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Geneva, 27–29 November 2023

Item 13 of the provisional agenda

Mine tailings Safety**Note on the assessment of the Guidelines to facilitate the
identification of hazardous activities for the purposes of the
Convention, in view of tailings management facilities****Note by the Bureau, prepared in cooperation with the Working Group
on Implementation and the Joint Expert Group on Water and
Industrial Accidents, based on the work of the Small Group on Mine
Tailings Safety***Summary*

At its twelfth meeting (Geneva (hybrid), 29 November–1 December 2022), the Conference of the Parties to the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) mandated the Joint Expert Group on Water and Industrial Accidents (Joint Expert Group), in cooperation with the Working Group on Implementation and the Bureau, to assess, in the 2023–2024 biennium, whether there was a need to revise and update the Guidelines to facilitate the identification of hazardous activities for the purposes of the United Nations Economic Commission for Europe Industrial Accidents Convention,^a with its amendments in 2004^b and 2018,^c to cover more comprehensively the hazards and risks arising from tailings management facilities, and to share its findings in the form of an official document with the Conference at its thirteenth meeting.^d

The Bureau's Small Group on Mine Tailings Safety, comprised of Bureau, Working Group and Joint Expert Group members, met on 30 May 2023, 14 September 2023 and 7 May 2024 to develop the official document. The draft document was presented to the fifty-third and fifty-fourth meetings of the Bureau (Geneva, 11–12 October 2023, and 13–14 June 2024, respectively), to the forty-ninth meeting of the Working Group (Geneva, 31 January–1 February 2024) and to the Joint Expert Group (online, 2 June 2023, and Bratislava, 24 April 2024), and opened for comments to these bodies. In updating the draft document with those contributions, the Small Group prepared the present note, which the Bureau, Working Group and Joint Expert Group supported.

The Conference of the Parties is invited to endorse the note.

^a ECE/CP.TEIA/2, annex IV, decision 2000/3.

^b ECE/CP.TEIA/12, annex II, decision 2004/2.

^c ECE/CP.TEIA/38/Add.1, decision 2018/1.

^d ECE/CP.TEIA/44, para. 30.

I. Introduction and mandate

1. Industrial accidents at tailings management facilities (TMFs) have led to environmental catastrophes with devastating effects on people, the environment and economies.¹ Some TMFs contain hazardous substances that are harmful to human health, biodiversity and ecosystems due to their toxicity, alkalinity or acidity. Whereas the greatest risk posed by other TMFs is the sheer amount of tailings sludge; the physical force of released sludge can result in fatalities and the decimation of homes and landscapes. For example, in 2019, a massive tailings dam collapsed in Brumadinho, Brazil, and spilled approximately 12 million m³ of mining waste, killing at least 259 people and leaving an 8 km-long trail of destruction through the local town and countryside. This accident and others from the United Nations Economic Commission for Europe (ECE) region and beyond are strong reminders of the need to address the hazards and risks of TMFs.

2. Addressing TMF hazards and risks is becoming more urgent within the context of climate change. First, global demand for minerals and metals is expected to continue to significantly increase in the coming decades, including to produce the technology needed for the green energy transition.² Such climate change mitigation will lead to more mining processes and more tailings ponds. Second, natural hazards and the increasingly frequent and severe impacts of climate change are heightening TMF hazards and risks, for example: heavy rainfall and snowfall have caused TMF ponds to exceed capacities and burst, releasing tailings into watercourses where they have rapidly mobilized; rising temperatures and droughts have caused tailings to dry out, with rain and wind spreading hazardous dusts; and landslides and earthquakes have caused damage and ruptures to TMF structures. These issues call for Governments and operators to take adaptation measures at TMFs to address risks of natural hazard-triggered technological disasters (Natech risks).

3. Past discussions show that Parties to the Convention on the Transboundary Effects of Industrial Accidents understand that it applies to TMFs.³ Some substantive provisions of the Convention apply broadly to “industrial accidents”, which cover TMFs that (could) have uncontrolled releases of hazardous substances. Others apply specifically to “hazardous activities”; the process for identifying TMFs as “hazardous activities” under the Convention is cumbersome, as Parties are required to determine: (a) if tailings mixtures contain a hazardous substance at a threshold quantity listed in annex I; and (b) if the respective TMFs are capable of causing transboundary effects. Annex I is currently aligned with the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The testing and classification of wastes and heterogeneous mixtures, including tailings, under annex I and GHS is not always straightforward; it is time-consuming and rather impractical due to the complex properties of tailings. Annex I also primarily addresses the toxicity of hazardous substances – not other risks associated with tailings — e.g., alkalinity, acidity,

¹ As per the *Safety Guidelines and Good Practices for Tailings Management Facilities* (United Nations publication, ECE/CP.TEIA/26, p. 3): “A TMF is intended to encompass the whole set of structures required for the handling of tailings including the tailings storage facility, tailings dam(s), tailings impoundment, clarification ponds, delivery pipelines, etc.” Tailings are defined as “The fine-grained waste material remaining after the metals and minerals recoverable with the technical processes applied have been extracted. The material is rejected at the ‘tail end’ of the process with a particle size normally ranging from 10 µm to 1.0 mm.”

² See ECE/CP.TEIA/2024/2.

³ See ECE/CP.TEIA/WG.1/2013/3, para. 9.

physical —. These challenges have been the subject of much work on TMFs under the Convention.

