

~~under A.R.S. § 41-1056(J) at 19 A.A.R. 2856, effective April 30, 2013 (Supp. 13-3).~~

~~**R18-2-1307. Expired**~~

~~**Historical Note**~~

~~New Section made by final rulemaking at 9 A.A.R. 1295, effective April 2, 2003 (Supp. 03-2). Section expired under A.R.S. § 41-1056(J) at 19 A.A.R. 2856, effective April 30, 2013 (Supp. 13-3).~~

~~**PART A. RESERVED**~~

~~**PART B. HAYDEN, ARIZONA, PLANNING AREA**~~

~~**R18-2-B1301. Limits on Lead Emissions from the Hayden Smelter**~~

~~**A. Applicability.**~~

- ~~1. This Section applies to the owner or operator of the Hayden Smelter.~~
- ~~2. Effective date. Except as otherwise provided, the requirements of this Section shall become applicable on the earlier of July 1, 2018 or 180 days after completion of all project improvements authorized by Significant Permit Revision No. 60647.~~

~~**B. Definitions.** In addition to general definitions contained in R18-2-101, the following definitions apply to this Section:~~

- ~~1. "ACFM" means actual cubic feet per minute.~~
- ~~2. "Anode furnace baghouse stack" means the dedicated stack that vents controlled off-gases from the anode furnaces to the Main Stack.~~
- ~~3. "Blowing" shall mean the introduction of air or oxygen-enriched air into the converter furnace molten bath through tuyeres that are submerged below the level of the molten bath. The flow of air through the tuyeres above the level of the molten bath or into an empty converter shall not constitute blowing.~~
- ~~4. "Capture system" means the collection of components used to capture gases and fumes released from one or more emission units, and to convey the captured gases and fumes to one or more control devices or a stack. A capture system may include, but is not limited to, the following components as applicable to a given capture system design: duct intake devices, hoods, enclosures, ductwork, dampers, manifolds, plenums, and fans.~~
- ~~5. "Control device" means a piece of equipment used to clean and remove pollutants from gases and fumes released from one or more emission units that would otherwise be released to the atmosphere. Control devices may include, but are not limited to, baghouses, Electrostatic Precipitators (ESPs), and sulfuric acid plants.~~
- ~~6. "Hayden Smelter" means the primary copper smelter located in Hayden, Gila County, Arizona at latitude 33°0'15"N and longitude 110°46'31"W.~~
- ~~7. "Main Stack" means the center and annular portions of the 1,000-foot stack, which vents controlled off-gases from the INCO flash furnace, the converters, and anode furnaces and also vents exhaust from the tertiary hoods.~~
- ~~8. "SCFM" means standard cubic feet per minute.~~
- ~~9. "SLAMS monitor" means an ambient air monitor part of the State and Local Air Monitoring Stations network operated by State or local agencies for the purpose of demonstrating compliance with the National Ambient Air Quality Standards.~~
- ~~10. "Smelting process-related fugitive lead emissions" means uncaptured and/or uncontrolled lead emissions that are released into the atmosphere from smelting copper in the INCO flash furnace, converters, and anode furnaces.~~

C. Emission limit. Main Stack lead emissions shall not exceed 0.683 pound of lead per hour.

D. Operational Standards.

1. Process equipment and control device operations. At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate smelter processes and associated emission capture and/or control equipment in a manner consistent with good air pollution control practices for minimizing lead emissions to the level required by subsection (C). Determination of whether acceptable operating and maintenance procedures are being used shall be based on all information available to the Department and EPA Region IX, which may include, but is not limited to, monitoring results, review of operating and maintenance procedures and records, and inspection of the relevant equipment.
2. Capture system and control device operations and maintenance plan. The owner or operator shall develop and implement an operations and maintenance plan for each capture system and/or control device used to ventilate or control process gas or emissions from the flash furnace, including matte tapping, slag skimming and slag return operations; converter primary hoods, converter secondary hoods, tertiary ventilation system; and anode refining operations. The operations and maintenance plan must address the following requirements as applicable to each capture system and/or control device.
 - a. Monitoring devices. The plan shall provide for installation, operation, calibration, and maintenance of appropriate monitoring devices to measure and record operating limit values or settings at all times the required capture and control system is operating, except during periods of monitor calibration, repair, and malfunction. The initial plan shall provide for volumetric flow monitoring on the vent gas baghouse (inlet or outlet), each converter primary hood, each converter secondary hood, the tertiary ventilation system, and the anode furnace baghouse (inlet or outlet). All monitoring devices shall be accurate within +/- 10 percent and calibrated according to manufacturer's instructions. If direct measurement of the exhaust flow is infeasible due to physical limitations or exhaust characteristics, the owner or operator may propose a reliable equivalent method for approval. Initial monitoring may be adjusted as provided in subsection (D)(2)(e). Dampers that are manually set and remain in the same position while the capture system is operating are exempt from these monitoring requirements. Capture system damper position setting(s) shall be specified in the plan.
 - b. Operational limits. The owner or operator shall establish operating limits in the operations and maintenance plan for the capture systems and/or control devices that are representative and reliable indicators of the performance of the capture system and control device operations. Initial operating limits may be adjusted as provided in subsection (D)(2)(e). Initial operating limits shall include the following:
 - i. A minimum air flow for the furnace ventilation system and associated damper positions for each matte tapping hood or slag skimming hood when operating to ensure that the opera-

