
Rules of
Department of Natural Resources
Division 45—Metallic Minerals Waste Management
Chapter 8—Technical Guidelines

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**Title 10—DEPARTMENT OF
NATURAL RESOURCES**
**Division 45—Metallic Minerals Waste
Management**
Chapter 8—Technical Guidelines

10 CSR 45-8.010 General

PURPOSE: This rule lists the basic technical issues expected to be addressed in a completed application for a Metallic Minerals Waste Management Permit and references other rules containing technical information.

(1) A completed application for a Metallic Minerals Waste Management Permit shall comply with sections 444.362 and 444.365, RSMo (Cum. Supp. 1989) which set the purpose, requirements and objectives of the required closure and inspection-maintenance plans.

(2) The closure and inspection-maintenance plans shall establish and explain the technical processes and steps proposed to accomplish and maintain closure. Issues expected to be addressed shall include, but should not be limited to:

(A) The design, construction and maintenance of waste control structures, tailings dams, waste stockpiles and supporting facilities;

(B) The characterization of waste products;

(C) The methods for control and protection of surface water;

(D) The methods for protection of groundwater and aquifers;

(E) The geology and seismicity of the area;

(F) The potential for subsidence;

(G) The reuse and off-site removal of wastes; and

(H) The surface reclamation of waste management areas.

(3) Consistent with section 444.362, RSMo and 10 CSR 45-6.020, the owner/operator shall comply with the appropriate technical requirements, standards and guidelines published in the rules of other state and federal environmental programs. Supplemental guidelines for preparation, review and approval of closure and inspection-maintenance plans are—

(A) 10 CSR 45-8.020 Groundwater Protection;

(B) 10 CSR 45-8.030 Metallic Minerals Waste Management Control Structures; and

(C) 10 CSR 45-8.040 Reclamation-Reuse.

AUTHORITY: sections 444.362 and 444.380, RSMo Supp. 1989.* Original rule filed Oct. 2, 1990, effective April 29, 1991.

**Original authority:* 444.362, RSMo 1989 and 444.380, RSMo 1989.

10 CSR 45-8.020 Groundwater Protection

PURPOSE: This rule provides guidelines regarding an approvable groundwater monitoring and protection plan.

(1) Section 444.362, RSMo (Cum. Supp. 1989) requires a plan for monitoring and protection of groundwater consistent with Missouri's Water Quality Standards at 10 CSR 20-7.031(5). The purpose of the plan shall be to prevent the contamination of groundwater in aquifers through the disposal of metallic minerals waste. The plan shall include, but not be limited to:

(A) An analysis of groundwater quality in the aquifers identified in the permit application;

(B) The design and construction of monitoring wells;

(C) A groundwater monitoring program during the active life of the site, during closure and throughout the inspection-maintenance period; and

(D) A description of the methods the operator will use to prevent the contamination of aquifers.

(2) The groundwater protection plan preparation, review and implementation shall be based upon technology and methods of sample collection, analysis and evaluation that are currently acceptable and available to the geologic, hydrologic, engineering and mining professions.

(3) Contaminants from metallic minerals waste disposal shall not cause or contribute to the exceedence in aquifers of Missouri's Water Quality Standards in 10 CSR 20-7.031(5). The director may establish groundwater monitoring compliance points as necessary to achieve this objective.

AUTHORITY: sections 444.362 and 444.380, RSMo Supp. 1989.* Original rule filed Oct. 2, 1990, effective April 29, 1991.

**Original authority:* 444.362, RSMo 1989 and 444.380, RSMo 1989.

10 CSR 45-8.030 Metallic Minerals Waste Management Structures

PURPOSE: This rule provides guidelines regarding the integrity, design, construction and maintenance of metallic mineral waste management structures including, but not

limited to, tailings dams and slag waste piles. This rule includes dams less than thirty-five feet in height not regulated under the Missouri Dam Safety Act, sections 236.400—236.500, RSMo (1986).

(1) Definitions. Definitions as set forth in 10 CSR 45-2.010 shall apply to those terms used in this rule unless the context clearly requires otherwise.

