

Improving the safety of industrial tailings management facilities in

Ukraine published in POPS Newsletter, No 25, September, 2013, prepared on behalf of IHPA

Interview with Gerhard Winkelmann-Oei, the project manager of the German Umweltbundesamt (German Environment Agency) that is financing the project “**Improving the safety of industrial tailings management facilities in Ukraine**”, within the Technical Assistance Programme of the German Ministry of the Environment



Mr. Winkelmann-Oei during the kick-off Meeting in Kiev

1. Could you tell me what tailing management facilities are?

Yes, certainly I can do that. First I should then briefly explain what tailings are: Tailings consist of ground rock and process effluents that are generated in mine processing plants. Tailings are the materials left over after the process of separating the valuable fraction from the uneconomic fraction ([gangue](#)) of an [ore](#). Various mechanical and chemical processes are used to extract the desired product from the run of the mine ore.

Respectively tailings may contain trace quantities of metals found in the host ore, and they may contain substantial amounts of added compounds used in the extraction process.

The unrecoverable and uneconomic metals, minerals, chemicals, organics and process water are discharged, normally as slurry, and finally stored in an area commonly known as a Tailings Management Facility (TMF) or Tailings Storage Facility (TSF).

These tailings dumps would continue to leach residual chemicals into the environment, and if weather conditions allowed it the finer fraction would become windborne, blowing around the mining areas.

It is obvious that the physical and chemical characteristics of tailings and their methods of handling and storage are of great and growing concern.

2. That looks a serious issue , but why should Tailing Management Facilities be reported in IHPA POPS Newsletter?

That is a good question. IHPA is working with dangerous chemicals. We are dealing with hazardous activities. The risk potential of a hazardous activity is not only up to the individual danger of the substances used , but also up to the amount of the chemicals, the process conditions and the respective prevention measures being implemented. Also the consequences in a potential accident have to be taken into account. What we noticed is accidents with the largest extent of environmental consequences at global level and often transboundary are up to the failure of TMF

3. Can you mention some of these TMF accidents in the region of Eastern Europe and Former Soviet Union, as you are starting now in Ukraine?

First of all let me mention that these kind of accidents are not only limited to the region of Eastern Europe and Former Soviet Union, but we can see it worldwide wherever mining activities with TSF are performed. But of course the more often mining activities are performed the more you have to be aware of accidents. And in the mentioned region mining activities have a very high economic importance.

Let me just outline some of these accidents so you get a bit of a feeling what we are dealing with. Just recently, in October 2010, there was an environmental disaster in the Hungarian town of Kolontar. Its cause was the dam failure of a TMF with toxic waste of a large factory for the production of aluminum. About 600–700 000 m³ of red sludge have spilled out.

This so-called 'red mud' was released as a 1–2 m (3–7 ft) wave, flooding several nearby localities. Three villages (Devecser, Kolontár, Somlóvásárhely) were inundated, 10 people died, and more hundred people suffered injuries. About 40 square kilometers of land were initially affected. The chemicals extinguished all life in the Marcal river, and reached the Danube River on the 7th October, prompting countries located further down the river to develop emergency plans in response.

The costs of remediation cannot yet be exactly calculated but will be certainly up to millions or even billions of dollars.

In that region another two cases are still fresh in many people's mind was the breaking of dams used for the storage of liquid waste from gold mining in the Romanian cities Baya Mare and Baya Borsa about 10 years ago. Severe environmental damage was caused to the tributaries of the Danube and was even noticed at the Danube River Delta. This is also underlined through an analysis carried out by the International Commission for the Protection of the Danube River (ICPDR), which shows the greatest potential risks in the Danube basin in Romania are combined with the large tailings in mining and processing plants.

And let's not forget the Ukrainian TMF case of Kalush, which are well known and the UN-EU mission to the Kalush area described in 2010 (Technical Scoping Mission Kalush Area, Ukraine March 2010, A Joint United Nations – European Commission Environmental Emergency Response Mission) assessed the situation there as "critical", quoting that mining in the Kalush area has left the ground unstable and prone to subsidence, with mine tailings dams at risk of bursting as a result of snowmelt and spring floods. Even recently again it turned out that the dangers still exist for the entering of pollution from the TMF plus the dangers of the waste generation of HCB, one of the chemicals which IHPA so concerned about, will enter the Dniestr and can endanger the drinking water of Moldova and Western Ukraine, so I hope you can see my point of taking the problems TMF extremely serious.