- tion(s) are within the confines or influence of the capture system.
- ii. A minimum air flow for the secondary hood baghouse and associated damper positions for each slag return hood to ensure that the operation is within the confines or influence of the capture system's ventilation draft during times when the associated process is operating.
 - iii. A minimum air infiltration ratio for the converter primary hoods of 1:1 averaged over 24 converter Blowing hours, rolled hourly measured as volumetric flow in primary hood less the volumetric flow of tuyere Blowing compared to the volumetric flow of tuyere Blowing.
 - iv. A minimum secondary hood exhaust rate of 35,000 SCFM during converter Blowing, averaged over 24 converter Blowing hours, rolled hourly.
 - v. A minimum secondary hood exhaust rate of 133,000 SCFM during all non-Blowing operating hours, averaged over 24 non-Blowing hours, rolled hourly.
 - vi. A minimum negative pressure drop across the secondary hood when the doors are closed equivalent to 0.007 inches of water.
 - vii. A minimum exhaust rate on the tertiary hooding of 400,000 ACFM during all times material is processed in the converter aisle, averaged over 24 hours and rolled hourly.
 - viii. Fan amperes or minimum air flow for the anode furnace baghouse and associated damper positions for each anode furnace hood to ensure that the anode furnace off-gas port is within the confines or influence of the capture system's ventilation draft during times when the associated furnace is operating.
 - ix. The anode furnace charge mouth shall be kept covered when the tuyeres are submerged in the metal bath except when copper is being charged to or transferred from the furnace.
- c. Preventative maintenance. The owner or operator shall perform preventative maintenance on each capture system and control device according to written procedures specified in the operations and maintenance plan. The procedures must include a preventative maintenance schedule that is consistent with the manufacturer's or engineer's instructions, or operator's experience working with the equipment, and frequency for routine and long-term maintenance. This provision does not prohibit additional maintenance beyond that required by the plan.
- d. Inspections. The owner or operator shall perform inspections in accordance with written procedures in the operations and maintenance plan for each capture system and control device that are consistent with the manufacturer's, engineer's, or operator's instructions for each system and device.
- e. Plan development and revisions.
- i. The owner or operator shall develop and keep current the plan required by this Section. Any plan or plan revision shall be consistent with this Section, shall be designed to ensure that the capture and control system performance conforms to the attainment demonstration in the Hayden 2008 Lead National Ambient Air Quality Standards Nonattainment Area State Implementation Plan (SIP), and shall be submitted to the Department for review. Any plan or plan revision submitted shall include the associated manufacturer's, engineer's or operator's recommendations and/or instructions used for capture system and control device operations and maintenance.
 - ii. The owner or operator shall submit the initial plan to the Department no later than May 1, 2018 and shall include the initial volumetric flow monitoring provisions in subsection (D)(2)(a), the initial operational limits in subsection (D)(2)(b), the preventative maintenance procedures in subsection (D)(2)(c), and the inspection procedures in subsection (D)(2)(d).
 - iii. The owner or operator shall submit to the Department for approval a plan revision with changes, if any, to the initial volumetric flow monitoring provisions in subsection (D)(2)(a) and initial operational limits in subsection (D)(2)(b) not later than six months after completing a fugitive emissions study conducted in accordance with Appendix 14. The Department shall submit the approved changes to the volumetric flow monitoring provisions and operational limits pursuant to this subsection to EPA Region IX as a SIP revision not later than 12 months after completion of a fugitive emissions study.
 - iv. Other plan revisions may be submitted at any time when necessary. All plans and plan revisions shall be designed to achieve operation of the capture system and/or control device consistent with the attainment demonstration in the Hayden 2008 Lead National Ambient Air Quality Standards Nonattainment Area SIP. Except for changes to the volumetric flow monitoring provisions in subsection (D)(2)(a) and operational limits in subsection (D)(2)(b), which shall require prior approval, plans and plan revisions may be implemented upon submittal and shall remain in effect until superseded or until disapproved by the Department. Disapprovals are appealable Department actions.
3. Emissions from the anode furnace baghouse stack shall be routed to the Main Stack.
- E. Performance Test Requirements.**
1. Main stack performance tests. No later than 180 calendar days after completion of all Converter Retrofit Project improvements authorized by Significant Permit Revision No. 60647, the owner or operator shall conduct initial performance tests on the following:
 - a. the gas stream exiting the anode furnaces baghouse prior to mixing with other gas streams routed to the Main Stack.
 - b. the gas stream exiting the acid plant at a location prior to mixing with other gas streams routed to the Main Stack.
 - c. the gas stream exiting the secondary baghouse at a location prior to mixing with other gas streams routed to the Main Stack.
 - d. the gas stream collected by the tertiary hooding at a location prior to mixing with other gas streams routed to the Main Stack.

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- e. the gas stream exiting the vent gas baghouse at a location prior to mixing with other gas streams routed to the Main Stack.
 - 2. Subsequent performance tests on the gas streams specified in subsection (E)(1) shall be conducted at least annually.
 - 3. Performance tests shall be conducted under such conditions as the Department specifies to the owner or operator based on representative performance of the affected sources and in accordance with 40 CFR 60, Appendix A, Reference Method 29.
 - 4. At least 30 calendar days prior to conducting a performance test pursuant to subsection (E)(1), the owner or operator shall submit a test plan, in accordance with R18-2-312(B) and the Arizona Testing Manual, to the Department for approval. The test plan must include the following:
 - a. Test duration;
 - b. Test location(s);
 - c. Test method(s), including those for test method performance audits conducted in accordance with subsection (E)(6); and
 - d. Source operation and other parameters that may affect the test result.
 - 5. The owner or operator may use alternative or equivalent performance test methods as defined in 40 CFR § 60.2 when approved by the Department and EPA Region IX, as applicable, prior to the test.
 - 6. The owner or operator shall include a test method performance audit during every performance test in accordance with 40 CFR § 60.8(g).
- F. Compliance Demonstration Requirements.**
- 1. For purposes of determining compliance with the Main Stack emission limit in subsection (C), the owner or operator shall calculate the combined lead emissions in pounds per hour from the gas streams identified in subsection (E)(1) based on the most recent performance tests conducted in accordance with subsection (E).
 - 2. The owner or operator shall determine compliance with the requirements in subsection (D)(2) as follows:
 - a. Maintaining and operating the emissions capture and control equipment in accordance with the capture system and control device operations and maintenance plan required in subsection (D)(2) and recording operating parameters for capture and control equipment as required in subsection (D)(2)(b); and
 - b. Conducting a fugitive emissions study in accordance with Appendix 14 starting not later than 6 months after completion of the Converter Retrofit Project authorized by Significant Permit Revision No. 60647. The fugitive emissions study shall demonstrate, as set forth in Appendix 14, that fugitive emissions from the smelter are consistent with estimates used in the attainment demonstration in the Hayden 2008 Lead National Ambient Air Quality Standards Nonattainment Area SIP.
 - 3. The owner or operator shall include periods of startup, shutdown, malfunction, or other upset conditions when determining compliance with the emission limit in subsection (C).
- G. Recordkeeping.** The owner or operator shall maintain the following records for at least five years and keep on-site for at least two years:
- 1. All records as specified in the operations and maintenance plan required under subsection (D)(2).
 - 2. All records of major maintenance activities and inspections conducted on emission units, capture systems, monitoring devices, and air pollution control equipment, including those set forth in the operations and maintenance plan required by subsection (D)(2).
 - 3. All records of performance tests, test plans, and audits required by subsection (E).
 - 4. All records of compliance calculations required by subsection (F).
 - 5. All records of fugitive emission studies and study protocols conducted in accordance with Appendix 14.
 - 6. All records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of concentrate drying, smelting, converting, anode refining, and casting emission units; and any malfunction of the associated air pollution control equipment that is inoperative or not operating correctly.
 - 7. All records of reports and notifications required by subsection (H).
- H. Reporting.** The owner or operator shall provide the following to the Department:
- 1. Notification of commencement of construction of any equipment necessary to comply with the operational or emission limits.
 - 2. Semiannual progress reports on construction of any such equipment postmarked by July 30 for the preceding January-June period and January 30 for the preceding July-December period.
 - 3. Notification of initial startup of any such equipment within 15 business days of such startup.
 - 4. Whenever the owner or operator becomes aware of any exceedance of the emission limit set forth in subsection (C), the owner or operator shall notify the Department orally or by electronic or facsimile transmission as soon as practicable, but no later than two business days after the owner or operator first knew of the exceedance.
 - 5. Within 30 days after the end of each calendar-year quarter, the owner or operator shall submit a quarterly report to the Department for the preceding quarter that shall include dates, times, and descriptions of deviations when the owner or operator operated smelting processes and related control equipment in a manner inconsistent with the operations and maintenance plan required by subsection (D)(2).
 - 6. Reports from performance testing conducted pursuant to subsection (E) shall be submitted to the Department within 60 calendar days of completion of the performance test. The reports shall be submitted in accordance with the Arizona Testing Manual and A.A.C. R18-2-312(A).
- Historical Note**
- New Section R18-2-B1301 made by final rulemaking at 23 A.A.R. 767, effective on the earlier of July 1, 2018, or 180 calendar days after completion of all Converter Retrofit Project improvements authorized by Significant Permit Revision No. 60647 (Supp. 17-1).
- R18-2-B1301.01. Limits on Lead-Bearing Fugitive Dust from the Hayden Smelter**
- A. Applicability.**
- 1. This Section applies to the owner or operator of the Hayden Smelter.
 - 2. Effective Date. Except as otherwise provided, the requirements of this Section shall become applicable on December 1, 2018.

