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Decision on strengthening mine tailings safety in the United Nations Economic Commission for Europe region and beyond

Mine tailings safety in the United Nations Economic Commission for Europe region and beyond

**Prepared by the small group preparing the seminar on mine tailings
safety, in cooperation with the secretariat**

Summary

The present document includes background information (context, relevance, desired outcomes and objectives) and the outline of the online seminar on mine tailings safety in the United Nations Economic Commission for Europe (ECE) region and beyond, which will be held on 1 December 2020.

The seminar has been planned by a small group preparing the seminar on mine tailings safety, including members of the Bureau, the Chair of the Industrial Accidents Convention and the secretariat. The main objective of the online seminar is to provide support to ECE member States, including the Parties to the Convention on the Transboundary Effects of Industrial Accidents and the beneficiary countries of its Assistance and Cooperation Programme, in their efforts to implement the Convention and to take action to strengthen mine tailings safety.

On the basis of the seminar, the Conference of the Parties will be invited to consider and adopt a draft decision on strengthening mine tailings safety in the United Nations Economic Commission for Europe region and beyond (ECE/CP.TEIA/2020/3).



I. Introduction

1. At its forty-second meeting (Oslo, 26 and 27 September 2019), the Bureau of the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) decided to address the topic of mine tailings safety through a dedicated seminar in the framework of the eleventh meeting of the Conference of the Parties.¹ The Bureau considered that the topic should be addressed in view of recent accidents and failures at tailings management facilities, the need to address industrial safety hotspots as highlighted by the Convention's long-term strategy (ECE/CP.TEIA/38/Add.1) and the work on improving the safety of tailings management facilities that the Convention has been carrying out for several years.

2. The Bureau established a small group to prepare the above-mentioned seminar on mine tailings safety (the small group), consisting of Mr. Michael Struckl (Austria), Ms. Martine Rohn-Brossard (Switzerland) and Mr. Gerhard Winkelmann-Oei (Germany, Co-Chair of the Joint Ad Hoc Expert Group on Water and Industrial Accidents (Joint Expert Group)).² The small group was chaired by Ms. Torill Tandberg (Norway, Chair of the Conference of the Parties to the Industrial Accidents Convention) and supported by the secretariat. It established the objectives of the seminar, prepared the seminar programme and provided advice on possible speakers and presenters. The small group also requested the secretariat to prepare a draft decision on strengthening mine tailings safety for presentation to the eleventh meeting of the Conference of the Parties.

3. Owing to the extraordinary circumstance of the coronavirus disease (COVID-19) pandemic, the Bureau at its forty-fourth meeting (Geneva (online), 18 September 2020) agreed that the eleventh meeting of the Conference of the Parties would be organized as a hybrid meeting on 7–9 December 2020, limited to three morning sessions — each one beginning at 10 a.m. and ending at noon. As a result, the seminar could no longer be organized as part of the Conference of the Parties. The Bureau agreed to schedule the seminar on mine tailings safety as a separate online event of maximum three hours, to take place in advance of the Conference of the Parties, on 1 December 2020. In view of the envisaged adoption of the draft decision on strengthening mine tailings safety in the ECE region and beyond (ECE/CP.TEIA/2020/3) at the eleventh meeting of the Conference of the Parties, the Bureau encouraged Parties and non-Parties to attend the online seminar.

II. Safe management of mine tailings in a socioeconomic context

4. The extraction of mineral resources is an important contributor to export earnings, employment and economic growth in many United Nations Economic Commission for Europe (ECE) countries, especially in Eastern and South-Eastern Europe, the Caucasus and Central Asia. Looking towards 2050, a global increase in the demand for metals and minerals is expected,³ even taking into account progress towards a circular economy, making long-term availability and extraction of resources of relevance to many ECE countries, including European Union member States, as well as countries with economies in transition.

5. While mining activities are essential for socioeconomic development, industry and Governments need to put safety first to minimize disaster risk caused by hazardous activities, and to take into account impacts on health, safety, the environment and climate, through implementation of the 2030 Agenda for Sustainable Development. According to the Global Chemicals Outlook II — From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development,⁴ the global target to minimize the adverse impacts of

¹ See CP.TEIA/2019/B.3/Minutes, para. 55, available at http://www.unece.org/fileadmin/DAM/env/documents/2019/TEIA/Bureau_Oslo/Bureau-42_Minutes_as_agreed_with_the_Chair_and_Bureau_final_clean.pdf.

² Ibid.

³ See United Nations Environment Programme (UNEP), *Mineral Resource Governance in the 21st Century: Gearing Extractive Industries towards Sustainable Development* (Nairobi, 2020).

⁴ UNEP (2018).

chemicals and waste by 2020⁵ will not be achieved at the current pace, requiring accelerated progress and a higher level of engagement of industries and governance.