4. Parties to the Convention and other countries have exchanged information and knowledge and developed and applied tools to strengthen mine tailings safety and prevent accidents through the following means:

(a) The Seminar on mine tailings safety in the ECE region and beyond (online, 1 December 2020)⁴ and the International ECE workshop on increasing capacities to prevent, prepare for and respond to accidental water pollution from tailings facilities (Bratislava (hybrid), 23–24 April 2024)⁵ resulted in conclusions and recommendations for addressing gaps;

(b) The ECE *Safety Guidelines and Good Practices for Tailings Management Facilities* and the related TMF methodology,⁶ decision 2020/1 on strengthening mine tailings safety in the ECE region and beyond (ECE/CP.TEIA/42/Add.1), the Road map for action to strengthen mine tailings safety within and beyond the ECE region (ECE/CP.TEIA/2022/7) and the Online Toolkit and Training for Strengthening Mine Tailings Safety⁷ provide tools for authorities and operators to gain practical knowledge and take action;

(c) Assistance activities, carried out by Parties to the Convention and the secretariat, have supported countries in using these tools, resulting in, among other achievements, the identification of over 1,000 TMFs in the ECE region, of which at least 25 per cent were estimated to be capable of causing transboundary effects,⁸ and the formal establishment of Inter-institutional Working Groups on Tailings Safety and the Prevention of Accidental Water Pollution in countries for inter-agency policy and technical coordination.

5. The above-mentioned activities are evidence of the dedication of Parties and other countries to tackling the hazards and risks of TMFs using the Convention and tools developed thereunder. Other intergovernmental bodies and international organizations have recognized the importance of this work. For example, the Convention has been recognized as an important instrument for addressing tailings management issues, and the potential of promoting the application of the ECE *Safety Guidelines and Good Practices* globally has been recognized within the context of the United Nations Environment Assembly of the United Nations Environment Programme.⁹

6. The Conference of the Parties to the Convention has continuously prioritized the need to strengthen mine tailings safety. Among other things, it endorsed the *Safety Guidelines and Good Practices*, adopted decision 2020/1, endorsed the Road map for action to strengthen mine tailings safety within and beyond the ECE region, and welcomed progress made by countries in strengthening TMF safety through the Convention's Assistance and Cooperation Programme. During the implementation of the activities outlined in paragraph 4, Parties and

⁴ See <https://unece.org/environmental-policy/events/seminar-mine-tailings-safety-unece-region-and-beyond>.

⁵ See <https://unece.org/info/Environmental-Policy/Industrial-Accidents/events/381922>.

⁶ See https://unece.org/environment-policy/industrial-accidents/online-toolkit-and-training-strengthening-mine-tailings#accordion_1.

⁷ Available at https://unece.org/environment-policy/industrial-accidents/online-toolkit-and-training-strengthening-mine-tailings#accordion_1.

⁸ For example, 59 of the 237 tailings management facilities (TMFs) identified in Central Asian countries may have potential transboundary effects. In river basins, this percentage is usually much higher, e.g., 33 of the 61 TMFs identified in the Syr Darya River basin may have potential transboundary effects.

⁹ See United Nations Environment Programme (UNEP), *Environmental Aspects of Minerals and Metals Management: Implementing UNEA Resolution 5/12- Co-Chairs' Summary Report of the Global Intergovernmental Meeting, 7-8 September 2023* (n.d.), available at www.greenpolicyplatform.org/sites/default/files/downloads/tools/Report-UNEA%2012%20Global%20Intergovernmental%20Meeting-V2.pdf; UNEP, *Knowledge Gaps in Relation to the Environmental Aspects of Tailings Management* (n.d.), available at www.greenpolicyplatform.org/sites/default/files/downloads/tools/Final%20Knowledge%20Gaps%20Report_Environmental%20Aspects%20of%20Tailings%20Management%2028January%202024%209_1.pdf; and ECE/CP.TEIA/44, para. 31.

associated experts began to discuss whether the Guidelines to facilitate the identification of hazardous activities for the purposes of the Convention (ECE/CP.TEIA/38/Add.1, decision 2018/1) (Guidelines) should be updated to more comprehensively cover TMF hazards and risks. The Convention's Bureau and Working Group on Implementation and the Joint Expert Group on Water and Industrial Accidents, under the ECE Industrial Accidents Convention and Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) discussed such updates during the 2021–2022 biennium. At the Working Group's Special Session: Seminar on good practices and lessons learned in implementing the Convention (Geneva (hybrid), 3–4 February 2022), a representative of Germany proposed that the Guidelines be updated to include all TMFs with capacities of at least 1 million m³ or a Tailings Risk Index > 10, regardless of whether they contain hazardous substances listed in annex I to the Convention and of their distance to borders.¹⁰ As a result of identifying and mapping TMFs in countries of Eastern Europe, the Caucasus and Central Asia through assistance projects sponsored by the German Environment Agency, it was found that TMFs with this amount of tailings pose the highest risks.¹¹ Introducing such a capacity criterion into the Guidelines would acknowledge the physical risks of tailings, independent of their toxicity, and further facilitate the identification of TMFs as hazardous activities under the Convention.

7. Against this background, at its twelfth meeting (Geneva (hybrid), 29 November–1 December 2022), the Conference of the Parties mandated the Joint Expert Group, in cooperation with the Working Group and Bureau, to: “Assess, in the next biennium [2023–2024], whether there exists a need for the Guidelines to be revised and updated in order to cover more comprehensively the hazards and risks arising from ... TMFs, and to share its findings in the form of an official document with the Conference at its thirteenth meeting.”¹²

8. The Bureau and Working Group, at their joint meeting at the start of the biennium 2023–2024 (Geneva (hybrid), 14 February 2023) reconvened the Small Group on Mine Tailings Safety, with members from the Bureau, the Working Group and the Joint Expert Group and the secretariat to undertake the mandate.¹³ The Small Group was tasked with discussing and building consensus on the consideration of updating the Guidelines over the course of 2023 and drawing up the official document to report on its assessment and the different options considered, including their advantages and disadvantages and with a recommendation for moving forward,¹⁴ for the thirteenth meeting of the Conference. This process resulted in the present document and accompanying draft decision on the identification of tailings management facilities as hazardous activities (ECE/CP.TEIA/2024/11).

II. Approach

9. In order to structure the assessment, the Small Group on Mine Tailings Safety identified the following key questions — on which the present document is structured — to guide its work:

(a) How are TMFs currently covered and identified under the Convention and Guidelines? Are there any gaps or obstacles in addressing TMF hazards and risks?