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- e. the gas stream exiting the vent gas baghouse at a location prior to mixing with other gas streams routed to the Main Stack.
 2. Subsequent performance tests on the gas streams specified in subsection (E)(1) shall be conducted at least annually.
 3. Performance tests shall be conducted under such conditions as the Department specifies to the owner or operator based on representative performance of the affected sources and in accordance with 40 CFR 60, Appendix A, Reference Method 29.
 4. At least 30 calendar days prior to conducting a performance test pursuant to subsection (E)(1), the owner or operator shall submit a test plan, in accordance with R18-2-312(B) and the Arizona Testing Manual, to the Department for approval. The test plan must include the following:
 - a. Test duration;
 - b. Test location(s);
 - c. Test method(s), including those for test method performance audits conducted in accordance with subsection (E)(6); and
 - d. Source operation and other parameters that may affect the test result.
 5. The owner or operator may use alternative or equivalent performance test methods as defined in 40 CFR § 60.2 when approved by the Department and EPA Region IX, as applicable, prior to the test.
 6. The owner or operator shall include a test method performance audit during every performance test in accordance with 40 CFR § 60.8(g).
- F. Compliance Demonstration Requirements.**
1. For purposes of determining compliance with the Main Stack emission limit in subsection (C), the owner or operator shall calculate the combined lead emissions in pounds per hour from the gas streams identified in subsection (E)(1) based on the most recent performance tests conducted in accordance with subsection (E).
 2. The owner or operator shall determine compliance with the requirements in subsection (D)(2) as follows:
 - a. Maintaining and operating the emissions capture and control equipment in accordance with the capture system and control device operations and maintenance plan required in subsection (D)(2) and recording operating parameters for capture and control equipment as required in subsection (D)(2)(b); and
 - b. Conducting a fugitive emissions study in accordance with Appendix 14 starting not later than 6 months after completion of the Converter Retrofit Project authorized by Significant Permit Revision No. 60647. The fugitive emissions study shall demonstrate, as set forth in Appendix 14, that fugitive emissions from the smelter are consistent with estimates used in the attainment demonstration in the Hayden 2008 Lead National Ambient Air Quality Standards Nonattainment Area SIP.
 3. The owner or operator shall include periods of startup, shutdown, malfunction, or other upset conditions when determining compliance with the emission limit in subsection (C).
- G. Recordkeeping.** The owner or operator shall maintain the following records for at least five years and keep on-site for at least two years:
1. All records as specified in the operations and maintenance plan required under subsection (D)(2).
 2. All records of major maintenance activities and inspections conducted on emission units, capture systems, monitoring devices, and air pollution control equipment, including those set forth in the operations and maintenance plan required by subsection (D)(2).
 3. All records of performance tests, test plans, and audits required by subsection (E).
 4. All records of compliance calculations required by subsection (F).
 5. All records of fugitive emission studies and study protocols conducted in accordance with Appendix 14.
 6. All records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of concentrate drying, smelting, converting, anode refining, and casting emission units; and any malfunction of the associated air pollution control equipment that is inoperative or not operating correctly.
 7. All records of reports and notifications required by subsection (H).
- H. Reporting.** The owner or operator shall provide the following to the Department:
1. Notification of commencement of construction of any equipment necessary to comply with the operational or emission limits.
 2. Semiannual progress reports on construction of any such equipment postmarked by July 30 for the preceding January-June period and January 30 for the preceding July-December period.
 3. Notification of initial startup of any such equipment within 15 business days of such startup.
 4. Whenever the owner or operator becomes aware of any exceedance of the emission limit set forth in subsection (C), the owner or operator shall notify the Department orally or by electronic or facsimile transmission as soon as practicable, but no later than two business days after the owner or operator first knew of the exceedance.
 5. Within 30 days after the end of each calendar-year quarter, the owner or operator shall submit a quarterly report to the Department for the preceding quarter that shall include dates, times, and descriptions of deviations when the owner or operator operated smelting processes and related control equipment in a manner inconsistent with the operations and maintenance plan required by subsection (D)(2).
 6. Reports from performance testing conducted pursuant to subsection (E) shall be submitted to the Department within 60 calendar days of completion of the performance test. The reports shall be submitted in accordance with the Arizona Testing Manual and A.A.C. R18-2-312(A).

Historical Note

New Section R18-2-B1301 made by final rulemaking at 23 A.A.R. 767, effective on the earlier of July 1, 2018, or 180 calendar days after completion of all Converter Retrofit Project improvements authorized by Significant Permit Revision No. 60647 (Supp. 17-1).

R18-2-B1301.01. Limits on Lead-Bearing Fugitive Dust from the Hayden Smelter

- A. Applicability.**
1. This Section applies to the owner or operator of the Hayden Smelter.
 2. **Effective Date.** Except as otherwise provided, the requirements of this Section shall become applicable on December 1, 2018.