6. An increasing population, combined with migration and peri-urbanization⁶ trends, increases exposure and, potentially, vulnerability, to disaster risks, including those of tailings management facilities. This requires strengthened disaster resilience and disaster risk reduction measures to protect communities from the consequences of accidents in tailings management facilities. In terms of international action to respond to these trends, synergies exist between the strengthened implementation of the Industrial Accidents Convention, the Sendai Framework for Disaster Risk Reduction 2015–2030 and the 2030 Agenda. Furthermore, linkages with the objectives for adaptation to climate change under the Paris Agreement can be further explored.

7. Past accidents at tailings management facilities within and beyond the ECE region — such as those in Brazil (2019, 2015), Canada (2014), Finland (2012), Hungary (2010), Kazakhstan (2016) and Romania (2000) — have shown the disastrous effects that such events can have on humans and the environment, at both the national and the transboundary levels. A 2017 United Nations Environment Programme (UNEP) report⁷ listing the main causes of tailings management facility failures worldwide between 1915 and 2016 found that the majority of such failures can be attributed to a small number of factors, in particular the lack of management continuity and inadequate resourcing (especially financially) for the facility.

8. According to a 2001 International Commission on Large Dams report⁸ analysing 221 tailings management facility failures worldwide, all failures researched could have been avoided, for example, through better monitoring and maintenance. Analyses carried out based on that report⁹ indicate that a large share of the failures were due to extreme weather (rainfall and snow), reflecting an omission to account for climate change in the structural design of tailings management facilities. Parties may wish to consider this when taking future action to manage mine tailings and strengthen tailings management facility safety.

9. Extreme weather events such as floods, storms and landslides are examples of natural hazards triggering technological risks that particularly affect tailings management facilities, as described in paragraph 11 below. Environmental hazards can be aggravated by changing weather patterns. A recent German Environmental Agency report highlights how potential environmental hazards, such as floods and storms, should be considered when safely constructing tailings dams.¹⁰ This calls for increased awareness and proactive measures to strengthen safe management of mine tailings in the long term, covering both new and existing tailings management facilities.

10. Global trends in the number and impacts of tailings management facility failures are relevant to the ECE region and beyond. Countries in Eastern Europe, the Caucasus and

⁵ Target 12.4 of the Sustainable Development Goals: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

⁶ Peri-urbanization is defined under Habitat III as: “the urbanization of former rural areas on the fringe, both in a qualitative (e.g. diffusion of urban lifestyle) and in a quantitative (e.g. new residential zones) sense”. The United Nations Terminology Reference System defines peri-urbanization as: “A process, often a highly dynamic one, in which rural areas located on the outskirts of established cities become more urban in character.”

⁷ Roche, C., Thygesen, K. and Baker, E., eds., *Mine Tailings Storage: Safety Is No Accident* (Nairobi/Arendal, Norway, UNEP/GRID-Arendal, 2017).

⁸ UNEP/International Commission on Large Dams, “Tailings Dams: Risk of Dangerous Occurrences. Lessons learnt from practical experiences”, Bulletin 121 (Paris, 2001).

⁹ See Rico, M. and others, “Reported tailings dam failures: A review of the European incidents in the worldwide context”, *Journal of Hazardous Materials*, vol. 152, No. 2 (April 2008), pp. 846–852; and Lyu, Z. and others, “A Comprehensive Review on Reasons for Tailings Dam Failures Based on Case History”, *Advances in Civil Engineering*, vol. 2019 (June 2019).

¹⁰ See Dehoust, G. and others, “Environmental Criticality of Raw Materials. An assessment of environmental hazard potentials of raw materials from mining and recommendations for an ecological raw materials policy”, Text 80/2020 (Dessau-Roßlau, Germany, German Environment Agency, 2020).

Central Asia face particular challenges in view of the existence of neglected tailings management facilities. Moreover, many other countries in the ECE region have mine tailings facilities in place (for example, Austria, Czechia, Finland and Serbia), making the subject of strengthening safety of mine tailings facilities of interest to all Parties to the Convention.

11. At the same time, experiences around the globe could inform countries in the ECE region on lessons learned and on upcoming practices to monitor and measure tailings management facility-related risks, in order to adapt management of mine tailings facilities to the scenarios of increased demand for resources, densely populated areas and increased climate-related extreme weather events and environmental impact.

