

Idaho Department of Environmental Quality

Rules for Ore Processing by
Cyanidation, IDAPA 58.01.13



Overview

- Recap May 3, 2019, meeting
- Comment summary
- Idaho Mining Association's proposed revisions to the current rule
- Next steps



Recap of May 3, 2019, Negotiated Rulemaking meeting

- DEQ presentation
- Idaho Mining Association (IMA) presentation
- Discussion
- Requested comments



Administrative Rules Request Form

- The rules will be evaluated and revised as appropriate to account for current best available technologies or best practices for design, construction and closure of cyanidation facilities that can achieve necessary regulatory goals of protecting human health and the environment.



Comment Summary

- John Rygh (McCall, ID)
 - Allowing new technology and using performance based criteria is worth considering.
 - Consider adding requirements to treat mine wastewater to remove cyanide (to concentration that meets surface water standards) prior to disposal in tailings storage facility.
 - Need peer-reviewed analysis of treatment for existing industrial processes and emerging technologies.
 - Could not find requirement of when double liner versus single liner is required.
 - Allowing more options for liner materials may be justified as long as maximum permeability coefficient is adhered to.
 - Need more information on damage to liner during installation of high permeability media.
 - Need more information on options for leak management.



Comment Summary

- US Forest Service (Intermountain Region)
 - Development of rigid design criteria may not be applicable statewide due to the range of geologic, hydrologic and climatic conditions in the state.
 - DEQ is encouraged to research and consider rules and regulatory practices in other states (NV and AZ).
 - Design criteria must be based on reasonable assumption that leaks will occur and leak detection and recovery systems are necessary.
 - Nevada requirements are often included as best practices in other states.
 - DEQ should review designs and facility plans of recently permitted leach processing facilities.
 - DEQ should review peer-reviewed publications pertaining to design and construction practices to determine if industry practices have substantially changed since 2006.



Comment Summary

- Idaho Conservation League
 - Can support use of performance based compliance measures in principle, particularly when new technology may provide better protection.
 - Performance based criteria must be paired with assurances, guidance and backed by quantitative data.
 - Curious to know how a single-layer liner will be as protective as a double-layer liner currently required.
 - It is unclear how double-layer liners are more prone to ruptures/tears than single-layer liner.
 - Must demonstrate rule is consistent with Idaho Code 39-107(D)(2); peer reviewed science and supporting studies, and data
 - System monitoring is necessary; defensible and quantifiably demonstrate operating at performance level.
 - Caution against rushing the rulemaking.



Comment Summary

- Idaho Department of Lands
 - Slide 4 of IMA presentation is oversimplification of tailings pond; liner exposed at edges, differential deposition with coarser material at the edge and finer grained material on the floor.
 - Tailings ponds may be more susceptible to damage than described; ice jams, slumping of fill material causing liner to be stretched/torn.
 - If no leak detection/collection system, how will leaks be detected and mitigated? Will more groundwater monitoring be required? Will bonding for groundwater remediation be included?
 - For IMA's point #5, different standards should apply to facilities based on cyanide concentration. This suggest that bonding amounts would vary based on cyanide content and facility usage.
 - Examples are needed for facilities built under current standards that did not function well.
 - Examples are needed for facilities build under IMA's proposed standards that have functioned.



Comment Summary

- Idaho Mining Association
 - Provided redline strikeout for consideration.
 - DEQ should evaluate alternative, performance based, design applications that consider updated technical engineering and practices for the specific location, type and use of a facility.
 - Suggest minor changes in Section 200.03 to ensure natural material (clay) can be utilized more readily as a liner material.
 - Proposed removing some definitions, and associated references throughout the Rule, because such definitions are no longer relevant.
 - Since the proposed changes to the Rule simply allow IDEQ discretion to approve alternative design standards based on a variety of facility-specific considerations, we are unclear how or if the statute (Idaho Code 39-107D) would apply to IMA's proposed changes. IMA assumes DEQ would apply best available science in approving alternative designs.
 - IMA is in the process of gathering additional information on alternative designs for cyanidation facilities that have been successfully implemented in other states, and will provide that information to IDEQ.