- B. Definitions.** In addition to definitions contained in R18-2-101 and R18-2-B1301, the following definitions apply to this Section:
1. “Acid plant scrubber blowdown drying system” means the process in which Venturi scrubber blowdown solids are dried and packaged via a thickener, filter press, electric dryer, and supersack filling stations.
 2. “Control measure” means a piece of equipment used, or actions taken, to minimize lead-bearing fugitive dust emissions that would otherwise be released to the atmosphere. Control equipment may include, but are not limited to, wind fences, chemical dust suppressants, and water sprayers. Actions may include, but are not limited to, relocating sources, curtailing operations, or ceasing operations.
 3. “Hayden Lead Nonattainment Area” means the townships in Gila and Pinal Counties, as identified and codified in 40 CFR § 81.303, that are designated nonattainment for the 2008 Lead National Ambient Air Quality Standards.
 4. “High wind event” means any period of time beginning when the average wind speed, as measured at a meteorological station maintained by the owner or operator that is approved by the Department, is greater than or equal to 15 miles per hour over a 15 minute period, and ending when the average wind speed, as measured at the approved meteorological station maintained by the owner or operator, falls below 15 miles per hour over a 15 minute period.
 5. “Lead-bearing fugitive dust” means uncaptured and/or uncontrolled particulate matter containing lead that is entrained in the ambient air and is caused by activities, including, but not limited to, the movement of soil, vehicles, equipment, and wind.
 6. “Material pile” means material, including concentrate, uncrushed reverts, crushed reverts, and bedding material, that is stored in a pile outside a building or warehouse and is capable of producing lead-bearing fugitive dust.
 7. “Non-smelting process sources” means sources of lead-bearing fugitive dust that are not part of the hot metal process, which includes smelting in the INCO flash furnace, converting, and anode refining and casting. Non-smelting process sources include storage, handling, and unloading of concentrate, uncrushed reverts, crushed reverts, and bedding material; acid plant scrubber blowdown solids; and paved and unpaved roads.
 8. “Ongoing visible emissions” means observed emissions to the outside air that are not brief in duration.
 9. “Road” means any surface on which vehicles pass for the purpose of carrying people or materials from one place to another in the normal course of business at the Hayden Smelter.
 10. “Slag” means the inorganic molten material that is formed during the smelting process and has a lower specific gravity than copper-bearing matte.
 11. “Slag hauler” means any vehicle used to transport molten slag.
 12. “Storage and handling” means all activities associated with the handling and storage of materials that take place at the Hayden Smelter, including, but not limited to, stockpiling, transport on conveyor belts, transport or storage in rail cars, crushing and milling, arrival and handling of offsite concentrate, bedding, and handling of reverts.
 13. “Trackout/carry-out” means any materials that adhere to and agglomerate on the surfaces of motor vehicles, haul trucks, and/or equipment (including tires) and that may then fall onto the road.
- C. Operational Standards.**
1. Equipment operations. At all times, the owner or operator shall operate and maintain all non-smelting process sources, including all associated air pollution control equipment, control measures, and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing lead-bearing fugitive dust, and in accordance with the fugitive dust plan required by subsection (C)(2) and performance and housekeeping requirements in subsection (D). A determination of whether acceptable operating and maintenance procedures are being used shall be based on all available information to the Department and EPA Region IX, which may include, but is not limited to, monitoring results, review of operating and maintenance procedures and records, review of fugitive dust plans, and inspection of the relevant equipment.
 2. Fugitive dust plan. The owner or operator shall develop, implement, and follow a fugitive dust plan that is designed to minimize lead-bearing fugitive dust from non-smelting process sources. At minimum, the fugitive dust plan shall contain the following:
 - a. Performance and housekeeping requirements in subsection (D).
 - b. Design plans and specifications for each wind fence to be installed to control lead-bearing fugitive dust from non-smelting process sources identified in subsections (D)(11) through (D)(14). The dust plan shall contain height limits for the materials being stored in each wind fence, consistent with the design plans and specifications for that particular wind fence. Wind fence design and specifications shall:
 - i. Require full encircling of the source to be controlled, with reasonable and sufficient openings for ingress and egress;
 - ii. Consider the orientation of the wind fence to the prevailing winds;
 - iii. Consider the strength of the winds in the area where the fence will be located;
 - iv. Consider the porosity of the material to be used, which shall not exceed 50 percent; and
 - v. Consider the height of the fence relative to the height of the material being stored. At minimum, wind fence height shall be greater than or equal to the material pile height.
 - c. Design plans and specifications for each new or modified water sprayer system used to control lead-bearing fugitive dust from non-smelting process sources specified in subsections (D)(11) through (D)(14). The number, type, location, watering intensity, flow rates, and other operational parameters of the water sprayers must meet moisture content objectives for sources specified in subsections (D)(11) through (D)(14). The owner or operator may include in the dust plan an exemption to the water requirements at times when the materials are sufficiently moist or it is raining and thus there is no need for additional wetting until the next scheduled watering to meet moisture content objectives. The dust plan shall include the following for each water sprayer:
 - i. Watering schedule;
 - ii. Watering intensity;
 - iii. Minimum flow rate or pressure drop;

