

Consultation response

Part 1: Your details

Original language of response: English

Name: Antonio Rivero Merege

Country of residence: Chile

Are you willing to let us publish your response publicly on the Global Tailings Review website? Yes

Please select which stakeholder group you are representing: Academic (universities and other research institutes)

If 'Other', please specify below:

Are you responding on behalf of an organization? Yes

Please give the name of the organization: SMI-ICE-Chile

Your level within the organisation: Management

Part 2: Your views on each of the Principles and Requirements in the Standard

Topic 1: Knowledge Base

Principle 1

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 1 do your comments relate to?

Requirement 1.1, Requirement 1.3

Your comments on Principle 1

1.1 Best international practices: The idea is that the standard is flexible enough to evolve, but the best international practices need to be named for reference and described. Furthermore, the accessibility of the knowledge base, its ease of use, the permissions and restrictions, are not described in sufficient detail.

1.3 Experts know what methodologies could be used for flood studies; however, if this is aimed for miners that lack that expert knowledge, the level of orientation is not sufficient.

Others: In regards to the knowledge base in previous standards and other documentation, there is a need to consider everything in relation to tailings to be part of the knowledge base. This should include the materials used for construction of the dam, the processes including placement of construction facilities and its engineering, and relevant information for preparedness such as sirens and warning

systems.

Principle 2

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 2 do your comments relate to?

Requirement 2.4, Requirement 2.3, Requirement 2.2, Requirement 2.6

Your comments on Principle 2

2.2 Independent commission for review: It will be hard to understand or enforce the no conflict of interest principle here. We think that an important part of this standard will be to establish clear guidelines about how a company or professional would be considered independent (e.g. no contracts with the company in general or in the area, for the last three years and no possibility of obtaining a contract there for the same amount of time). Also, it needs to be clear that this position cannot be confused with the EOR (Engineer of Record). Again, a model that would be good to consider is that of the marine industry and the Marine Warranty Surveyors (MWS), who work on behalf of the insurance company to review the marine operations from engineering to execution based on strict and agreed standards. Being hired by the insurance industry and the core business being risk management evaluation of the operations on the insurers' behalf, gives these companies clear independence to make demands and suggestions to companies on how to best ensure a reliable and safe operation.

2.3 Liquefaction is not the only cause of flow failure.

2.4 Best practices of adaptive management: As per Point 1.1, clarification of these is needed.

2.6 Should be tied with Point 2.2 for best assurance of the system.

Topic II: Affected Communities

Principle 3

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 3 do your comments relate to?

Requirement 3.3, Requirement 3.2, Requirement 3.1

Your comments on Principle 3

3.1 Consideration is made around failure of tailings storage facilities but it needs to be expanded on how the tailings themselves, their inherent risks and expected impacts, affect the communities of interest.

3.2 Consider making explicit reference to informing affected communities on the nature and implications of a tailings storage facilities.

3.3 Good faith or the international norms. We think it is stronger and clearer to stand

on the side of the international norms specified, as “good faith” is a concept that is not specific enough to be measurable or enforceable. Others Closure: The standard needs to consider closure of tailings storage facilities in respect to the communities of interest.

Topic III: Design, Construction, Operation and Monitoring of the Tailings Facility

Principle 4

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 4 do your comments relate to?

Requirement 4.1, Requirement 4.2, Requirement 4.3

Your comments on Principle 4

4.1 Clarify risk matrix for ease of use; risk curves are normally used that take into account the possible magnitude of impacts (fatalities) versus probability. An alternative is for risks to also be properly accounted for financially (connected with Principles 2.1 and 5.1) which will result in safer alternatives being considered more favourably.

4.2 Same issue as Principle 1 - clarify the Independent Reviewer role and don't separate into two possibilities.

4.3 Eliminate the possibilities to lower the standards. Overall, the principle of zero harm expressed in other ICMM documents is missing here.

Principle 5

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 5 do your comments relate to?

Requirement 5.2, Requirement 5.6

Your comments on Principle 5

5.2 Could connect with other standards - water stewardship.

5.6 Closure terminology is too general; consider the concept of passive closure and also relinquishment. Recovery should be considered as a requisite where tailings storage facilities have a reasonable chance to be used by communities of interest in a given time (e.g:20 or 30 years).

Principle 5: Lack of more engineering background here, on what is a “solid” design.

Principle 6

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 6 do your comments relate to?