Comment Summary

- Bryan Ulrich (Bryan Ulrich LLC, Denver, CO)
 - Engineer of record for constructed tailings storage facilities.
 - The requirements in the current rule holds similarities to various codes for mining facilities in Nevada, but are more directly related to regulations for a cyanide-bearing process water pond than for a tailings storage facility.
 - Leak detection system for a process pond is also to assist in directing repairs to the primary liner once a leak is detected.
 - For tailings storage facilities, a complete repair would be rare, complex and potentially dangerous work. The presence of a leak detection system for a tailings storage facility could be a long-term liability for closure as leakage could occur uncontrolled for many decades.
 - Provided Nevada Administrative Code requirements for tailings facilities. Nevada provides an allowance to decrease the protection levels for a soil liner in a tailings storage facility.
 - Modifying Idaho's existing Rules for Ore Processing by Cyanidation to allow designers to propose alternative, or site-specific, designs will allow for the required protection of waters of the State.



Common Themes

- Revising current rules is worth considering.
- Need peer-reviewed documentation of current designs; research.
- Need more information on damage to liners.
- Need more information on leak management options.



Idaho Mining Association's proposed changes to the current rule

- Section 007 Definitions
 - Change NPDES to IPDES – acceptable
 - Delete special resource water – not used
 - Delete WAD – may want to keep if reference in revisions to the current rule
- Section 050 Conceptual Design Approval, subsection 050.03 Preapplication Conference
 - add 'any alternative design proposals' - acceptable



Idaho Mining Association's proposed changes to the current rule

- Section 200 Requirements for Water Quality Protection (introductory paragraph)

The following design and performance standards are intended as the minimum criteria for protection of public health and the waters of the state. These standards shall apply to all facilities unless the Department determines ~~that other site-specific criteria are appropriate to protect water quality and the public health~~ alternative design and performance standards to those specified in Subsection 03 are appropriate. Such an alternative design may be proposed by an owner or operator and shall apply best practical methods to protect water quality. In evaluating an alternative design, the Department shall consider cyanide concentrations and other materials contained in facilities, hydrogeology, practicability, advances in liner technology, alternative designs implemented at other facilities which protect water quality and any other site-specific factors.



DEQ's suggested changes to Idaho Mining Association's proposed changes to rule

- Section 200 Requirements for Water Quality Protection

The following design and performance standards are intended as the minimum criteria for protection of public health and the waters of the state. These standards shall apply to all facilities unless the Department determines that ~~other site-specific criteria are~~ an alternative design under Subsection 201 is appropriate and ~~to~~ protects water quality and the public health.



DEQ's Proposed New Section 201

- Alternative design proposals to requirements in section 200.03
 - Submit proposal during Conceptual Design Approval (Subsection 050)
 - Demonstrate that alternative design applies best practical methods to achieve water quality standards
 - Hydrogeology assessment
 - Engineering assessment
 - Water quality assessment
 - Demonstrate will be equally protective
 - Cost recovery and potential use of 3rd party to support review



Idaho Mining Association's proposed changes to the current rule

- Section 200.03.a and 03.b
- **a.** A prepared subbase of compacted soil, which shall be a minimum of twelve (12) inches thick. The soil must be compacted to ninety-~~five~~ percent (~~95~~90%) of Standard Proctor Test ASTM 698 or ninety-five percent (95%) of Modified Proctor Test ASTM 1557. The compacted soil layers must be placed in a minimum of two (2) lifts; **with the upper six (6) inch lift of the prepared subbase, which shall be free of plus three (3) inch rocks, roots, brush, trash, debris or other deleterious materials;**
- ~~**b.** A The upper six (6) inch lift of the prepared subbase, which shall be free of plus three (3) inch rocks, roots, brush, trash, debris or other deleterious materials; (3-30-06)~~



Idaho Mining Association's proposed changes to the current rule

- Section 200.03.d and 03.f
- **d.** ~~A final smoothed and compacted soil layer, which~~ **Compacted clay liners (CCLs) when used shall be smoothed and** shall not contain particles in excess of point seven five (0.75) inches (nineteen (19) mm) in diameter and have a maximum coefficient of permeability of 10^{-6} cm/ sec, or comparable liners approved by the Department **and shall be placed within two percent (2%) of optimum moisture content for the CCL to achieve specified compaction and permeability criteria;**
- ~~f. Compacted clay liners (CCLs), which shall be placed within two percent (2%) of optimum moisture content for the CCL to achieve specified compaction and permeability criteria;~~



