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Sent: Monday, December 13, 2010 11:37 AM
To: zzMSHA-Standards - Comments to Fed Reg Group
Subject: Rin 1219-AB70

2010 DEC 13 P 9:00

Dear MSHA,

Thank you for the opportunity to provide our company's experience and expertise on safety standards for metal and nonmetal mining impoundments.

As a mine operator and owner, we have an intense focus on safety for all our processes and we believe our insight is valuable in assisting you with the development of practical regulatory guidelines relating to dams and tailings impoundments.

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AB70 - COMM-16



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RE: ASARCO Comments on Proposed Rules – Metal and Nonmetal Dams (RIN 1219-AB70)

Dear MSHA,

Thank you for the opportunity to provide our company's experience and expertise on safety standards for metal and nonmetal mining impoundments.

As a mine operator and owner, we have an intense focus on safety for all our processes and we believe our insight is valuable in assisting you with the development of practical regulatory guidelines relating to dams and tailings impoundments.

We've provided responses to each of the thirty-six questions in your request for comments. However, based on the nature and content of the questions we are concerned that the Agency is not adequately differentiating between tailings impoundments and water impoundment dams.

Tailings impoundment design, purpose and operation are unique and specific to the site application. If MSHA adopts regulations/rules governing structures that impound water or tailings relating to nonmetal and metal mines, it's imperative that MSHA develop a system to distinguish criteria specific for water impoundment dams and tailings deposition facilities.

In the State of Arizona, the Arizona Department of Water Resources regulates dams impounding water. The Arizona Department of Environmental Quality (ADEQ) has jurisdiction for tailings impoundments under the Aquifer Protection Program (APP).

The Aquifer Protection Program – Best Available Demonstrated Control Technology (BADCT) is a comprehensive and extensive guideline that includes requirements for the design, construction and operation of tailings impoundments.

It seems appropriate that MSHA rely on the success of the Arizona APP as well as applicable guidelines established by the various state agencies tasked with regulating tailings impoundments and water dams. We're concerned that rigid guidelines established by MSHA will create anomalous criteria that neither rely on site-specific variables nor adequately account for site-specific or operation-specific conditions.

Respectfully,

ASARCO LLC



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II. Key Issues on Which Comment Is Requested

MSHA is asking interested parties to comment on measures to assure that mine operators design, construct, operate and maintain dams to protect miners against the hazards of a dam failure.

MSHA seeks comments on the questions below. If a commenter refers to a particular dam as an example, please identify the mine, or provide the number of miners and the mine's commodity. Also, include the dam's storage capacity, height, and hazard potential and characterize its complexity. Provide enough detail with the comments that the Agency can understand the issues raised and give them the fullest consideration. Comments should include alternatives, rationales, benefits to miners, technological and economic feasibility, impact on small mines, and supporting data. Please include any information that supports your conclusions and recommendations: Experiences, data, analyses, studies and articles, and standard professional practices.

General Comment:

- If MSHA adopts regulations/rules governing structures that impound water or tailings relating to nonmetal and metal mines, it's imperative that MSHA develop a system to distinguish between the various types of structures and their intended use. This will require developing specific criteria for dams that impound water and specific criteria for tailings deposition facilities. A hazard ranking system needs to be developed that differentiates between water dams and tailing impoundments. ASARCO's experience to date is that MSHA is unable to differentiate between tailings impoundments and water dams. This results in MSHA inspectors applying inappropriate standards developed for water dams to tailings impoundments. As an example, MSHA's application of FEMA tree removal guidelines for water impoundments may not be appropriate for tailings impoundments.
- Similar to Arizona statutes and rules governing dams, structures that do not exceed a threshold height and/or storage capacity should be exempt from the proposed rules and regulations.
- MSHA personnel responsible for design review and inspection of water dams and tailing impoundments should be qualified professional engineers registered in the state of in which the water dams and/or tailing impoundments are located.
- MSHA should require a structure specific Operating Plan based on the unique use, purpose and function of each non-exempt structure that impounds water or tailings.
- It appears to ASARCO that MSHA, as an agency primarily concerned with worker safety, is ill-equipped to participate in the design and design approval of water dams and tailing impoundments. This function should continue to be done by state regulators that specifically regulate these structures. MSHA's function should be to insure that water dams and tailing impoundments at mines are being operated and maintained in a manner that protects workers' safety. Most failures of engineered water dams and tailing impoundments are due to lack of maintenance and/or failure to operate the structure properly.

General Questions

1. MSHA is seeking information concerning current dam safety practices at metal and nonmetal mines. What measures do mine operators currently take to design, construct, operate, and maintain safe and effective dams? What measures do mine operators currently take to safely abandon their dams? For mine operators with dams, please provide your experiences.