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- iv. Appropriate and/or continuous monitoring;
 - v. Schedule for calibration based on the manufacturer's recommended calibration schedule;
 - vi. Preventative maintenance schedule; and
 - vii. Other applicable operational parameters.
- d. Necessary improvements and/or modifications to material conveyor systems, along with a schedule for implementing improvements or modifications, targeted to minimize lead-bearing fugitive dust from non-smelting process sources specified in subsections (D)(11) through (D)(14), as applicable, to the greatest extent practicable. The improvements or modifications may include, but is not limited to, hooding of transfer points, utilizing water sprayers, and employing scrapers, brushes, or cleaning systems at all points where belts loop around themselves to catch and contain material before it falls to the ground.
- e. Design plans for the concrete pads for the non-smelting process sources specified in subsections (D)(11) and (D)(13). The concrete pads shall be designed to capture, store, and control stormwater or sprayed water to minimize emissions to the greatest extent practicable, including curbing around the outer edges of the concrete pad where feasible.
- f. Additional controls and measures for sources specified in subsections (D)(11) through (D)(14) to be implemented during high wind events. These additional controls or measures, which must include curtailment or other alteration of activity when appropriate, must be implemented at these sources during all periods of high wind.
- g. Sample inspection sheets, checklists, or logsheets for each of the inspections identified in subsection (D)(6), and in accordance with the following:
- i. The inspection sheets or checklists shall include:
 - (1) Specific descriptions of the equipment being inspected and the specific functions being evaluated;
 - (2) The findings of the inspection;
 - (3) The date, time, and location of inspections; and
 - (4) An identification of who performed the inspection or logged the results.
 - ii. The logsheets for high wind events shall include:
 - (1) High wind event start time;
 - (2) High wind event end time;
 - (3) Description of area or activity inspected; and
 - (4) Description of corrective action taken if necessary.
- h. Design plans of the new acid plant scrubber blow-down drying system specified in subsection (D)(15).
- i. The name and location of the meteorological station, which must be approved by the Department, that is to be used by the owner or operator for determining high wind events pursuant to subsection (B)(4) and for implementing control requirements pursuant to subsection (D)(5).
3. Plan development and revisions. The owner or operator shall develop and keep current the fugitive dust plan required by subsection (C)(2). Any plan or plan revision shall be consistent with this Section and shall be submitted to the Department for review. The initial plan shall be submitted to the Department for review no later than May 1, 2017. Plans and plan revisions shall be consistent with good air pollution control practice for fugitive dust. Except for the meteorological station to be used for high wind events pursuant to subsection (D)(5), which shall require prior approval, plans and plan revisions may be implemented upon submittal and shall remain in effect until superseded or until disapproved by the Department. Disapprovals are appealable Department actions.
- D. Performance and Housekeeping Requirements.** The owner or operator shall comply with these requirements at all times regardless of a fugitive dust plan.
- 1. Water sprayers. The owner or operator shall implement a recordkeeping system to capture sprayer operations, including identification of the particular operation, lead-bearing fugitive dust source, timing and intensity of watering, and data regarding the quantity of water used at each water sprayer.
 - 2. Wind fences. The owner or operator shall ensure that wind fences used to control lead-bearing fugitive dust from the non-smelting process sources specified in subsections (D)(11) through (D)(14) meet the following requirements:
 - a. Wind fence height shall be greater than or equal to the material pile height. The allowed material pile height shall be posted in a readily visible location at each wind fence.
 - b. Wind fence porosity shall not exceed 50 percent.
 - 3. Material conveyor systems. For sources specified in subsections (D)(11) through (D)(14), as applicable, the owner or operator shall:
 - a. Minimize conveyor drop heights to the greatest extent practicable.
 - b. Clean any spills from conveyors within 30 minutes of discovery. The material collected must be handled in such a way so as to minimize lead-bearing fugitive dust to the maximum extent practicable.
 - 4. Vehicle transport of materials. The owner or operator shall maintain vehicle cargo compartments used to transport materials capable of producing lead-bearing fugitive dust so that the cargo compartment is free of holes or other openings and is covered by a tarp.
 - 5. High wind event requirements.
 - a. During high wind events, the owner or operator shall evaluate the non-smelting process sources specified in subsections (D)(11) through (D)(14) for ongoing visible emissions using the appropriate logsheet for each source.
 - b. If ongoing visible emissions are observed, the owner or operator shall promptly wet the source of emissions with the objective of mitigating further emissions.
 - c. If wetting does not appear to mitigate the ongoing visible emissions to 20 percent opacity or less, the owner or operator shall postpone associated handling of the source until the high wind event has ceased.
 - 6. Physical inspections. The owner or operator shall conduct physical inspections as follows:
 - a. Daily inspections of all water sprayers to make sure they are functioning and are in accordance with the dust plan;
 - b. Daily visual inspections of all material piles to make sure they are maintained within areas protected by a wind fence, that they are not higher than allowed for

- the wind fence, and to verify that moisture content requirements are met;
- c. Daily inspections of all material handling areas to identify and clean up track out or spills of materials;
 - d. Daily inspections of conveyor systems to identify and clean up material spills;
 - e. Daily inspections of rumble grates sump levels;
 - f. Daily spot inspections of vehicles carrying lead-bearing fugitive dust-producing materials when vehicles are in use to ensure that material is not overloaded, is properly covered, and cargo compartments are intact;
 - g. Weekly inspections of wind fences for material integrity and structural stability;
 - h. Daily inspections of all paved roads to identify and clean up track out or spills of materials;
 - i. Daily inspections of unpaved roads in subsection (D)(10)(a) to identify areas where chemical dust suppressant coverage has broken down; and
 - j. Bi-weekly inspections of the acid plant scrubber blowdown drying system enclosure.
7. Opacity limit and Method 9 readings.
 - a. Opacity from lead-bearing fugitive dust emissions shall not exceed 20 percent from any part of the facility at any time. Opacity shall be determined by using 40 CFR 60, Appendix A, Reference Method 9, except for unpaved roads, in which opacity shall be determined pursuant to subsection (D)(10)(c).
 - b. In the event that an employee observes ongoing visible emissions at a non-smelting process source covered by this Section, that employee shall promptly contact a Reference Method 9-certified observer, who shall promptly evaluate the emissions and conduct a Reference Method 9 reading, if possible.
 - c. A Reference Method 9-certified observer shall conduct a weekly visible emissions survey of all non-smelting process sources covered by this Section and perform a Reference Method 9 reading for any plumes that on an instantaneous basis appear to exceed 15 percent opacity.
 8. Corrective actions.
 - a. At any time that visible emissions from the non-smelting process sources covered by this Section appear to exceed 15 percent opacity, the owner or operator shall take prompt corrective action to identify the source of the emissions and abate such emissions, with the corrective action starting within 30 minutes after discovery. For any non-smelting process source that produces visible emissions that appear to exceed 15 percent opacity, the owner or operator shall perform an analysis of the root cause, and implement a strategy designed to prevent, to the extent feasible, the ongoing recurrence of the source of visible emissions. Within 14 days of completion of its analysis, if appropriate, the owner or operator shall modify the fugitive dust plan in subsection (C)(2) for any changes identified from the analysis differing from the current provisions of the fugitive dust plan.
 - b. At any time that the owner or operator becomes aware that provisions of the fugitive dust plan and/or performance and housekeeping provisions required by this Section are not being met, the owner or operator shall take prompt action to return to compliance, which may include modifications to monitoring, recordkeeping, and reporting requirements in the fugitive dust plan. This includes, but is not limited to, the following actions:
 - i. Return water sprayers to full operational status;
 - ii. Repair damaged conveyor hoodings or other enclosures;
 - iii. Apply additional water to ensure that sources are meeting moisture content requirements;
 - iv. Clean any trackout or spillage of dust-producing material, including dropoff of dust producing material from conveyors, using a street sweeper, vacuum, or wet broom with sufficient water and at the speed recommended by the manufacturer;
 - v. Reapplication of chemical dust suppressants in areas where the coating has broken down on unpaved roads; and
 - vi. Revisions to the fugitive dust plan to undertake improved monitoring, recordkeeping, and reporting requirements necessary to ensure that the controls contained in the fugitive dust plan are being implemented as contemplated by the fugitive dust plan.
 9. Paved Roads. These requirements apply to all roads at the facility currently paved and roads to be paved in the future. The owner or operator shall:
 - a. Clean roads at least once daily with a sweeper, vacuum, or wet broom in accordance with applicable manufacturer recommendations.
 - b. Maintain the integrity of the road surface.
 - c. Clean up trackout and carry-out of material on the following schedule:
 - i. As expeditiously as practicable, when trackout and carry-out extends a cumulative distance of 50 linear feet or more; and
 - ii. At the end of the workday, for all other trackout and carry-out.
 - d. Comply with a speed limit not to exceed 15 miles per hour for all vehicular traffic. At minimum, speed limit signs shall be posted at all entrances and truck loading and unloading areas and/or at conspicuous areas along the roadway.
 10. Unpaved Roads. These requirements apply to the unpaved roads identified in subsections (D)(10)(a)(i) through (D)(10)(a)(iii) below, including any access points where the unpaved roads adjoin paved roads and any areas of vehicular handling of material. The owner or operator shall:
 - a. Implement a chemical dust suppressant application intensity and schedule, which at minimum shall be:
 - i. For the slag hauler road and all other unpaved roads used or to be used by the slag hauler, chemical dust suppressant shall be applied at least once per week during the summer, and once per every two weeks during the winter.
 - ii. For the main road to the secondary crusher, chemical dust suppressant shall be applied at least once every six weeks, year-round.
 - iii. For unpaved roads near reverts and silica flux crushing operations, chemical dust suppressant shall be applied at least once per two weeks during the summer, and once per month in the winter.
 - b. Increase the frequency of chemical dust suppressant application if necessary to reduce fugitive dust emissions from unpaved roads.