¹⁰ The Tailings Risk Index was developed alongside the Tailings Hazard Index as part of the German Environment Agency's wider TMF Methodology, which supports the practical application of the ECE Safety Guidelines and Good Practices for Tailings Management Facilities.

¹¹ The Joint Expert Group on Water and Industrial Accidents member from Germany stated that this proposed criterion was described as a starting point that should be analysed after some years to decide whether the threshold should be lower or higher.

¹² CP.TEIA/2023/B.1/Minutes–CP.TEIA/2023/WGI.2/Minutes, para. 9. Available at <https://unece.org/info/Environmental-Policy/Industrial-Accidents/events/374971>.

¹³ The group included Mr. Michael Struckl (Austria), Mr. Pavel Danihelka (Czechia), Mr. Gerhard Winkelmann-Oei (Germany), Mr. Bojan Srdic (Serbia), Ms. Sanja Stamenkovic (Serbia), Mr. George Georgiadis (secretariat), Ms. Claudia Kamke (secretariat), Mr. Joseph Orangias (secretariat) and Mr. Martin Merkofer (Switzerland; Lead).

¹⁴ CP.TEIA/2023/B.1/Minutes–CP.TEIA/2023/WGI.2/Minutes, para. 12.

(b) What are the options to consider for the Guidelines and/or Convention to more comprehensively cover TMF hazards and risks?

III. Status of how tailings management facilities are currently covered and identified under the Convention

10. Article 2 of the Convention sets out the instrument's scope, stating that it applies to the prevention of, preparedness for and response to industrial accidents capable of causing transboundary effects, including the effects of such accidents caused by natural disasters, and to international cooperation concerning mutual assistance, research and development, exchange of information and exchange of technology in the area of prevention of, preparedness for and response to industrial accidents. It does not apply to, among other types of accidents, "dam failures, with the exception of the effects of industrial accidents caused by such failures". Parties and experts have interpreted this exclusion as only applying to water dams – not tailings dams. The Working Group on Development has reported that Parties understand that the Convention applies to TMFs, and the Conference of the Parties has endorsed the Joint Expert Group-developed *Safety Guidelines and Good Practices for Tailings Management Facilities*,¹⁵ which expressly encompass tailings dams within the definition of TMFs.

11. Despite the general division of the Convention's scope in its article 2, the substantive provisions of the Convention apply to either "industrial accidents", "industrial accidents capable of causing transboundary effects" or "hazardous activities". Article 1 (a) of the Convention defines an "industrial accident" as an event resulting from an uncontrolled development in the course of any activity involving hazardous substances, including in an installation, for example during manufacture, use, storage, handling or disposal. "Transboundary effects" are defined as serious effects within the jurisdiction of a Party as a result of an industrial accident occurring in the jurisdiction of another Party. All TMFs that meet these definitions are respectively covered by the Convention's measures addressing "industrial accidents" and "industrial accidents capable of causing transboundary effects".

12. The article 1 (b) definition of "hazardous activity" provides the following two criteria:

(a) Substance and quantity: The activity must contain a hazardous substance or mixture at a quantity listed in annex I. This criterion was developed on the basis of the toxicity of substances or mixtures – not on the hazards or risks derived from the amount of a substance or mixture and the physical force it could have in case of an accident, which has been highlighted as one of the highest risks for TMFs. Furthermore, it does not necessarily consider other properties of substances or mixtures to identify hazardous activities, such as alkalinity and acidity, which tailings can contain;

(b) Location: The activity must also be capable of causing transboundary effects in case of an accident. This criterion is broad, without detailed information on what constitutes an activity as being capable of causing transboundary effects. For the purposes of undertaking preventive measures and setting up preparedness measures, article 4 (1) requires Parties to take measures, as appropriate, to identify hazardous activities within their jurisdiction and to ensure that affected Parties are notified of any such proposed or existing activity. In line with article 18 (6), the Conference of the Parties adopted the Guidelines to support Parties in interpreting and implementing their obligations arising from article 4 (1). The Guidelines elaborate on the location criterion to guide Parties in determining the transboundary nature of hazardous activities through air and water paths (see table 1).

¹⁵ United Nations publication, ECE/CP.TEIA/26.

Table 1
Criteria for identifying “hazardous activities” under the Convention

| <i>Criteria</i> | <i>Convention, art. 1 (b)</i> | <i>Guidelines</i> | |
|------------------------|---|---|---|
| Substance and quantity | Activity has one or more hazardous substances that are or might be present in quantities at or in excess of the threshold quantities in annex I | Same as art. 1 (b) | |
| Location | Activity is capable of causing transboundary effects | Air path: The activity is within 15 km of the border (must involve hazardous substances that may cause a fire/ explosion or that fall under category 1, 2 or 3 of Part I of annex I to the Convention and that may be released into the air in an accident) | Water path: Along or within the catchment areas of transboundary and border rivers, transboundary or international lakes, or within the catchment areas of transboundary groundwaters, for activities involving hazardous substances that fall under category 1, 2, 3, 9, 16, 17 or 18 of Part I of annex I to the Convention (including any substance mentioned in Part II of annex I that has any of these properties) and that may be released into watercourses in the event of an accident. Whether or not such an activity is capable of causing a transboundary effect in such an event should be decided by the competent authority of the Party of origin, preferably in consultation with joint bodies. The decision should depend, among other things, on the existence of river warning and alarm systems and the distance between the location of hazardous activity and the border. The joint ad hoc expert group on water and industrial accidents recommended that this distance should correspond to approximately a flowing period of two days of average flow velocity |

13. All TMFs that fulfil the criteria of the article 1 (b) definition are covered by the Convention’s measures addressing hazardous activities. The Conference of the Parties has requested Parties and invited other ECE member States to use the Guidelines when identifying hazardous activities under article 4 (1); albeit not legally binding, Parties and implementing countries have a standard practice of applying the Guidelines. Given the technical challenges in testing tailings mixtures against annex I and the lack of data on the

number and conditions of TMFs within the jurisdictions of Parties and across the ECE region, the Conference of the Parties, associated experts and the secretariat are precluded from establishing an evidence-based understanding of the scale of the problem of TMFs and tailoring laws, policies and strategies to directly address the most pressing risks and hotspots.