III. Tailings management facility safety under the Industrial Accidents Convention

12. Tailings management facility safety has been a matter of concern for the Convention since its entry into force in 2000, following the spillage of cyanide and heavy metal into the Tisza River basin as the result of a tailings dam breach in Baia Mare, Romania — one of the biggest ever environmental disasters in the ECE region. An estimated 100,000 m³ of cyanide and metal-rich liquid waste emptied into the river system, causing transboundary water pollution, large-scale environmental damage and threats to drinking water supplies stretching from Romania to Hungary and the Black Sea. Following the event, the Conference of the Parties to the Convention, at its first meeting (Brussels, 22–24 November 2000), adopted a decision on the prevention of accidental water pollution (CP.TEIA/2000/13). In addition, the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (Civil Liability Protocol) was adopted in 2003 by the Parties to both the Industrial Accidents Convention and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention).

13. Article 2 (2) (c) of the Industrial Accidents Convention excludes certain accidents from the scope of the Convention. It states that the Convention: “shall not apply to ... dam failures, with the exception of the effects of industrial accidents caused by such failures”. It also provides a definition of “industrial accident” in article 1 (a), which could include tailing dams accidents. However, the definition of “industrial accident” contained in article 2 (e) (i) of the Civil Liability Protocol specifically includes tailing dams. It thereby clarifies article 2 (2) (c) of the Convention. The definition of industrial accidents provided by the Protocol thus makes it clear that tailing dam failures are considered to be an exception to the exclusion.

14. When assessing possible amendments to the Industrial Accidents Convention, the Conference of the Parties at its seventh meeting (Stockholm, 14–16 November 2012) tasked the Working Group on the Development of the Convention with assessing whether an amendment clarifying that tailings facilities were covered under the scope of the Convention was necessary (ECE/CP.TEIA/24, para. 66 (b)). The Working Group at its fourth meeting (Geneva, 28 and 29 April 2014) concluded that article 2 of the Convention needed no amendment, as tailings management facilities were already regulated by the Convention (ECE/CP.TEIA/WG.1/2014/3, paras. 22 and 23).

15. Tailings management facilities are therefore considered to fall within the scope of the Industrial Accidents Convention.¹¹ To address industrial accident prevention, preparedness and response in this regard, the Joint Expert Group was tasked with developing safety guidelines and good practices for tailing management facilities ((ECE/CP.TEIA/2006/9–ECE/MP.WAT/2006/7 para. 15 (b)). These safety guidelines were subsequently endorsed by the Conference of the Parties to the Industrial Accidents Convention at its fifth meeting (Geneva, 25–27 November 2008) and by the Meeting of the Parties to the Water Convention

¹¹ More specifically, the Convention applies to those tailings management facilities that meet the definition of “hazardous activity” provided in article 1 (b) of the Convention, i.e. those tailings management facilities in which one or more hazardous substances are present or may be present in quantities at or in excess of the threshold quantities listed in annex I to the Convention, and which are capable of causing transboundary effects.

at its fifth session (Geneva, 10–12 November 2009) (see, respectively, ECE/CP.TEIA/19, para. 61, and ECE/MP.WAT/29, para. 64). Furthermore, in 2013, under the leadership of Germany, a related checklist methodology was developed in the framework of the Convention, as part of a project on improving the safety of industrial tailings management facilities based on the example of Ukrainian facilities.¹² The Conference of the Parties at its eighth meeting (Geneva, 3–5 December 2014) took note of the checklist and welcomed the continuation of this work (ECE/CP.TEIA/30, para. 67).

16. Since their development, the safety guidelines and the tailings management facility methodology have been applied in multiple ECE countries during dedicated projects under the Convention's workplans, supported by experts from the Joint Expert Group. Examples of countries where the guidelines have been (or will be) applied are Armenia, Georgia, Kazakhstan, Romania, Tajikistan, Ukraine and Uzbekistan, as part of the following activities:

(a) Project on supporting countries of Central Asia in strengthening the safety of mine tailings (since 2020), financed by the Swiss Federal Office for the Environment;

(b) Project to strengthen the safety of mining operations, in particular tailings management facilities, in Tajikistan and Central Asia (since 2019), financed by the Swiss Federal Office for the Environment;

(c) Pilot project to strengthen the safety of mining operations, in particular tailings management facilities, in Kazakhstan and beyond in Central Asia (2017–2019), financed by the Swiss Federal Office for the Environment;

(d) Project to improve safety conditions of tailings management facilities in the Danube River basin (2019–2020), financed by the German Environment Agency;

(e) Project on Improving the Safety of Tailings Management Facilities in the Caucasian Region (2017–2019), financed by the German Environment Agency;

(f) Project on Raising Knowledge among Students and Teachers on Tailings Safety and its Legislative Review in Ukraine (2016–2017), financed by the German Environment Agency;

(g) Project on Improving the Safety of Industrial Tailings Management Facilities, based on the example of Ukrainian Facilities (2013–2015), financed by and implemented under the leadership of the German Environment Agency.¹³

17. Increased application of available guidance such as the Safety guidelines and good practices for tailings management facilities¹⁴ in the ECE region can support tailings management facility safety on an operational level. Building on lessons learned, knowledge exchange can benefit capacity development in the ECE region.

