg of soil, but the maximum mercury concentration reached up to 37,000 mg/kg of soil (Greenpeace Czech Republic 2002). This can also be a significant source of mercury pollution into the River Labe through underground water as well as surface water flow during the rain. However, this contamination spreads further since contaminated sediments are carried into Germany especially during the floods like the large flood in 2002. During this event about 90% of the area of the chemical complex was flooded up to 3 metres.

Spolchemie

According to EuroChlor the total mercury emission and the waste disposal from the factory were 0.73 g per tonne of chlorine and 10.3 g per tonne of chlorine respectively in 2013.

The mercury concentrations found in certain areas outside the Spolchemie premises - especially in Solvayova Street and at the corner of Okružní and Solvayova Streets - exceeded the value of tens and hundreds ng/m³ (Fig. 6). In certain parts of Solvayova Street, mercury concentrations in the air were in the range from the limit of detection (2 ng/m³) up to the highest found out value of 412 ng/m³ (Kuncová 2006).

The contaminated soil in the area of the chemical complex Spolchemie poses an old environmental burden resulted from operation of the chlor-alkali production in past. At least

350 tonnes of mercury and range of other chemicals (e.g. chlorinated hydrocarbons) were left at the former chlorine production site

The highest mercury concentration in soils was 2400 mg/kg dry matter (d.m.). This mercury level was detected at the depth of 23-25 metres below the ground level at the site of the old amalgam electrolysis. The highest mercury concentration at the depth about one meter was 1200 mg/kg d.m. This distribution shows that the mercury contamination on the site is situated mainly in deep layers of underground sediments. Through the years the mercury contamination is gradually spreading in direction of the groundwater flow.

Levels of mercury in sediments in the River Bílina downstream from Spolchemie were up to almost 32 mg/kg d.m. The mercury concentration in biofilm in the River Bílina at Ústí nad Labem was 6.7 mg/kg. This value was the highest level of mercury observed in biofilm among all Czech rivers (Pokorný et al. 2011).

Indicate if mercury for these industries is mined locally, imported or recovered from mercury wastes and the quantities involved:

The mercury was mostly recovered from mercury wastes. It was also imported in the past. The companies won't require any new mercury from now until the phase out of amalgam electrolyses process.

Project Outcomes:

Describe the activity conducted:

1.1 Collection of data about mercury contamination related to chemical industry was conducted for the following countries: Albania, Czech Republic, Slovakia, Romania and Kazakhstan.

1.2 Field visits and photo-documentation of selected chlor-alkali plants and contaminated sites at the same time. We have visited chlor-alkali plants in the Czech Republic (Spolana and Spolchemie) and abandoned acetaldehyde facility and contaminated site in Temirtau on Nura river, Kazakhstan.

1.4 Sampling of sediments, fish and/or human hair at selected sites and their **analyses for mercury, and methylmercury**. We already had results of sampling from the Czech Republic and Albania from previous studies. New samples were taken in Kazakhstan, where sediments and fish were sampled downstream from a contaminated site (former Karbid facility) on the Nura river in Karaganda Oblast. We also convinced Spolana chlor-alkali plant management to order monitoring of mercury and other contaminants in fish and used the results in our report.

1.3 Collecting data from national PRTRs on mercury, where available.

We have collected data about mercury releases from national PRTRs in the Czech Republic and Slovakia. The data was very useful particularly in the Czech Republic because there is also available data reported about mercury transfers in wastes.

2.1 Writing the report *Chlor-alkali plants and mercury contamination in the CEE region* as a major part of the project was possible to finalize only after all data were gathered and after we also obtained results of monitoring from Spolana. The associated full length report doesn't address only current chlor-alkali, and other chemical plants but also contaminated sites left after use of mercury in different chemical factories. The collected data was used to reflect whether the Minamata Convention sets standards that may lead to any improvement at chemical factories sites in CEE region. The outcome demonstrates that the deadline for phasing out mercury in chemical industries is very weak.