Comment:

- For tailing impoundments, ASARCO employs qualified engineers, consultants and contractors to design and construct tailings impoundments in compliance with the State of Arizona Aquifer Protection Program (APP) – Best Available Demonstrated Control Technology (BADCT). The APP also requires a maintenance and closure plan as part of the APP permitting process.
 - For water dams, ASARCO complies with the State of Arizona Department of water resources dam safety rules and regulations.
 - ASARCO has qualified tailings impoundment operators who work at our tailings impoundments on a daily bases.
2. MSHA is required to inspect every mine in its entirety, which includes dams of all sizes and hazard potential. A common approach for dam safety is to have tiered requirements based on a dam's size and hazard potential. How should MSHA determine safety requirements based on a dam's size and hazard potential? Please include specific recommendations and explain your reasoning.

Comment:

- MSHA should follow rules and regulations established by various Arizona agencies tasked with regulating tailings impoundments and water dams.
 - The guidelines adopted by these agencies are well founded and have been in existence for many years. Any rules and/or regulations adopted by MSHA would be duplicative or contradict existing long established Arizona rules and regulations.
3. What non-Federal authority regulates the safety of dams at metal and nonmetal mines in your state, territory, or local jurisdiction? Please discuss the specific requirements, including the principles that they address. If possible, please provide information about relevant non-federal dam safety requirements through a hyperlink or other means.

Comment:

- In Arizona water dams are regulated by the Arizona Department of Water Resources. Tailings impoundments are regulated by the Arizona Department of Environmental Quality (ADEQ) under the APP permit process.
 - Extensive requirements are included in the agencies adopted rules and regulations.
 - Visit ADEQ online at: <http://www.adeq.state.az.us> (Water Quality - Water Permits section).
 - Visit ADWR online at <http://www.azwater.gov> (Dam Safety)
4. What records should be kept of activities related to the safety of dams? Please be specific and include your rationale. What records should be provided to miners if hazardous conditions are found?

Comment:

- Design documents, construction reports, and periodic inspection reports conducted by qualified tailings impoundment operators should be kept for review.
- If hazardous conditions are identified at a tailings impoundment structure, all affected miners should be notified and operations personnel directed to abate the hazard.
- For hazardous conditions at water dams, all affected miners should be notified and if

necessary, emergency evacuation and abatement procedures implemented.

Design and Construction of Dams

MSHA's existing standards do not include specific requirements for design of dams. MSHA found that inadequate design contributed to some of the metal and nonmetal dam failures. In responding to the following questions, please discuss how any requirements should vary according to the size or hazard potential of a dam, and why.

5. How should mine operators assure that dams are safely and effectively designed? Please suggest requirements that MSHA should consider for safe design of dams. Please be specific and include your rationale.

Comment:

- All structures that impound tailings and/or water that exceed threshold for height, storage volume, and risk should be designed by qualified professional engineers.
- In Arizona, water dams and tailings impoundments are required to meet regulatory requirements promulgated by the ADWR and ADEQ.

6. Please suggest requirements for review of dam designs by mine operators and MSHA and include your rationale for specific recommendations and alternatives.

Comment:

- See Item 5.
- Review of water dams and tailings impoundments should be required by qualified professional engineers, for mine operators or MSHA for compliance with minimum standards that exceed threshold.

7. With new standards, operators may need to evaluate and upgrade existing dams. Please elaborate on how the safety of existing dams should be addressed.

Comment:

- ASARCO does not believe that the new standards would have any effect on the current tailings impoundments unless MSHA is going to overwrite the existing ASWR /ADEQ design standards currently in place.
- All structures that impound tailings and/or water that exceed threshold for height, storage volume, and risk should be evaluated by qualified professional engineers.
- Existing engineered structures should be "grandfathered" and be exempt from any new more stringent design standards.

8. MSHA's existing standards for dams at metal and nonmetal mines do not address whether a dam is constructed as designed. What measures are necessary to ensure that mine operators construct dams as designed?

Comment:

- Require certified "As-Built" drawings/documentation by a qualified professional engineer.

9. How should MSHA verify that dams have been constructed as designed? Please explain your rationale.

Comment:

- MSHA qualified professional engineer should review the certified "As-Built" drawings.

Operation and Maintenance of Dams

MSHA's existing standards do not contain specific requirements addressing the operation and maintenance of dams

10. What should a mine operator do to operate and maintain a safe dam? How should MSHA verify that dams are safely operated and maintained? Please be specific.

MSHA's existing standards require dams to be inspected at regular intervals if failure would create a hazard. Inspections can identify hazardous conditions, allowing a mine operator to take corrective action to prevent a failure. The Agency will be referring to two types of inspections in this document, "routine" and "detailed." Mine operators should perform frequent, routine dam inspections, which may include monitoring instrumentation, to identify unusual conditions and signs of instability. Personnel with more specialized knowledge of dam safety should conduct detailed inspections to identify less obvious problems and evaluate the safety of the dam. Detailed inspections, occurring less often, would include an examination of the dam and a review of the routine inspections and monitoring data. The Guidelines recommend that inspection personnel be qualified for their level of responsibility and trained in inspection procedures.