- c. Not allow visible emissions to exceed 20 percent opacity and shall not allow silt loading equal to or greater than 0.33 oz/ft². However, if silt loading is equal to or greater than 0.33 oz/ft², then the owner or operator shall not allow the average percent silt content to exceed 6 percent. Compliance with these requirements shall be determined by the test methods described in Appendix 15.
 - d. Maintain sufficient watering trucks and personnel to operate such trucks to be employed as an interim measure whenever visible emissions or a breakdown in dust suppressant covering are observed at any point along the treated unpaved road system.
 - e. Immediately, but no later than 30 minutes after initial observation of any visible emissions, apply water or chemical dust suppressant to the portion of the unpaved road where the visible emissions were observed.
 - f. Reapply chemical dust suppressant within 24 hours of discovery of any area where the surface chemical dust suppressant coverage has broken down.
 - g. Collect and prevent from becoming airborne any runoff or material from rinsing or sweeping as soon as practicable.
 - h. Comply with a speed limit not to exceed 15 miles per hour for all vehicular traffic. At minimum, speed limit signs shall be posted at all entrances and truck loading and unloading areas and/or at conspicuous areas along the roadway.
11. Concentrate Storage, Handling, and Unloading. The owner or operator shall:
- a. Consolidate and manage all concentrate storage piles in one or more concrete storage pads.
 - b. Store concentrate in an area with a wind fence in accordance with requirements set forth in the fugitive dust plan and pursuant to subsection (D)(2).
 - c. Maintain water sprayers in accordance with requirements set forth in the fugitive dust plan and to ensure the surfaces of concentrate piles are wetted to maintain a nominal 10 percent surface moisture content as determined from representative samples using ASTM Method D2216-10 or other equivalent methods approved by the Department and EPA Region IX.
 - d. Minimize the footprint of the concentrate storage piles by pushing into the stockpile with a front end loader and sweeping open areas of the pads with a self-powered vacuum sweeper at least daily during use.
12. Uncrushed Reverts Handling and Storage. The owner or operator shall:
- a. Manage uncrushed revert material only in areas protected by a wind fence in accordance with requirements set forth in the fugitive dust plan and pursuant to subsection (D)(2).
 - b. Maintain water sprayers in accordance with requirements set forth in the fugitive dust plan and to ensure the surface of uncrushed revert material is wetted with the objective to minimize lead-bearing fugitive dust emissions to the greatest extent practicable.
13. Reverts Crushing Operations and Crushed Reverts Storage. The owner or operator shall:
- a. Crush revert and store crushed revert only on one or more concrete pads.
 - b. Crush revert and store crushed revert only within an area protected by a wind fence in accordance with requirements set forth in the fugitive dust plan and pursuant to subsection (D)(2).
14. Bedding Operations, Including Handling, Storage, and Unloading. The owner or operator shall:
- a. Perform all bedding activities, including loading and unloading of materials to be blended, only within an area protected by a wind fence in accordance with requirements set forth in the fugitive dust plan and pursuant to subsection (D)(2). These activities include the storage and handling areas for potentially lead-bearing fugitive dust-producing material within the bedding plant area.
 - b. Maintain water sprayers in accordance with requirements set forth in the fugitive dust plan and to ensure the surfaces of material in the bedding area is wetted to maintain a nominal 10 percent surface moisture content as determined from representative samples using ASTM Method D2216-10 or other equivalent methods approved by the Department and EPA Region IX.
 - c. Maintain rumble grates at all of the bedding plant's entrances and exits to shake off material on the loader tires as they enter and exit the area. Material that is tracked out of the bedding area must be cleaned up at the end of the workday.
 - d. Operate its bedding activities in a manner designed to avoid any trackout outside an area protected by a wind fence. Areas of material spillage or trackout, whether inside or outside of an area protected by a wind fence, shall be rinsed or cleaned daily.
15. Acid Plant Scrubber Blowdown Drying System.
- a. The owner or operator shall dry acid plant scrubber blowdown solids only in an enclosed system that uses a venturi scrubber, thickener, filter press, and electric dryer that is maintained under negative pressure at all times that materials are being dried.
 - b. The owner or operator shall maintain the negative pressure of the electric dryer using a 2,500 ACFM dryer ventilation fan that must run at all times the electric dryer is operational. Monitoring of the negative pressure shall be demonstrated through the run and stop states of the ventilation fan and electric dryer.
 - c. The acid plant scrubber blowdown drying system shall include the following elements:
 - i. Venturi scrubber slurry that reports to a new thickener.
 - ii. Underflow from the thickener that goes to a filter press for further liquid removal, with the resulting filter cake sent to two electric dryers operating in parallel to provide final drying of the dust cake.
 - iii. Exhaust from the dryers sent to the packed gas cooling tower inlet duct.

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- iv. Dried cake discharged directly into bags.
- d. The owner or operator shall clean all areas previously used for scrubber blowdown drying and no longer use previous areas for scrubber blowdown drying.