3.1 Printing of the report and its public release at press conference(s).

We were not able yet to release full report due to delay in finishing the monitoring by Spolana and due to delay in obtaining results from labs on analyses of our samples from Kazakhstan. We were able to present separate outcomes for contaminated sites in Kazakhstan at both the conference for state institutions and NGOs, and a press conference held at the end of April 2015 in Karaganda, Kazakhstan.

3.2 Discussion with national authorities about addressing the problems raised in the report.

We had discussion about partial outcomes of the report for Kazakhstan with Kazakhstani authorities, both regional and national. We expect to have more exchange after the report will be presented at international level also with authorities in some other countries. We also presented our views and used collected data in ongoing process of pushing Spolana Neratovice to phase out mercury not later than June 2017.

3.3 Presentation(-s) of the report at international meetings. This is a future activity, as there has been no international meeting yet where we should present the report.

Impact on Target Groups:

We discussed the preliminary results of the study with participants of a conference in Kazakhstan. We also presented our views and used collected data in ongoing process of pushing Spolana Neratovice to phase out mercury not later than June 2017. National and regional authorities in Czech Republic are also part of that discussion.

Impact on target policies:

The target policy of this activity is the implementation Minamata Convention on Mercury, phase out of mercury in chemical industry and the remediation of sites contaminated by mercury in particular. The project outcomes demonstrate specific examples weaknesses of Minamata Convention in these fields and prepared the baseline for negotiations to strengthen its role and its implementation in the CEE region. No change in target policies has been achieved yet with this project apart from maintaining the deadline for mercury phase out in the chlor-alkali plant Spolana Neratovice in the Czech Republic.

Outreach to Stakeholders:

The study was first presented in Kazakhstan at a conference in April 2015. The study was introduced twice – at a session for CSOs and at a session for state officers and experts. Also it was promoted at a press conference.

The study was designed to serve a tool for negotiations on both national and international levels, mainly for CSOs from CEE region involved in implementation of the Minamata Convention. The introduction of the preliminary results can be considered a pilot activity in this regard.

Deliverables, outputs and/or products:

- Report “Chemical plants as a significant source of mercury contamination in Central and Eastern Europe region” covering information on chemical plants in 6 CEE countries.
- Introduction of preliminary results at a conference for CSOs, government officers and journalists
- An indirect product is negotiated fish monitoring in surrounding of Spolana Neratovice chlor-alkali plant

Communication Efforts: Describe efforts to communicate this activity to the media and/or general public.

- Introduction of preliminary results at a conference for CSOs, government officers, experts and journalists in Kazakhstan
- Results of monitoring of fish ordered by Spolana Neratovice were discussed by journalists with Arnika afterwards

Communication with National or Local Authorities: Describe any communication, coordination or sharing of the results of your Activity with your environmental regulators, or any other national or local authority related to chemicals management.

- Introduction of preliminary results at a conference for CSOs, government officers, experts and journalists in Kazakhstan
- There were also unofficial discussions with them after the conference
- We had also unofficial meeting with regulators from regional office in the Czech Republic and Spolana Neratovice management and discussed mercury phase out in this factory; the early phase out deadline (2017) was kept.

Minamata Convention National Focal Point:

Mr. Karel Blaha

Director
Department of Environmental Risks and
Ecological Damage
Ministry of Environment
Vrsovicke 65
Prague 10 10010
Czech Republic
Tel: +420267122532
Email: karel.blaha@mzp.cz

NGO Recommendations for next steps:

We suggest using the report for international CSOs' work on mercury under IPEN Toxic Metals WG umbrella. We believe it's a good tool for addressing industrial mercury pollution and phase out dates in the chlorine industry in particular. There can also be found very good arguments for addressing the problem of contaminated sites.

What, if anything, changed from the original plans and why?

We were not able to print the report due to the insufficient funds. We also had delays due to longer time needed for laboratory analyses and new component of the project, which was fish monitoring ordered by chemical company Spolana Neratovice. It was not a part of our project, rather a result. We pushed for this monitoring and participated in its design. We also received full data from that monitoring. They are useful although we have slightly different interpretation of data than experts paid by chemical company.