In addition, the problems in Ukraine are not only limited to the Dniester region: there are also giant retention reservoirs in the Dnieper River Basin (Dnipropetrovsk region), and they pose an enormous threat to the entire Black Sea region. An accident in the Ukrainian city Nikolayev in January 2011 illustrated another potential danger of retention reservoirs: Due to a long period of drought, the reservoirs of an aluminium plant (see Kolontar, Hungary) dried out. Strong winds led to the fact that the deposited residues were stirred up which then extensively contaminated the environment and ground water in the vicinity.

4. So, why has your project such an international importance ?

Based on these findings the United Nations Economic Commission For Europe (UNECE) had already started a joint activity between the “Industrial Accident”- and “Water”-Convention to develop tools for improving the safety of TMF as they resulted as key problems for environmental safety in the whole UNECE region. Supported and guided by our agency, the Umweltbundesamt, this activity resulted in 2008/9 in *safety guidelines and good practices for tailings management facilities*. The safety guidelines were agreed by all UNECE countries and include both recommendations to UNECE countries and authorities on the necessary legal basis for issuing permits for the safe operation of tailings management facilities as well as recommendations to operator on the safe design of tailings management facilities. UNECE called on the governments of UNECE countries and on TMF operators to include the safety guidelines in the national regulations and technical standards and to apply them.

As an additional tool to support the implementation of the Guidelines in the UNECE member countries: a user-friendly checklist combined with a catalogue of measures is to facilitate the implementation of the UNECE safety guidelines.

Therefore the project, which is part of the UNECE work programme, delivers the key for many countries with TMF problems

Even better is that we have already now arranged the cooperation between this UNECE project and the presently running EU-funded Programme for the Prevention, Preparedness and Response to Man-made and Natural Disasters in the ENPI East Region (PPRD East).

The practical training for testing the checklists will be accessible not only for Ukrainian specialists but also for experts from a number of countries in the UNECE region.

It is obvious that far beyond this region, globally an enormous need to deal with the issue is proven.

In this way we will work out this package and make it available to all those who will need it. It will be like an oil spot spreading on the water.

5. What do you think the project can achieve in the Region of the Former Soviet Union, where IHPA also has put its focus ??

As mentioned already the idea is to support these countries in establishing a high safety level at TMF. TMF are economically very important in the region of the Former Soviet Union.

Many of these TMF that are badly maintained, due to former and/or present lack funds and where the dangers are silently increasing, often without their owners are realizing the enormous extent of their own problem, but also lacking the insight of the enormous dangers and consequences for disaster for their near and far surroundings.

As we are paving the way by training activities to raise the safety by prevention measures and being prepared of minimizing consequences in the case of an accident, this project is more welcome in these countries with economies in transition as in any other region!

PROJECT INFORMATION

Improving the safety of tailings management facilities based on the example of Ukrainian facilities



Ore processing tailings management facilities (Photo: Grigory Shmatkov)

Background

The failure of tailings management facilities is a major problem worldwide that regularly leads to severe disasters. To address this problem, the United Nations Economic Commission for Europe (UNECE) developed in 2009 "Safety Guidelines and Good Practices for Tailings Management Facilities". These comprise recommendations to authorities on the necessary legal basis for issuing permits for the safe operation of tailings management facilities as well as recommendations to operators on their safe design. The UNECE called on the governments of UNECE countries to incorporate the safety guidelines into their national regulations and technical standards and to apply them. In subsequent years it became apparent, however, that the implementation of the safety guidelines poses problems because they set out safety standards only in general terms.

Project

The aim of the project is to overcome the problems in the implementation of the UNECE Safety Guidelines for tailings management facilities and to thus permanently reduce the risk posed by these facilities. The practicality of the project outcomes will be tested at two Ukrainian facilities.

Following a fundamental analysis of the legal framework with respect to tailings management facilities in Ukraine, a checklist will be developed which can be used by inspectors and operators of tailings management facilities to identify safety shortcomings of these facilities and to derive short-, medium- and long-term measures to address those deficiencies. The checklist shall be developed in consultation with the current international expertise in this area and be based in particular on a catalogue of measures prepared on the basis of international standards.

The practicality of this checklist will be tested in cooperation with inspectors and operators by applying it to two selected Ukrainian facilities. After completion of the practical test, the checklist is intended to be available for use in the entire UNECE region.

- Target country/region: Ukraine, transnational
- Duration: 07/2013 – 06/2015
- Beneficiary: Authorities and plant operators
- Implementing organisation: IHPA, International HCH & Pesticides Association, Denmark
- Project number: 26206