E. Contingency Requirements.

1. If the owner or operator does not meet the compliance schedule below in subsection (E)(3), or if the Hayden Lead Nonattainment Area does not attain the 2008 Lead National Ambient Air Quality Standards by the attainment date established in the Act, whichever occurs first, then the owner or operator shall increase the paved road cleaning frequency specified in subsection (D)(9) to twice per day.
2. The owner or operator shall implement the contingency measure in subsection (E)(1) within 60 days of notification

by EPA Region IX of either a failure to meet the compliance schedule in subsection (E)(3) or a failure to attain by the attainment date established in the Act, whichever occurs first.

3. The compliance schedule is as follows. The Fugitive Dust Plan referred to in the compliance schedule shall mean the Fugitive Dust Plan submitted to the Administrator by the owner or operator to comply with requirements set forth in Consent Decree No. CV-15-02206-PHX-DLR, which became effective on December 30, 2015 in the United States District Court for the District of Arizona, as that plan may be later revised pursuant to subsection (C)(3):

Control Measure	Date of Implementation
Implementation of chemical dust suppression for unpaved roads.	Within 30 days of Administrator approval of application intensity and schedules in Fugitive Dust Plan.
Implementation of wind fences for materials piles (uncrushed reverts, reverts crushing and crushed reverts, bedding materials, and concentrate).	Within 120 days of Administrator approval of the Fugitive Dust Plan or the date of completion in the approved Fugitive Dust Plan, whichever is later.
Implementation of water sprays for materials piles (uncrushed reverts, reverts crushing and crushed reverts, bedding materials, and concentrate).	Within 120 days of Administrator approval of the Fugitive Dust Plan or the date of completion in the approved Fugitive Dust Plan, whichever is later.
Implementation of new acid plant scrubber blowdown drying system.	November 30, 2016
Implementation of new primary, secondary, and tertiary hooding systems for converter aisle for purposes of complying with requirements in R18-2-B1301.	July 1, 2018
Implementation of new ventilation system for matte tapping and slag skimming for flash furnace for purposes of complying with requirements in R18-2-B1301.	July 1, 2018

F. Ambient Air and Meteorological Monitoring Requirements.

1. The owner or operator shall conduct ambient air monitoring and sampling for lead as follows:
 - a. At minimum, the owner or operator shall continue to maintain and operate the ambient lead monitors located at ST-14 (the smelter parking lot), ST-23 (Hillcrest area), ST-26 (post office), and ST-18 (next to the concentrate handling area).
 - b. Samples must be collected continuously at all monitor sites specified in subsection (F)(1)(a). For the purposes of this requirement, “continuously” means that 24-hour filters are placed and collected at minimum, every six calendar days at all sites consistent with 40 CFR § 58.12.
 - c. The owner or operator shall follow the Hayden Smelter’s Quality Assurance Project Plan (QAPP) applicable to these monitors.
 - d. The monitors must be operated and maintained in accordance with 40 CFR 58, Appendix A.
 - e. The owner or operator shall submit each filter removed from each monitor to a certified laboratory for analysis no later than 18 calendar days after the filter’s removal. The owner or operator shall ensure

that the laboratory performs its analysis and submits the results to the owner or operator no later than 21 calendar days from the lab’s receipt of the filter.

- f. The owner or operator shall calculate, update, and maintain as a record the following data within 14 calendar days of receipt of any results pertaining to the monitor filters received from a certified lab:
 - i. The total pollutants on the filters collected and analyzed; and
 - ii. Calculations of 30-day rolling average ambient air levels of lead for the ST-23, ST-26, and ST-18 monitors, and 60-day rolling average ambient air levels of lead for the ST-14 monitor, expressed as µg/m³.
- g. The owner or operator shall retain lead samples collected pursuant to this Section for at least three years. The samples shall be stored in individually sealed containers and labeled with the applicable monitor and date. Upon request, the samples shall be provided to the Department within five business days.
2. The owner or operator shall conduct meteorological monitoring as follows:

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- a. Continuously monitor and record wind speed and direction data using equipment and a meteorological station approved by the Department.
 - b. The owner or operator shall calculate and record average wind speed in miles per hour over 15 minutes, rolled each minute.
 - c. Conduct wind speed and direction measurements using methods in accordance with EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements, Version 2.0.
3. The ambient air and meteorological monitoring stations required by this Section may be discontinued at the end of three full calendar years after the Hayden Lead Nonattainment Area is redesignated attainment for the 2008 Lead National Ambient Air Quality Standards.
- G. Compliance Demonstration Requirements.** The owner or operator shall demonstrate compliance with this Section by complying with all requirements in the fugitive dust plan pursuant to subsection (C)(2) and implementing all housekeeping and performance requirements pursuant to subsection (D).
- H. Recordkeeping.**
1. The owner or operator shall maintain the following records for at least five years and keep on-site for at least two years:
 - a. Current and past fugitive dust plans required by subsection (C)(2).
 - b. Physical inspection sheets, checklists, and logsheets for inspections conducted in accordance with subsection (D)(6).
 - c. All records of opacity and stabilization tests, if any, conducted in accordance with subsection (D)(10)(c).
 - d. All records of surface moisture content tests, if any, conducted in accordance with subsection (D)(11), subsection (D)(13), and subsection (D)(14).
 - e. All records of major maintenance activities and inspections conducted on monitors required by subsection (F).
 - f. All records of quality assurance and quality control activities for the monitors required by subsection (F).
 - g. All air quality monitoring samples, rolling averages of ambient lead concentrations and necessary calculations, and data required by subsection (F).
 - h. All records of wind data from the meteorological station required by subsection (F).
 - i. All records of any periods during which a monitoring device required by subsection (F) is inoperative or not operating correctly.
 - j. All records of reports and notifications required by subsection (I).
 2. All of the following records maintained for the purposes of the fugitive dust plan required by subsection (C)(2) must be maintained in a recordkeeping log or recordkeeping system. As part of the records, the owner or operator shall include the dates and times for each of the following observations or activities, the name of the employee documenting each activity or observation, and the nature and location of each observation activity:
 - a. Each instance of observed visible emissions of 15 percent opacity or greater, along with a description of any corrective action undertaken and its success.
 - b. Water sprayer operations, including timing and intensity of watering to be captured in the water sprayer recordkeeping system.
 - c. Timing, location, type, and amount of chemical suppressant and water applied to unpaved roads, and a description of the nature and timing of any additional corrective action taken, as necessary, to minimize emissions to the greatest extent practicable.
 - d. Timing and location of all sweeping and cleaning of trackout or spillage material.
 - e. Timing and location of all washdown of concrete areas.
 - f. Timing and location of sump cleanouts.
 - g. Results of all visible emissions surveys and Reference Method 9 readings.
 - h. Appropriate records for operating conditions, including electric dryer ventilation fan start and stop times for the newly designed acid plant scrubber blowdown drying system.
 - i. Calibration records for all measurement devices, including maintenance of manufacturer's manuals or other documentation for suggested calibration schedules and accuracy levels for each measurement device.
 - j. Dates, times, and descriptions of deviations when the owner or operator's operations was carried out in a manner inconsistent with the fugitive dust plan required by subsection (C)(2).
- I. Reporting.** Within 30 days after the end of each calendar-year quarter, the owner or operator shall submit a report to the Department covering the prior quarter that includes the following:
1. All instances where observed fugitive emissions coming from sources covered in this Section were 15 percent or greater.
 2. The date of all high wind events, with an identification of the location of the reading, wind speed, and duration of the event, and a description of actions taken as a result of the event on a source-by-source basis.
 3. All instances where corrective action was required with identification of the emission source involved, what triggered the corrective action, what action the owner or operator undertook to abate or mitigate the problem, and whether the corrective action achieved the intended results.
 4. A summary of all times when the electronic recordkeeping system was not recording data, and a summary and indication of the period when recorded data was outside of established operating parameters.
 5. A summary of progress of all new construction, installation, upgrades, or modifications to equipment or structures at the facility required by the fugitive dust plan and subsection (D), including dates of commencement and completion of construction, dates of operations of new or modified equipment or structures, and dates old or outdated equipment or structures were permanently retired.
 6. Raw monitoring data and calculated ambient lead concentrations from the ambient air monitoring stations required by subsection (F).