14. The Working Group on Implementation acknowledged this lack of data and introduced a new question in the reporting format for the tenth reporting round on implementation of the Convention (2019–2022) for countries to report on the number of TMFs that fall under article 1 (b) in their jurisdiction. The reporting format also asked Parties and other reporting countries to share information on the nature and locations of their hazardous activities. As indicated in the tenth report on implementation of the Convention (2019–2022) (ECE/CP.TEIA/2024/5), of the national reports submitted by 22 April 2024, 24 countries indicated having “hazardous activities” within their jurisdictions. Of those 24 countries, 4 (Armenia, France, Kyrgyzstan, North Macedonia) reported that their “hazardous activities” comprise, among other industrial facilities, TMFs. One Party (Czechia) reported that tailings dams were not classified within its major accident hazard prevention legislation but managed by a different legislative act; while cooperation across authorities is enshrined in its major accident hazard prevention legislation, it mentioned that the cardinal problem is classifying tailings mixtures against annex I. Two Parties had mentioned having recently prepared: new guidance for categorizing waste under annex I to the Convention and the European Union Seveso-III Directive¹⁶ (Germany); and a new regulation on the management of mining waste to identify TMFs under the Seveso-III Directive (Serbia). Despite the low number of TMFs reported as “hazardous activities” under the Convention, more than 1,000 TMFs have been identified in the ECE region through projects under the auspices of the Convention, suggesting that at least 25 per cent of the TMFs may have transboundary effects. This supports the Small Group’s conclusion that many countries may have challenges in assessing tailings mixtures against annex I and indicates the need to develop further guidance or update the Guidelines to facilitate the identification of TMFs as hazardous activities for the purposes of the Convention.¹⁷ Nevertheless, regardless of the number of TMFs reported as “hazardous activities”, the number of TMFs covered by the Convention’s provisions that apply to “industrial accidents” and “industrial accidents capable of causing transboundary effects” is certainly much higher, but the Working Group did not ask such questions for reporting purposes.

15. The Conference of the Parties, in adopting decision 2020/1, recommended that ECE countries that extract mineral resources identify, map and improve the safe management of TMFs, including those with transboundary risks, and invited countries beyond the region to do so. It reminded Parties that the identification and notification of hazardous activities shall comprise TMFs, particularly those that fall within the article 1 (b) definition, and requested them to report on these as part of their national implementation reports. Furthermore, the Conference of the Parties, through the 2030 Road map for action to strengthen mine tailings safety within and beyond the ECE region, agreed on actions Parties should take and instruments and tools they should use to identify TMFs and address their hazards and risks.

16. Below are key points summarized from this section:

(a) The substantive provisions of the Convention apply to either “industrial accidents”, “industrial accidents capable of causing transboundary effects” or “hazardous activities”. TMFs that meet one or more of these definitions are covered under the respective provisions;

(b) “Hazardous activities” encompass TMFs that: (i) have hazardous substances in line with annex I; and (ii) are capable of causing transboundary effects. In terms of (i), the following concerns have been expressed: testing for hazardous substances and determining their quantities within complex tailings mixtures is not always straightforward due to their heterogeneity; some properties of tailings mixtures — e.g., alkalinity and acidity — are not

¹⁶ See <https://eur-lex.europa.eu/eli/dir/2012/18/oj>.

¹⁷ Available at https://unece.org/DAM/env/documents/2019/TEIA/ENG_Guidelines_to_facilitate_the_identification_of_hazardous_activities_for_the_purposes_of_the_UNECE_Industrial_Accidents_Convention_Location_Criteria.pdf.

necessarily considered in annex I, hence some Parties suggested that the TMF where the 2010 Kolontar accident — also known as “the red sludge disaster” — occurred in Hungary and similar TMFs do not seem to be within the scope of “hazardous activities” under the Convention. Moreover, annex I is generally based on the toxicity of substances and mixtures and does not consider hazards or risks derived from the physical force of the amount of a substance or mixture in case of an accident. In terms of (ii), Parties routinely use the Guidelines to determine the transboundary nature of activities;

(c) The continued lack of data on the number of TMFs that fall under the article 1 (b) definition of “hazardous activities” of the Convention, including following the Working Group’s efforts to collect such data through the tenth reporting round on implementation, indicates ongoing challenges in classifying tailings mixtures against annex I and the need for respective tools.

IV. Options to consider for the Convention and its Guidelines to more comprehensively cover tailings management facility hazards and risks

17. This section presents assessments of three options that the Small Group on Mine Tailings Safety had considered for the Convention and the Guidelines to facilitate the identification of hazardous activities for the purposes of the Convention to more comprehensively cover TMF hazards and risks, namely for the Conference of the Parties to:

- (a) Update the Guidelines;
- (b) Adopt a decision to further cover TMFs;
- (c) Amend annex I.

18. These options surfaced through ongoing conversations under the Convention, including at past meetings of the Conference of the Parties, Bureau, Working Group on Implementation, Joint Expert Group, Small Group on Mine Tailings Safety and beyond. Over the course of 2023, members of the Small Group and the Joint Expert Group discussed the options in depth and assessed them, including their advantages and disadvantages, an overall assessment and a recommendation for or against. The assessments covered legal, technical, safety and political factors. Following the assessments, the secretariat, in cooperation with the lead of the Small Group, consolidated and synthesized the responses per option into the following subsections. An overview of the assessments is provided in table 2, while the more in-depth assessments are presented in tables 3–5.