Comment:

- As all water dams and tailing impoundments are designed for their specific use and setting.
- Operating Plans for the structure needs to be developed as part of the design process. The Operating Plan should be required to be site specific for the individual structure. This plan should cover who/what and when the structure will inspected and conditions to look out for.
- Routine and detailed inspection intervals and monitoring plans should also be included as part of the Operating Plan and should be site specific for both water and tailings impoundments.

11. What measures should mine operators take to assure that dams are adequately inspected for unusual conditions and signs of instability?

Comment:

- Follow the Operating Plan and the specific requirements in conformance with the monitoring and inspection plan.

12. How often are routine inspections of dams conducted? How often should they be conducted? What determines the frequency? Who conducts the routine inspections? Please be specific and include your rationale.

Comment:

- Uniform or rigid inspection schedules are not appropriate. Routine inspections are conducted daily on operational impoundments by qualified operators.
- Inspection intervals should be site specific based on the impoundment's design, use and specific natural events. Inspection intervals should be specified in the Operating Plan for the individual structure.
- Example: an inactive tailings impoundment does not have to be inspected on the same frequency as an active tailings facility.

13. Instruments, such as weirs, provide information on the performance of a dam. How frequently should mine operators monitor dam instrumentation? Please provide your rationale.

Comment:

- Site monitoring and inspections should be developed on a site specific as specified in the Operating Plan.

ASARCO LLC Comments on Proposed Rules – Metal and Nonmetal Dams (RIN 1219-AB70)

14. What information should be documented during routine dam inspections? Please provide your rationale.

Comment:

- Site monitoring and inspections should be developed on a site specific as specified in the Operating Plan.

15. Does a competent engineer inspect your mine's dam? If so, at what frequency? Please explain the rationale for these inspections and what is evaluated.

Comment:

- Qualified operators and engineers inspect all of Asarco's dams and impoundments on regular intervals as appropriate for the design and operating plan of the individual structure.

16. How often should detailed inspections be conducted? Please include your rationale.

Comment:

- Scheduled inspections should be site specific as outlined in the Operating Plan.

17. What information and findings should be documented during detailed dam inspections? Please be specific and include your rationale.

Comment:

- Site specific information as outlined in the site specific Operating Plan.

18. How should MSHA verify that mine operators conduct routine and detailed inspections? Please explain how your suggestion would work.

Comment:

- A qualified MSHA inspector should review inspection reports/documentation per the site specific Operating Plan.

Qualifications of Personnel

A mine operator is responsible for the design, construction, operation, and maintenance of dams. For an effective dam safety program, an operator must use personnel who are knowledgeable about dam safety.

19. What qualifications do mine operators currently require of persons who design, inspect, operate, and manage dams? In what capacities are engineers used? Please be specific in your response.

Comment:

- Water dams and tailing impoundments that exceed threshold criteria are designed, inspected, operated and managed by qualified engineers and personnel as appropriate on a site specific basis.

20. The Guidelines recommend that dams be designed by competent engineers. What specific qualifications or credentials should persons who design dams possess? Please include your rationale.

Comment:

- Water dams and tailing impoundments that exceed threshold criteria should be designed by a qualified professional engineer registered in the state in which the structure is located.

21. The Guidelines recommend that a dam be constructed under the general supervision of a competent engineer knowledgeable about dam construction. What specific qualifications or credentials should a person have who verifies that a dam is being constructed as designed? Please provide your rationale.

ASARCO LLC Comments on Proposed Rules – Metal and Nonmetal Dams (RIN 1219-AB70)

Comment:

- Construction of water dams and tailing impoundments that exceed threshold criteria should be overseen by a professional engineer registered in the state in which structure is located.

22. What training should personnel receive who perform frequent, routine inspections and who monitor instrumentation at dams? In your response, please suggest course content and the frequency of the training, including the rationale for your recommendations.

Comment:

- The site specific Operating Plan for the structure should specify minimum training requirements and an adequate training program on a site specific basis.
- The frequency of training should be based on MSHA task training requirements.

23. What qualifications or credentials should be required of persons who perform detailed inspections to evaluate the safety of a dam? Please be specific and include your rationale.

Comment:

- MSHA, mine operator, and third party inspectors that perform detailed water dam and tailing impoundment safety inspections need to be qualified professional engineers.

Abandonment of Dams

24. Some regulatory authorities require that dam owners obtain approval of a plan to cap, breach, or otherwise safely abandon dams. What actions should mine operators take to safely abandon dams? Please include specific suggestions and rationale.