Requirement 6.2, Requirement 6.4

Your comments on Principle 6:

6.2 Identify relevant safety factors to be considered, e.g. the ones used in Chile in relations to earthquakes. Incorporate the concept of relevant reliable measurement of materials, etc. which reduces variability and safety factors needed. Specify what it would be. 6.4 As per Point 4.2. 6.5 Identify critical risks and establish critical controls, and treat them according to ISO 31000 and the ICMM standard.

Principle 7

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 7 do your comments relate to?

Requirement 7.8

Your comments on Principle 7

7.8 Different expertise here to review different issues such as environmental and social issues that need to be clarified so that they are independent.

Principle 8

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 8 do your comments relate to?

Requirement 8.3, Requirement 8.2

Your comments on Principle 8

8.2 Establish as standard, certain monitoring measures as a minimum depending on the type of tailings storage facility. If upstream lifts are allowed in this standard, the requirement for closer monitoring should dissuade its usage.

8.3 The frequency of monitoring was a critical part of the failure of Brumadinho, and a clear guideline on minimum frequencies here is advised for relevant monitoring.

Topic IV: Management and Governance

Principle 9

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Yes

Which aspects of Principle 9 do your comments relate to?

Requirement 9.1, Requirement 9.2

Your comments on Principle 9

9.1 Consider adding that the Board or CEO will be responsible on behalf of owners.

9.2 "where a dam failure" or similar wording, potential or credible can be misconstrued

Principle 10

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 10 do your comments relate to?

Requirement 10.3, Requirement 10.5

Your comments on Principle 10:

10.3 Clarify the EOR role earlier, and clarify the responsibilities expected from the role.

10.5 Specify certain competencies such as risk management knowledge and an adequate standard for it.

Principle 11

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 11 do your comments relate to?

Requirement 11.1, Requirement 11.4, Requirement 11.5

Your comments on Principle 11:

11.1 How regularly?

11.4 What are the best practices?

11.5 We see here the independent reviewer as someone regularly reporting; this is therefore not an independent reviewer.

Principle 12

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 12 do your comments relate to?

Requirement 12.1

Your comments on Principle 12:

12.1 Check the degree to which the EOR is independent. The EOR should not delegate the designs to another company but should control and manage that aspect also.

Principle 13

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Yes

Which aspects of Principle 13 do your comments relate to?

No

Your comments on Principle 13:

Principle 14

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Yes

Which aspects of Principle 14 do your comments relate to?

Your comments on Principle 14:

Topic V: Emergency Response and Long-Term Recovery

Principle 15

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 15 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 15:

Increment the idea of participation of communities of interest, and the adequacy and use of multiple channels to reach them such as cell phones, emergency apps, etc.

Principle 16

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Partially

Which aspects of Principle 16 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 16:

Compensations? This would be of key importance if presenting this in Brazil and is crucial to establishing a baseline for insurers to consider.

Topic VI: Public Disclosure and Access to Information

Principle 17

In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

Yes

Which aspects of Principle 17 do your comments relate to?

Your comments on Principle 17:

Part 3: Your views on the Standard

Your view as to whether the content of the Standard meets your expectations

Your view as to whether the content of the Standard meets your expectations (closed question):

2: Falls somewhat below my expectations

Please summarize why you chose this option:

Point in the letter attached.

Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities

Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities (closed question):

2: Will deliver minor improvements to the safety and security of tailings facilities

Please summarize why you chose this option:

Point in the letter attached.

Does the content of the Standard address all aspects of tailings facility management adequately?

Does the content of the Standard address all aspects of tailings facility management adequately (closed question)?

No

Please explain why and/or what is missing:

Point in the letter attached.

Part 4: Suggestions for topics to be included in the accompanying Recommendations Report

On which topics would you expect to have further clarification or guidance in this document?

Point in the letter attached.

Other information

Non-fitting response text (text submitted which did was not in response to one of the questions above)

Attachment 1 reference (if applicable)

ref:0000001194:Q83

Attachment 2 reference (if applicable)

31 December 2019

Sustainable Minerals Institute
International Centre of Excellence Chile
(SMI-ICE-Chile)

Professor Bruno Oberle
Chair
Global Tailings Review
consultation@globaltailingsreview.org

Dear Professor Oberle,

Re: Consultation on Draft Global Tailings Standard

Additional feedback post consultation workshop in Santiago on 26 November 2019

Prepared by Antonio Rivero, with input and review from Nigel Wight, Felipe Saavedra and Doug Aitken.

Thank you for inviting the SMI-ICE-Chile team to be present and participate in the Global Tailings Workshop conducted at the Universidad de Concepción office in Santiago on 26 November, 2019. It is an honour for the team to be able to participate in this important joint initiative, which we are sure will be another step forward towards a zero-harm approach in tailings management worldwide.