Table 2
Overview of options A–C

| <i>Option</i> | <i>Summary of advantages</i> | <i>Summary of disadvantages</i> |
|--|---|--|
| Update the Guidelines | Updating the Guidelines could provide a means to better understand the toxicity of tailing mixtures, including to streamline the classification of TMFs as hazardous activities under the Convention, and the other risks of TMFs, such as their alkalinity and acidity levels and physical risks | The Guidelines are not legally binding, but such an update would provide a step forward and Parties have established a practice of implementing the Guidelines |
| Adopt a decision to further cover TMFs | A decision could provide clarity of how the Convention’s provisions apply to TMFs, given their variabilities and complexities, on the basis of past conclusions of the Convention’s bodies, guidelines and tools and national practice | A decision would need to be carefully developed and it may need to be complemented with another option to address the more technical issues |

| <i>Option</i> | <i>Summary of advantages</i> | <i>Summary of disadvantages</i> |
|---------------|--|--|
| Amend annex I | Amending annex I could solidify the Convention’s application to TMFs that are hazardous activities and ascertain Parties’ respective obligations | of identifying TMFs as hazardous activities Such an amendment would require lengthy consideration, with the risk of not being politically agreeable |

19. Additional options were also discussed by the Small Group on Mine Tailings Safety. First, an amendment of the article 1 (b) definition of “hazardous activities” to expressly cover TMFs was discussed, including with reference to the article 2 (e) (i) definition of “industrial accident” under the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters, which expressly includes “tailings dams”. However, members of the Small Group, as well as the Bureau, commented that an amendment to the Convention’s main text did not seem politically feasible at the current time, as this would require full consensus amongst Parties and lengthy considerations; whereas an amendment to annex I might be more feasible to consider, given that annexes are easier to modify — see option C —. Second, updating the location criterion within the Guidelines was considered. The Small Group agreed that this was not a priority in addressing TMF hazards and risks specifically, since such an update could have broader implications beyond TMFs, but it could be considered later. Lastly, there was some discussion of the idea of recommending the application of the article 5 voluntary extension to cover more or all TMFs. Since Parties already understand that TMFs fall within the scope of the Convention — the extent to which they do so depends on whether they are classified as “hazardous activities” — the Small Group agreed this option would not be needed.

A. Update the Guidelines

20. The Guidelines elaborate on article 1 (b), particularly the location criterion, to provide Parties and other implementing countries with a basis for interpreting and implementing their obligations regarding the identification of hazardous activities under the Convention. Although not legally binding, the Conference of the Parties has requested Parties and other implementing countries to use the Guidelines. They are routinely followed when determining whether an activity containing an annex I hazardous substance could have transboundary effects and could therefore be classified as a hazardous activity.

21. The idea of updating the Guidelines to more comprehensively cover TMF hazards and risks has been discussed in recent meetings. An update would require the Conference of the Parties to adopt a decision regarding the update, either by consensus or three-fourths majority vote of the Parties present and voting at the meeting, and to request Parties and other implementing countries to apply the updated Guidelines. Such a decision could contain other components — e.g., see option B —.

22. The Conference of the Parties has updated the Guidelines twice: at its third meeting (Budapest, 27–30 October 2004), the water path component of the location criterion was updated (decision 2004/2);¹⁸ and at its tenth meeting (Geneva, 4–6 December 2018), they were updated to ensure consistency in terminology with annex I (ECE/CP.TEIA/38/Add.1, decision 2018/1).

23. As for the update under consideration, the Small Group on Mine Tailings Safety and the Joint Expert Group considered two approaches:

(a) Elaborating on the substance and quantity criterion: This criterion is currently only provided for in article 1 (b), whereby activities, including TMFs, need to be assessed

¹⁸ Available at https://unece.org/DAM/env/documents/2020/TEIA/CoP_Decisions/DECISION_2004_2.pdf.

against the threshold quantities for hazardous substances and mixtures provided in annex I. A new technical methodology for testing and classifying tailings mixtures with regards to the categories of substances and mixtures and quantities listed in annex I could be developed and integrated into the Guidelines. This would require technical experts to develop such a universal methodology and the updated Guidelines to be drafted in a manner that does not conflict with article 1 (b) or annex I;

(b) Introducing a new capacity criterion for tailings: This would support conclusions that mass amounts of tailings sludge pose a higher risk than possible toxicity. It would be based on hazards and risks of the amount of tailings, regardless of the presence or possible presence of hazardous substances and mixtures therein. It could coincide with the proposal of Germany to add a capacity of 1 million m³ or a Tailings Risk Index > 10 regardless of whether TMFs contain hazardous substances listed in annex I. However, article 1 (b) and annex I do not provide a capacity criterion for tailings or other mixtures. The Small Group on Mine Tailings Safety concluded that introducing an entirely new criterion into the Guidelines based on capacity – rather than toxicity — as is currently the case for annex I — – would take the Guidelines beyond the Convention’s scope. Introducing a capacity criterion could nevertheless be justified in line with the precautionary principle when tailings mixtures are technically too difficult to test for toxicity.

24. The assessments of option A by members of the Small Group on Mine Tailings Safety and the Joint Expert Group were compiled and synthesized into table 3.