(2) Dams that are thirty-five feet (35') or greater in height are required to obtain a permit in accordance with sections 236.400—236.500, RSMo (1986), referred to in this rule as the Missouri Dam Safety Act. The requirements for obtaining a Dam Safety Permit are given in 10 CSR 22-1.010—10 CSR 22-4.020. Tailings dams that are permitted in accordance with the Missouri Dam Safety Act will be subject to the provisions of the permit during the mining, closure and post-closure phases of the operation. The Metallic Minerals Waste Management application must include a copy of the valid dam construction, registration or safety permit for each regulated dam within the waste management areas.

(3) For dams located in metallic minerals waste management areas that are constructed after the effective date of this regulation and are less than thirty-five feet (35') in height, the operator shall certify using standards that are currently acceptable and available to the engineering profession that the structures meet the requirements for spillway capacity, slope stability, correction of observable defects, maintenance and inspection in order to ensure the continued integrity of the structure.

(4) For dams located in metallic minerals waste management areas that were constructed before the effective date of this regulation and are less than thirty-five feet (35') in height, the operator shall certify using standards that are currently acceptable and available to the engineering profession that the structures meet the requirements for spillway capacity, correction of observable defects and maintenance and inspection.

(5) Sloped faces of slag waste piles or other waste management control structures shall be maintained according to the lines and gradients shown on the approved permit application. Any slope failures, as evidenced by scarp formation, sloughing, bulging or other indications, shall be reported to the director in writing within ten (10) days of the time when the failure is first noticed. Upon review



of the failure, the director will determine what corrective action is to be taken. Corrective action may include repair and stabilization of the failed area.

(6) Sloped faces that experience erosion shall be repaired by the operator on an on-going basis. The operator shall keep a record of all these repairs and make these records available to the director upon request. No repairs shall be made that would result in significant deviations from the lines and grades shown on the approved permit application without written approval of these repairs by the director. Areas that experience recurring erosion may require special erosion control measures, such as application of revetment materials, regrading and so forth. The director and operator will determine the need for these measures during the review of the closure plan. The operator shall prepare plans and specifications for measures in accordance with practices reputable and appropriate in the engineering, geologic and construction professions. A copy of these plans and specifications will be provided to the director for review. The operator shall not begin construction of erosion control measures without written approval of that work from the director.

(7) The operator shall provide a judgment of the effect of subsidence and earthquake loads on the long-term stability and integrity of all tailings dams, slag piles and other waste management control structures located within the boundary of the waste management area. The judgment shall be based upon engineering analysis and experience in accordance with practices reputable and in current use in the engineering and geologic professions. The operator and director shall determine the need for remedial measures to counteract the effects of potential subsidence.

*AUTHORITY: sections 444.362 and 444.380, RSMo Supp. 1989. * Original rule filed Oct. 2, 1990, effective April 29, 1991.*

**Original authority: 444.362, RSMo 1989 and 444.380, RSMo 1989.*

10 CSR 45-8.040 Reclamation-Reuse

PURPOSE: This rule provides guidelines for reclamation of permitted metallic minerals waste management areas.

(1) Compliance with sections 444.362 and 444.365, RSMo (Cum. Supp. 1989) requires establishment of final designated uses for waste management areas. The methods of

land reclamation proposed to achieve this goal shall be a condition to the permit. Because of the unique nature of each waste management facility, specific permit requirements shall be negotiated within the framework established by sections 444.352-444.380, RSMo (Cum. Supp. 1989.)

(2) Land reclamation methods shall be established so that—

(A) Wind erosion and dust generation will be minimized; and

(B) Runoff and seepage are managed to minimize negative environmental effects and changes in the hydrologic balance.

(3) Dust shall be controlled by techniques such as water spray, chemical binders, anchored mulches, vegetation and physical containment.

(4) Alternatives to land reclamation such as off-site removal or processing for beneficial use shall be described in the closure and inspection-maintenance plans and shall be included in the permit.

*AUTHORITY: sections 444.362 and 444.380, RSMo Supp. 1989. * Original rule filed Oct. 2, 1990, effective April 29, 1991.*

**Original authority: 444.362, RSMo 1989 and 444.380, RSMo 1989.*