Regarding the draft document, we had been able to undertake a review prior to the Workshop and members of our staff provided some comments during the Workshop itself. In response to your invitation to present more detailed comments in writing, we wish to contribute the following comments for the Review panel's consideration.

General points:

- 1. The standard and its objective:** The document aims to be a standard; however, in this draft, it focuses more on “what” should be done versus “how” it should be done - a standard by definition is “how to” do things. A standard that is only pointed at what should be done as a minimum, cannot stand by itself as a basis to ensure safe operation of tailings as it can easily be prone to convert itself to a checklist to comply, not assuring a safe construction, operation or closure of the tailings storage facility.

Since the objective of a standard is to standardize, if it is well designed it can be used to enforce practices and measure their implementation, and therefore, it can be employed to compare and hold accountable companies to a higher level of practice. Alternative legislation, such as that proposed by the Brazilian Government, established in other locations such as Chile, Canada and Australia offer more than this draft currently does. The current draft does consider good practices but remains relatively modest in terms of promoting the highest possible standards. That leads to the second point.

2. **Target:** From what we heard in the workshop, the standard aims to serve not only ICMM members, but also medium- and small-scale miners and also to consider the conditions of different countries and sites. There exist some concessions in the current draft standard, such as a reluctance to ensure safer operations by banning upstream tailings, which could be justified by a “lack of capital” of smaller operations or governmental agencies.

The message is somewhat contradictory as this approach sacrifices management quality and safety with this justification, and this weakens the standard and provides potential loopholes to unsafe operations. ICMM standards should all be aligned, on principle, around ‘critical controls’, for example, which are at the forefront of OH&S risk management. A standard about reducing risk from tailings should strive to be on at least a similar level. A standard is not made so that all comply, which would probably result in a lowering of the bar, but to put pressure on all to comply with an agreed level. The agreed level needs to be reasonable, but also challenging; lowering the bar for the larger operations in order to ensure smaller ones comply could be highly detrimental.

The aim must be safety, not compliance, and demonstrating the way to achieve it. Compliance is a second order aim that comes from the improvement of the design and operation. It is acknowledged that at first, many operations may not be fully meeting new standards, and hence providing the pathway by which the principle of safety and security dominates the agenda will have more value than a general guideline with no clear principle.

It is evident that smaller operators and underdeveloped countries will need more assistance on specific areas of tailings lifecycle management and this needs to be taken into consideration and appropriately addressed. Standards need to be more specific on critical elements and specifically focussed on safe operational protocols.

3. **Implementation:** Industries that are more mature in risk management practices advanced by being able to introduce the cost of risk and managing it through ‘As Low As Reasonably Practicable’ (ALARP) practices according to the standards in place and their vision of what is acceptable, internally and socially, as risk. In the case of the standard presented, we see a need in the implementation stage of an independent team in charge of checking the compliance with the standard.

4. **Independence and governance:** The main point of the standard is to assure risks are ALARP in order to have the safest operation of tailings management as possible. For that, a point repeated throughout is the need for an independent review, and the roles and the need for independence should to be emphasised more strongly.

As pointed out in the specific comment on Principle 2.2 below, we see as a possible model for truly independent reviews, the best practice used in the marine and offshore industry of Marine Warranty Surveyors (MWS). The use of insurance hired companies to leverage a more independent review will ensure a much stronger overall governance. The code and standards of the MWS are dependent on the company, but in this case it could be provided by ICMM.

Specific points:

1. Principle 1:

- 1.1 Best international practices: The idea is that the standard is flexible enough to evolve, but the best international practices need to be named for reference and described. Furthermore, the accessibility of the knowledge base, its ease of use, the permissions and restrictions, are not described in sufficient detail.
- 1.3 Experts know what methodologies could be used for flood studies; however, if this is aimed for miners that lack that expert knowledge, the level of orientation is not sufficient.
- 1.5 In regards to the knowledge base in previous standards and other documentation, there is a need to consider everything in relation to tailings to be part of the knowledge base. This should include the materials used for construction of the dam, the processes including placement of construction facilities and its engineering, and relevant information for preparedness such as sirens and warning systems.

2. Principle 2:

- 2.2 Independent commission for review: It will be hard to understand or enforce the no conflict of interest principle here. We think that an important part of this standard will be to establish clear guidelines about how a company or professional would be considered independent (e.g. no contracts with the company in general or in the area, for the last three years and no possibility of obtaining a contract there for the same amount of time). Also, it needs to be clear that this position cannot be confused with the EOR (Engineer of Record).