Table 3
Summary of expert assessments of option A

| Criteria | Summary of advantages | | Summary of disadvantages | |
|-----------|---|--|--|---|
| | Approach (i) | Approach (ii) | Approach (i) | Approach (ii) |
| Legal | Provides information for clarity in interpreting and implementing the Convention and aligns with art. 1 (b) | Provides a means to measure risks associated with large-scale TMFs | Not legally binding | Not legally binding and goes beyond the Convention’s scope |
| Technical | Provides a new universal methodology for testing the toxicity of tailings mixtures and classifying TMFs as hazardous activities, while adhering to the Convention’s hazardous substance criterion | Enables Parties and experts to define a threshold capacity relatively easily according to the hazards and risks of TMFs beyond only their toxicity | Could be technically challenging to develop and apply due to the variability of tailings mixtures and different tailings management practices, and due to lack of capacity and resources | Does not correspond to art. 1 (b) |
| Safety | Reinforces Parties’ obligations to apply safety measures within the Convention’s scope, and offers consistent guidelines to assess | Would likely cover a larger number of TMFs as hazardous activities, and offers consistent guidelines for | Does not necessarily address the physical hazards and risks alone | Could lead Parties to implement obligations for hazardous activities beyond the art. 1 (b) definition |

| Criteria | Summary of advantages | | Summary of disadvantages | |
|--------------------|--|---|--------------------------|--|
| | Approach (i) | Approach (ii) | Approach (i) | Approach (ii) |
| | TMF hazards and risk | Parties to assess TMF hazards and risk | | |
| Political | May be more politically feasible than other options | May be more politically feasible than other options | n/a | Parties may reject this option if it goes beyond the scope of the Convention |
| Overall assessment | <p>This option demonstrated the needs to better understand the toxicity of tailing mixtures, including to clarify the status of TMFs as hazardous activities under the Convention, and to address the physical risks of TMFs. As such, the Guidelines could be updated with:</p> <ul style="list-style-type: none"> - A universal technical methodology that facilitates the testing of tailings mixtures against annex I to classify TMFs as hazardous activities, in line with art. 1 (b) and to provide a clear and consistent base for decision-making; and - A recommendation to consider assessing the acidity and alkalinity levels of tailings mixtures and the physical risks of TMFs and, on the basis of the precautionary principle, to classify additional TMFs as hazardous activities. For example, the criteria could be developed in line with GHS through consideration of Hazard class skin corrosion/irritation, category 1A-1C, Hazard statement 314 (H314), which some national laws already cover (e.g., Swiss Major Accidents Ordinance with a threshold quantity of 20,000 kg). If H314 is only applied to TMFs, the threshold quantity should be higher (e.g., 1 million m³, as proposed by Germany). <p>The update would need to be prepared in a simple manner for easy use by end users, including without significant additional resources or technical training, and have expert agreement. As such, this option would provide a means for the Guidelines to streamline the link between the hazards and risks of TMFs and the Convention for enhanced implementation and industrial safety. Although not legally binding, this option would provide a step forward.</p> | | | |

B. Adopt a decision to further cover tailing management facilities

25. This option would consist of preparing a decision for the fourteenth meeting of the Conference of the Parties to adopt in 2026. The decision could clarify how the Convention applies to TMFs, in view of prior conclusions of the Conference of the Parties, the Working Group on Implementation, the Working Group on Development, the Joint Expert Group and individual Parties, national implementation practices, the *Safety Guidelines and Good Practices for Tailings Management Facilities* and other knowledge products, in order to provide more legal certainty in interpreting and implementing the Convention. Such a decision could also be developed to encompass an update of the Guidelines, should the Conference of the Parties also decide to pursue option A.

26. The decision for the Conference of the Parties could be prepared through discussions of the Bureau, the Working Group on Implementation, the Joint Expert Group and/or the Working Group on Development. It would require either consensus by the Conference of the Parties or a three-fourths majority vote of the Parties present and voting. In 2020, the Conference of the Parties adopted decision 2020/1. Work to develop a new decision should

build on the previous one to address recent developments and elaborate on issues that have arisen since the eleventh meeting of the Conference of the Parties. It is not uncommon for the Conference of the Parties to adopt decisions on the same topic in order to clarify or reiterate key issues — e.g., decisions on implementation and financing —, especially if it becomes necessary due to new knowledge and emerging risks.

27. The assessments of option B by members of the Small Group on Mine Tailings Safety and the Joint Expert Group were compiled and synthesized into table 4.

Table 4

Summary of expert assessments of option B

| <i>Criteria</i> | <i>Summary of advantages</i> | <i>Summary of disadvantages</i> |
|-----------------|---|--|
| Legal | Provides clarity regarding the Convention's application to TMFs, as per prior conclusions, national practices and existing guidelines, including to enhance interpretation and implementation of the Convention in line with art. 1 (b), and encompasses the updated Guidelines | Possible disagreement on the content, legality and/or strength of the decision (e.g., griping measures or a paper tiger) and precision needed to eliminate challenges in interpretation and effects |
| Technical | Provides further guidance, tools and criteria regarding TMFs, which would contribute to implementation of the Convention and other needs expressed in the field, and ensures alignment with latest technical advancements, guidelines and good practices for mine tailings safety and environmental protection | The technical complexities of tailings mixtures and TMFs may hinder comprehensiveness and accuracy within the text and make it challenging to remain within the Convention's scope, and subsequent decisions may be needed to ensure that the Conference stays up to date with rapidly advancing knowledge and developments |
| Safety | Implementation of the Convention and industrial safety could be enhanced if the decision further promotes measures to prevent accidents, minimize environmental risks, and protect people and ecosystems in proximity to TMFs and their effects, including in adherence with the ECE Safety Guidelines and Good Practices for TMFs | Effectiveness would rely on Parties' commitments to implement the decision and overcome possible challenges regarding the diversity of tailings management practices and the lack of capacity and resources for using technical tools in many countries; if developed as a stand-alone decision (e.g., without option A), it would risk not providing a technical approach for identifying TMFs as hazardous activities under the Convention |
| Political | Sends a clear message and commitment for Parties to address the hazards and risks of TMFs under the Convention and the related environmental and safety concerns; provides elements of cooperation and coordination of national authorities across sectors and across borders; and, if pursued with an update to the Guidelines, serves as a first step to get planning security on implementation from Parties | Requires striking a balance between stringent safety measures and practical implementation; needs to be developed with criteria – not on the basis of principles alone – and in line with the Convention's scope and complementing or updating decision 2020/1 |