18. Capacity constraints for safe management of tailings management facilities and a lack of awareness of risks related to such facilities stand in the way of accomplishing safe mine tailing management. Further identification and notification of mine tailings that are regulated by the Convention will increase awareness and lay the basis for capacity development. This can be supported by the inclusion of tailings management facilities in reports on hazardous activities, thorough self-assessment and sharing of this information with competent authorities, operators of tailing management facilities and communities

¹² Vijgen, J. and Nikolaieva, I., "Improving the safety of industrial tailings management facilities based on the example of Ukrainian facilities", Document 01/2016 (Dessau-Roßlau, Germany, German Environment Agency/Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, April 2016).

¹³ For further information on all the projects listed, see <http://www.unece.org/environmental-policy/conventions/industrial-accidents/areas-of-work/assistance-and-cooperation-programme/envteiaimplementation/project-on-supporting-countries-of-central-asia-in-strengthening-the-safety-of-mine-tailings.html>.

¹⁴ United Nations publication, ECE/CP.TEIA/26.

IV. Objectives of the seminar

19. In the light of the above, the main objective of the seminar is to strengthen mine tailings safety and provide support to countries in the implementation of the Industrial Accidents Convention. The focus of the seminar will be on the ECE region; interested representatives of neighboring and other countries (including Brazil, Chile, China and Mongolia) are invited to attend. More specifically, the seminar aims to:

- (a) Raise awareness among competent authorities and decision-makers of the urgent need to strengthen national governance, policies and operational measures related to mine tailings facility safety;
- (b) Agree on action to be taken by the Parties to the Convention, beneficiaries of its Assistance and Cooperation Programme, and other interested countries;
- (c) Discuss the impact of international developments on mine tailings management, including:
 - (i) The increase in the demand for minerals and metals related to energy, transport, investments and trade;
 - (ii) The consequences of changes in climatic conditions;
 - (iii) Considerations regarding how to address related challenges;
- (d) Present the role of the Industrial Accidents Convention, other legal instruments and existing tools in strengthening the safe management of mine tailings facilities and showcase successful efforts by ECE countries, and beyond;
- (e) Strengthen awareness of the Convention's role and collect input for its future work on mine tailings and for the global debate on mineral resource governance and sustainable infrastructure, focusing on support for operational and implementation activities;
- (f) Provide a forum to strengthen existing and build new partnerships, including with international organizations, industry representatives, experts, academia and non-governmental organizations (NGOs), through the exchange of experiences and good practices in the area of mine tailings safety.

20. The target audience for this seminar therefore includes Parties to the Industrial Accidents Convention, countries in the ECE region and beyond, as well as international organizations, industry representatives, experts, academia and NGOs active in the field of management and/or safety of mine tailings and tailings management facilities.

V. Outline and format of the seminar

21. The seminar will be held on 1 December 2020 as a fully online event. It will be split into several sessions and address various aspects of achieving safe management of mine tailings, including:

- (a) A scene-setter in the area of mine tailing safety at the ECE and global levels;
- (b) Experiences and lessons learned from the application of the safety guidelines and methodologies for improving tailings safety in ECE countries;
- (c) Trends and developments, industry responses and next steps to improve mine tailings safety in the ECE region and beyond;
- (d) Experiences, lessons learned and good practices on the safe management of mine tailings from countries beyond the ECE region;
- (e) National and industry actions to strengthen national governance, policies and community involvement on mine tailings in the ECE region.

22. The seminar will provide an opportunity for discussions among participants, both through oral interventions and written messages in the chat box of the virtual meeting room. The full programme of the seminar will be available in a separate informal document

(CP.TEIA/2020/INF.1). Participants will be invited to reply to the following questions during the online seminar:

(a) Which experiences, lessons learned, or good practices related to the safe management of mine tailings can you share, in view of the existing national challenges and international developments in the area of mineral resource governance?

(b) What are, in the light of current challenges and megatrends, the actions you have been or are planning on taking to strengthen policy and governance to improve mine tailings management and to manage and reduce related disaster risks?

VI. Outcome of the seminar

23. During the closing of the seminar, the Chair of the Conference of the Parties will present the key conclusions. The Conference of the Parties at its eleventh meeting will then be invited to take note of these when considering the draft decision on strengthening mine tailings safety in the ECE region and beyond (ECE/CP.TEIA/2020/3).

24. Following the seminar, the secretariat, in cooperation with the Chair of the Conference of the Parties, the moderators and the small group, will prepare a summary report, including key discussions, conclusions and suggested lines of action to be carried out under the Convention.