Again, a model that would be good to consider is that of the marine industry and the Marine Warranty Surveyors (MWS), who work on behalf of the insurance company to review the marine operations from engineering to execution based on strict and agreed standards. Being hired by the insurance industry and the core business being risk management evaluation of the operations on the insurers' behalf, gives these companies clear independence to make demands and suggestions to companies on how to best ensure a reliable and safe operation.

- 2.3 Liquefaction is not the only cause of flow failure.
- 2.4 Best practices of adaptive management: As per Point 1.1, clarification of these is needed.
- 2.6 Should be tied with Point 2.2 for best assurance of the system.

3. Principle 3:

- 3.1 Consideration is made around failure of tailings storage facilities but it needs to be expanded on how the tailings themselves, their inherent risks and expected impacts, affect the communities of interest.
- 3.2 Consider making explicit reference to informing affected communities on the nature and implications of a tailings storage facilities.

- 3.3 Good faith or the international norms. We think it is stronger and clearer to stand on the side of the international norms specified, as “good faith” is a concept that is not specific enough to be measurable or enforceable.
- 3.5 Closure: The standard needs to consider closure of tailings storage facilities in respect to the communities of interest.

4. Principle 4:

- 4.5 Clarify risk matrix for ease of use; risk curves are normally used that take into account the possible magnitude of impacts (fatalities) versus probability. An alternative is for risks to also be properly accounted for financially (connected with Principles 2.1 and 5.1) which will result in safer alternatives being considered more favourably.
- 4.6 Same issue as Principle 1 - clarify the Independent Reviewer role and don't separate into two possibilities.
- 4.7 Eliminate the possibilities to lower the standards.

Overall, the principle of zero harm expressed in other ICMM documents is missing here.

5. Principle 5:

Lack of more engineering background here, on what is a “solid” design.

- 5.2 Could connect with other standards - water stewardship.
- 5.6 Closure terminology is too general; consider the concept of passive closure and also relinquishment. Recovery should be considered as a requisite where tailings storage facilities have a reasonable chance to be used by communities of interest in a given time (e.g:20 or 30 years).

6. Principle 6:

- 6.2 Identify relevant safety factors to be considered, e.g. the ones used in Chile in relations to earthquakes. Incorporate the concept of relevant reliable measurement of materials, etc. which reduces variability and safety factors needed. Specify what it would be.
- 6.4 As per Point 4.2.
- 6.5 Identify critical risks and establish critical controls, and treat them according to ISO 31000 and the ICMM standard.

7. Principle 7:

- 7.8 Different expertise here to review different issues such as environmental and social issues that need to be clarified so that they are independent.

8. Principle 8:

- 8.2 Establish as standard, certain monitoring measures as a minimum depending on the type of tailings storage facility. If upstream lifts are allowed in this standard, the requirement for closer monitoring should dissuade its usage.

- 8.3 The frequency of monitoring was a critical part of the failure of Brumadinho, and a clear guideline on minimum frequencies here is advised for relevant monitoring.

9. Principle 9:

- 9.5 Consider adding that the Board or CEO will be responsible on behalf of owners.
9.6 “where a dam failure” or similar wording, potential or credible can be misconstrued.

10. Principle 10:

- 10.3 Clarify the EOR role earlier, and clarify the responsibilities expected from the role.
10.5 Specify certain competencies such as risk management knowledge and an adequate standard for it.

11. Principle 11:

- 11.1 How regularly?
11.4 What are the best practices?
11.5 We see here the independent reviewer as someone regularly reporting; this is therefore not an independent reviewer.

12. Principle 12:

- 12.1 Check the degree to which the EOR is independent. The EOR should not delegate the designs to another company but should control and manage that aspect also.

15. Principle 15:

- 15.5 Increment the idea of participation of communities of interest, and the adequacy and use of multiple channels to reach them such as cell phones, emergency apps, etc.

16. Principle 16:

16. Compensations? This would be of key importance if presenting this in Brazil and is crucial to establishing a baseline for insurers to consider.

We trust the above feedback and comments are of value to the review process for the draft standard, and thank you again for the opportunity to contribute.

Yours sincerely,



Prof David Mulligan (Executive Director, SMI-ICE-Chile) **on behalf of Antonio Rivero Meregé, SMI-ICE-Chile** (and colleagues Nigel Wight, Felipe Saavedra, Doug Aitken)