| <i>Criteria</i> | <i>Summary of advantages</i> | <i>Summary of disadvantages</i> |
|--------------------|---|---------------------------------|
| Overall assessment | <p>This option showed the need for more clarity on how the Convention applies to TMFs and what constitutes a TMF. As such, the decision could define TMFs, taking into account the variabilities and complexities of tailings mixtures and TMFs, and elaborate on how the Convention’s provisions apply to them, on the basis of past conclusions of the bodies under the Convention, guidelines and tools and national practice. The content and criteria within the decision would need to be carefully developed and in agreement amongst legal, policy and technical experts – a process which could benefit from intergovernmental and multi-stakeholder consultations. However, some experts expressed the need for a decision to be complemented with another option to address the more technical issues of identifying TMFs as hazardous activities.</p> <p>Some experts recommended the below elements be considered in developing a decision:</p> <p>Clear definitions of TMFs and tailings management practices;</p> <p>References to prior conclusions of Parties and bodies under the Convention;</p> <p>Alignment with existing ECE Safety Guidelines and Good Practices on TMFs;</p> <p>Acknowledgment of technical advancements and commitment to periodic updates;</p> <p>Emphasis on adhering to safety measures and environmental protection practices;</p> <p>Mechanisms for stakeholder engagement and reporting on TMF safety;</p> <p>Encouragement for Parties to compile or update their TMF inventories;</p> <p>Provision of assistance to Parties that face challenges in implementing the decision.</p> | |

C. Amend annex I

28. This option would entail reviewing annex I and deciding how the hazards and risks of TMFs could be more comprehensively covered through an amendment. As annex I is linked to the article 1 (b) definition of “hazardous activities” within the legally binding Convention, any amendment would implicate the Convention’s scope and Parties’ obligations that apply to hazardous activities. Parties would be obliged to apply all provisions regarding hazardous activities to any additional hazardous activities that an amendment to annex I would encompass. For example, further to article 4, Parties would be required to prepare on-site and off-site contingency plans (arts. 8 (2)–(3)) to any additional TMFs covered by the amendment. While this might be the desired legal effect, all provisions applying to hazardous activities should be reviewed.

29. Any amendment to annex I would need to be proposed to the ECE Executive Secretary by a Party, and the Conference of the Parties would discuss the amendment at its meeting. The Conference of the Parties would then need to adopt the amendment by consensus or nine-tenths majority vote of the Parties present and voting at the meeting.

30. The Conference of the Parties has amended annex I twice. At its fourth meeting (Rome, 15–17 November 2006), this entailed updating the categories of substances and preparations and the named substances and their threshold quantities in the light of new scientific information and the lessons learned from past industrial accidents — see decision

2006/2 —.¹⁹ At its eighth meeting (Geneva, 4–6 December 2014), this involved introducing the GHS criteria and aiming to maintain consistency with the corresponding European Union legislation (see decision 2014/2).²⁰ Both processes entailed the Conference of the Parties convening the Working Group on Development to discuss the matters and prepare the amendments.

31. As annex I is currently aligned with GHS and the European Union Seveso-III Directive, any update of annex I would broaden the Convention’s scope beyond that of those instruments. This has been referred to as both a disadvantage — i.e., possible dealignment — and advantage — i.e., possible interlinking of additional instruments, such as the European Union Extractive Waste Directive,²¹ under the Convention —.

32. The Small Group on Mine Tailings Safety and the Joint Expert Group considered three approaches to amending annex I:

(a) Adding a tailings category to Part 1: This would entail making one or more “tailings” entries in Part 1 and indicating respective quantities that warrant coverage by the Convention. It would require indicating what constitutes “tailings”. It would support conclusions that mass amounts of tailings sludge pose higher risks than the — possible — toxicity of tailings;

(b) Adding hazardous substances common to tailings to Part 2: This would entail understanding the common properties of tailings mixtures and deciding which substances and quantities therein warrant hazardous activity status under the Convention. If they are not already included, such substances and quantities could be added to Part 2. To identify a TMF as a hazardous activity, Parties would then need to determine if the substance is present in the tailings mixture and at what quantity, as is the case currently; this approach would continue to base annex I on toxicity rather than the physical risks;

(c) Adding a capacity criterion for tailings to a new Part 3: This approach would consist of an entirely new Part based on the capacity of tailings. An indication of or reference to what constitutes “tailings” and at what capacity they would be covered would be necessary. It would also support conclusions that the mass amount of tailings sludge poses a higher risk than the possible toxicity of tailings. The Small Group discussed the idea that adding a capacity of 1 million m³ for tailings due to the high risks, on the basis of the earlier proposal of Germany, could be a starting point.

33. The assessments of option C by members of the Small Group on Mine Tailings Safety and the Joint Expert Group were compiled and synthesized into table 5.

Table 5
Summary of expert assessments of option C

| <i>Criteria</i> | <i>Summary of advantages</i> | <i>Summary of disadvantages</i> |
|-----------------|--|--|
| Legal | Solidifies the Convention’s scope and strengthens legal effectiveness by expressly addressing TMFs; aligns with the Convention’s purpose of preventing, preparing for and responding to TMF accidents; potentially increases the number of hazardous activities under the Convention | Requires a thorough review of how all provisions of the Convention would apply to any additional hazardous activities covered; possible need to convene the Working Group on Development to deliberate, requiring more meetings and costs without certainty that the proposed solution would be politically accepted in the end; possible long path of transposition into national law |

¹⁹ Available at https://unece.org/DAM/env/documents/2020/TEIA/CoP_Decisions/DECISION_2006_2.pdf.

²⁰ Available at <https://unece.org/cop-decisions>.