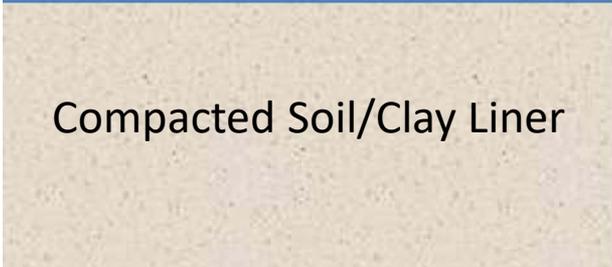
Minimum Plans and Specifications when single liner is required, IDAPA 58.01.13.200.03

Primary Liner	80-milli-inch high-density polyethylene liner (2.0 millimeter) 10^{-11} cm/sec maximum coefficient of permeability
Compacted Soil/Clay Liner	12 Inches (minimum) soil layer 10^{-6} cm/sec maximum coefficient of permeability

Subbase underlying the composite liner system



Minimum Plans and Specifications when double liner is required, IDAPA 58.01.13.200.03

 <p>Primary Liner</p>	<p>80-milli-inch high-density polyethylene liner (2.0 millimeter) 10^{-11} cm/sec maximum coefficient of permeability</p>
	<p>Leak Detection and Collection System</p>
 <p>Secondary Liner</p>	<p>80-milli-inch high-density polyethylene liner (2.0 millimeter) 10^{-11} cm/sec maximum coefficient of permeability</p>
 <p>Compacted Soil/Clay Liner</p>	<p>12 Inches (minimum) soil layer 10^{-6} cm/sec maximum coefficient of permeability</p>

Subbase underlying the composite liner system



Idaho Mining Association's proposed changes to the current rule

- Section 200.03.c
- c. ~~Primary containment~~s Synthetic liners **when used, which** shall have a minimum thickness of eighty (80) milli-inches (2.0 mm) consisting of high-density polyethylene (HDPE) material and a maximum coefficient of permeability of 10^{-11} cm/sec, or comparable liners approved by the Department;



Idaho Mining Association's proposed changes to the current rule

- Section 200.03.e
- **e.** All primary and secondary liner systems shall be constructed according to manufacturers' standards, or Department-approved design standards, and which must protect against cracking, sun damage, ice, frost penetration or heaving, wildlife and wildfires, and damage that may be caused by personnel or equipment operating in or around these facilities.



Idaho Mining Association's proposed changes to the current rule

- Section 200.03.k and 03.k.v
- Removed 'synthetic' from the liner description
- v. Provide secondary containment **synthetic** liners, which shall have a minimum thickness of eighty (80) milli-inches (two (2.0) mm) consisting of HDPE and a maximum coefficient of permeability of 10^{-11} cm/sec, **or a smoothed compacted clay liner, which shall not contain particles in excess of point seven five (0.75) inches (nineteen (19) mm) in diameter and have maximum coefficient of permeability of 10^{-6} cm/sec, or comparable liners approved by the Department.**



Reminder of Idaho Code 39-107D Requirements

- 39-107D(2)
 - Action based on science and studies
- 39-107D(3)
 - Identification of risk
 - Identification of studies



Proposed Rule Changes (Section 200.03 and Addition of New Section 201)

- Section 200.03
 - Keep the general requirements with some modifications/improvements?
 - Separate the requirements for different types of facilities (e.g., ponds, heap leach, tailings)?
- New Section 201
 - Outline expectations for alternative design



Next Steps

- Comments/input on DEQ's presentation.
- Comments/input on discussion during today's meeting.
- Comments/input are due to DEQ by close of business on June 10, 2019.
- Research current best available technologies and best practices for designs and evaluate current rules.
- Next meeting scheduled for June 27, 2019; 9 am to 3 pm (MDT)



Thank you