Comment:

- The Operation Plan for each structure should include structure specific closure requirements.

25. How can MSHA verify that a mine operator has safely abandoned a dam?

Comment:

- To the extent MSHA is involved in the closure/abandonment of water dams and tailing impoundments, MSHA qualified professional engineers should inspect the facility and the closure "As-Built" documentation.

Economic Impact

MSHA seeks information to assist the Agency in deriving the costs and benefits of any regulatory changes for dams at metal and nonmetal mines. In answering the following questions, please indicate the dam's storage capacity, height, and hazard potential and characterize the complexity of each dam referenced. Also, please include the state where each dam is located, and the number of employees at the mine.

26. What are the costs of designing a new dam? Please provide details such as hours, rates of pay, job titles, and any contractual services necessary. How often is the design of an existing dam changed? What are the costs of a redesign?

Comment:

- Impoundment design costs vary greatly based on numerous site specific variables: geography, geology, hydrology, hydrogeology, facility size, configuration, design life, operating procedures, location, etc.
- Recent design costs for ASARCO have ranged from \$150,000 for an expansion of an existing impoundment, up to million dollars for the design of a new facility.
- Generally, changes to existing dam design are rare; however, a redesign may be required for an expansion beyond the original scope. If a redesign does occur the costs for redesign would be site dependent.

27. What are the costs of constructing a dam? Please provide details based on: Size of dam; labor costs, including hours, rates of pay, job titles; costs of equipment and materials; and any contractual services necessary.

Comment:

- Once again, this is extremely variable relating to the reasons noted in Item # 26.

28. Please describe the oversight you provide during dam construction to assure it complies with the design plan. How much does it cost per year per dam for oversight and quality control? What special knowledge, qualifications, or credentials do you require of those who provide oversight?

Comment:

- Construction oversight, including Quality Control, is conducted and certified by a qualified engineer to ensure that the structure is constructed in accordance with the design specifications.
- Costs are variable dependent upon site specific conditions.

29. How often do you add height to an existing dam or modify it in some other way? Who supervises the design and construction of these modifications, for example, a professional engineer, competent engineer, contractor, etc? Please be specific and provide rationale for your answer. How much does it cost? Please provide details such as labor costs, including hours, rates of pay, job titles, and costs of equipment and materials and any contractual services necessary.

Comment:

- Tailing impoundments continuously increase in height until the ultimate design height is achieved. Design is completed by a qualified professional engineer and constructed in accordance with the approved impoundment design and Operating Plan. Water dams are generally not modified after they are constructed.
- Tailing impoundment costs are site specific. Asarco utilizes in-house personnel and equipment to operate, maintain and raise the impoundment.

30. How much does it cost per year per dam for routine inspections? If you incur separate costs for monitoring instrumentation, how much is that cost? How often do you have a detailed inspection conducted? How much does it cost per year for these inspections?

Comment:

- Individual costs for inspection are not tracked.

31. Does the state or local jurisdiction in which you operate require you to use a professional engineer? If so, when is a professional engineer specifically required? (If you have dams in more than one state please identify which states require a professional engineer and which do not).

Comment:

- The state of Arizona, as well Asarco protocol, requires registered professional engineer certification.

32. What are the costs associated with training personnel who conduct frequent, routine inspections and monitor instrumentation at dams?

Comment:

- Individual costs for inspection are not tracked but are included in our normal operating costs.

33. What costs are involved in capping, breaching, or otherwise properly abandoning a dam? Please provide details of your experience and what was involved when you properly abandoned a dam. Describe any impact of a properly abandoned dam.

ASARCO LLC Comments on Proposed Rules – Metal and Nonmetal Dams (RIN 1219-AB70)

Comment:

- These types of costs are site dependent and can vary tremendously. Asarco is currently completing the reclamation/closure of an 1100 acre tailing facility at an estimated cost of \$7 million.

34. What are the costs to a mine operator if a dam fails? Please characterize other impacts such as loss of life, environmental damage, etc.

Comment:

- Asarco has no experience in dam failures and therefore we cannot provide any cost information.

35. Do you have insurance against a dam failure? If so, please specify cost and coverage. Does the insurance carrier require the use of a professional engineer for specific dam activities? If a professional engineer is not required, does the insurance carrier give a discount if one is used? Does your insurance company have any other requirements related to dam safety?

Comment:

- Asarco is self insured and carries an excess policy

36. What quantifiable and non- quantifiable costs and benefits for the downstream community are involved when a dam is properly designed and constructed? In addition, MSHA welcomes comments on other relevant indirect costs and benefits.

Comment:

- The community benefits from the employment opportunities and the long-term financial contributions of the mining operations.

Dated 12/13/10

ASARCO Personnel Commenting:

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Ruth Kern, SR. Associate General Counsel

Tom Klempel, P.E., Sr. Manager Projects

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