²¹ Available at <https://eur-lex.europa.eu/eli/dir/2006/21/oj>.

| <i>Criteria</i> | <i>Summary of advantages</i> | <i>Summary of disadvantages</i> |
|--------------------|--|---|
| Technical | Ensures the Convention reflects current technical knowledge and practices in tailings management; provides Parties with a shortcut to determining TMFs as hazardous activities and implementing the Convention accordingly, with possibilities to take stronger actions to ensure safety; possibly prompts Parties to re-inventory TMFs within their jurisdictions, which will make it possible to clarify TMF conditions and risks | Possible technical difficulties with integrating tailings into annex I in terms of determining which substances and quantities associated with TMFs warrant coverage and ensuring the consistent and/or accurate identification of hazardous properties of tailings, especially given the variabilities of tailing mixtures; might require additional guidance for implementation and/or resources to re-inventory TMFs; might cause complications due to dealignment with GHS and new relations to waste schemes |
| Safety | Provides clear indication of tailings to support Parties in developing, improving and implementing safety measures to TMFs and to contribute to industrial accident prevention for the best possible protection of people and the environment against TMF accidents; streamlines the identification of TMFs as hazardous activities and subsequent notification processes | Possible challenges in preparing the amendment due to the diverse practices of tailings management and variable risk profiles of TMFs; complexities in differentiating the toxicity risks from the physical risks, if needed for developing such an amendment |
| Political | Relatively easy to justify since the concerns about TMF safety are evident; raises high-level awareness and commitment to addressing the hazards and risks of TMFs and regularizes political discussions on TMF safety and related transboundary cooperation and coordination | Lack of certainty on which Party would initiate the amendment process and whether all Parties would support it; possible disagreements might also arise regarding the approach, potentially causing delays in decision-making and in terms of Parties' different priorities and interests |
| Overall assessment | This option would solidify the Convention's application to TMFs that are hazardous activities and ascertain Parties' respective obligations. Some experts recommended a combined approach of adding a tailings category to Part 1 and capacity criterion for tailings to a new Part 3, in order to cover both toxicity and physical risks. Another expert recommended integrating tailings into the named substances of Part 2, similar to how ammonia nitrate/fertilizers feature. However, the experts agreed that any amendment would require legal and technical precision and entail a risk of not being politically feasible at the current time | |

V. Recommendation for the Conference of the Parties

34. At its second meeting (online, 14 September 2023), the Small Group on Mine Tailings Safety reviewed the assessments of the options summarized in section IV. It highlighted core questions that should be taken into account when preparing a recommendation for the Conference of the Parties: To what extent should the recommendation cover both the toxicity and physical risks of TMFs, as well as acidity and alkalinity? — How — can these be integrated into the chosen path forward? In preparing options in the recommendation, which bodies/experts should pursue the respective work and how can it be completed in an

efficient/effective manner? How can the resulting Guidelines update, Conference of the Parties decision and/or annex I amendment be developed to be practically implementable by Parties, without too many additional resources or technical training sessions?

35. **The Small Group on Mine Tailings Safety, supported by the Bureau, the Working Group on Implementation and the Joint Expert Group, recommends that the Conference of the Parties pursue a combination of options A and B over the course of the biennium 2025–2026 for consideration at its fourteenth meeting:**

(a) **For option A, the Small Group recommends that experts develop a technical methodology to equip Parties with a tool for testing tailings mixtures against annex I and classifying them as “hazardous activities” under the Convention. The methodology should be integrated into the Guidelines and be simple and easy for Parties and other implementing countries to apply. On the basis of the precautionary principle, it recommends that criteria for assessing alkalinity and acidity levels of tailings mixtures, in line with GHS, and for assessing the physical risks of tailings mixtures also be integrated into the Guidelines. In updating the Guidelines, it agrees that the location criterion should remain as it stands for now;**

(b) **For option B, the Small Group recommends the preparation of a decision for the Conference of the Parties as a means to adopt the updated Guidelines, to urge Parties and other countries to apply the updated Guidelines, and to clarify how the Industrial Accidents Convention applies to TMFs, including with regards to the variabilities of tailings mixtures and TMFs. The decision should also urge Parties and other implementing countries to apply the precautionary principle when deciding whether the Convention applies to specific TMFs, particularly those where tailings mixtures remain technically difficult to classify under the Convention. Furthermore, it should outline the existing tools for addressing the hazards and risks of TMFs.**

36. The Small Group considered Option C and the advantages and disadvantages of the Conference of the Parties pursuing a more legally binding option; however, it agreed that an approach with incremental steps would be more suitable within the context of the Conference of the Parties.

37. Taking into account the growing demand for minerals and mining processes, which will lead to more TMFs, and the need to further address TMF hazards and risks under the Convention, the Bureau, at its fifty-third meeting (Helsinki, 11–12 October 2023), agreed to put forward the recommendation of the Small Group on Mine Tailings Safety for the Conference of the Parties to decide to pursue in the 2025–2026 biennium.²² At its forty-ninth meeting (Geneva, 31 January–1 February 2024), the Working Group on Implementation expressed support for the recommendation and emphasized the value of developing a technical methodology that facilitates the testing and classification of tailings mixtures against annex I.²³ At its meeting in Bratislava and online (24 April 2024), the Joint Expert Group also supported the recommendation to be put forward to the Conference of the Parties. The following Joint Expert Group members made suggestions for the process of upgrading the Guidelines: ensuring that the Guidelines are prepared for universal use so that non-Parties can also make use of them as a tool for enhancing mine tailings safety (Hungary); clarifying how the Tailings Hazard Index and Tailings Risk Index would be used given that they have been updated over time (Romania); and ensuring that the technical methodology is easy to use (Serbia).

38. To support the pursuit of the recommendation provided in paragraph 35, the Small Group on Mine Tailings Safety has prepared the accompanying decision on the identification of TMFs as hazardous activities (ECE/CP.TEIA/2024/11), which outlines the basic criteria for developing the technical methodology and to be integrated into the Guidelines, for the Conference of the Parties to consider at its thirteenth meeting.

²² CP.TEIA/2023/B.4/Decisions Report, p. 3, decision 17, available at

<https://unece.org/info/Environmental-Policy/Industrial-Accidents/events/378701>.

²³ CP.TEIA/2024/WGI.1/Minutes, para. 26, available at https://unece.org/sites/default/files/2024-05/WGI49%20draft%20minutes_final_clean.pdf.