Historical Note

New Section R18-2-B1301.01 made by final rulemaking at 23 A.A.R. 767, effective December 1, 2018 (Supp. 17-1).

R18-2-B1302. Limits on SO₂ Emissions from the Hayden Smelter**A. Applicability.**

1. This Section applies to the owner or operator of the Hayden Smelter. It establishes limits on sulfur dioxide

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- a. Continuously monitor and record wind speed and direction data using equipment and a meteorological station approved by the Department.
 - b. The owner or operator shall calculate and record average wind speed in miles per hour over 15 minutes, rolled each minute.
 - c. Conduct wind speed and direction measurements using methods in accordance with EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Measurements, Version 2.0.
3. The ambient air and meteorological monitoring stations required by this Section may be discontinued at the end of three full calendar years after the Hayden Lead Nonattainment Area is redesignated attainment for the 2008 Lead National Ambient Air Quality Standards.
- G. Compliance Demonstration Requirements.** The owner or operator shall demonstrate compliance with this Section by complying with all requirements in the fugitive dust plan pursuant to subsection (C)(2) and implementing all housekeeping and performance requirements pursuant to subsection (D).
- H. Recordkeeping.**
1. The owner or operator shall maintain the following records for at least five years and keep on-site for at least two years:
 - a. Current and past fugitive dust plans required by subsection (C)(2).
 - b. Physical inspection sheets, checklists, and logsheets for inspections conducted in accordance with subsection (D)(6).
 - c. All records of opacity and stabilization tests, if any, conducted in accordance with subsection (D)(10)(c).
 - d. All records of surface moisture content tests, if any, conducted in accordance with subsection (D)(11), subsection (D)(13), and subsection (D)(14).
 - e. All records of major maintenance activities and inspections conducted on monitors required by subsection (F).
 - f. All records of quality assurance and quality control activities for the monitors required by subsection (F).
 - g. All air quality monitoring samples, rolling averages of ambient lead concentrations and necessary calculations, and data required by subsection (F).
 - h. All records of wind data from the meteorological station required by subsection (F).
 - i. All records of any periods during which a monitoring device required by subsection (F) is inoperative or not operating correctly.
 - j. All records of reports and notifications required by subsection (I).
 2. All of the following records maintained for the purposes of the fugitive dust plan required by subsection (C)(2) must be maintained in a recordkeeping log or recordkeeping system. As part of the records, the owner or operator shall include the dates and times for each of the following observations or activities, the name of the employee documenting each activity or observation, and the nature and location of each observation activity:
 - a. Each instance of observed visible emissions of 15 percent opacity or greater, along with a description of any corrective action undertaken and its success.
 - b. Water sprayer operations, including timing and intensity of watering to be captured in the water sprayer recordkeeping system.
 - c. Timing, location, type, and amount of chemical suppressant and water applied to unpaved roads, and a description of the nature and timing of any additional corrective action taken, as necessary, to minimize emissions to the greatest extent practicable.
 - d. Timing and location of all sweeping and cleaning of trackout or spillage material.
 - e. Timing and location of all washdown of concrete areas.
 - f. Timing and location of sump cleanouts.
 - g. Results of all visible emissions surveys and Reference Method 9 readings.
 - h. Appropriate records for operating conditions, including electric dryer ventilation fan start and stop times for the newly designed acid plant scrubber blowdown drying system.
 - i. Calibration records for all measurement devices, including maintenance of manufacturer's manuals or other documentation for suggested calibration schedules and accuracy levels for each measurement device.
 - j. Dates, times, and descriptions of deviations when the owner or operator's operations was carried out in a manner inconsistent with the fugitive dust plan required by subsection (C)(2).
- I. Reporting.** Within 30 days after the end of each calendar-year quarter, the owner or operator shall submit a report to the Department covering the prior quarter that includes the following:
1. All instances where observed fugitive emissions coming from sources covered in this Section were 15 percent or greater.
 2. The date of all high wind events, with an identification of the location of the reading, wind speed, and duration of the event, and a description of actions taken as a result of the event on a source-by-source basis.
 3. All instances where corrective action was required with identification of the emission source involved, what triggered the corrective action, what action the owner or operator undertook to abate or mitigate the problem, and whether the corrective action achieved the intended results.
 4. A summary of all times when the electronic recordkeeping system was not recording data, and a summary and indication of the period when recorded data was outside of established operating parameters.
 5. A summary of progress of all new construction, installation, upgrades, or modifications to equipment or structures at the facility required by the fugitive dust plan and subsection (D), including dates of commencement and completion of construction, dates of operations of new or modified equipment or structures, and dates old or outdated equipment or structures were permanently retired.
 6. Raw monitoring data and calculated ambient lead concentrations from the ambient air monitoring stations required by subsection (F).

Historical Note

New Section R18-2-B1301.01 made by final rulemaking at 23 A.A.R. 767, effective December 1, 2018 (Supp. 17-1).

R18-2-B1302. Limits on SO₂ Emissions from the Hayden Smelter**A. Applicability.**

1. This Section applies to the owner or operator of the Hayden Smelter. It establishes limits on sulfur dioxide

emissions from the Hayden Smelter and monitoring, recordkeeping and reporting requirements for those limits.

2. Effective date. Except as otherwise provided, the requirements of this Section shall become applicable on the earlier of July 1, 2018 or 180 days after completion of all project improvements authorized by Significant Permit Revision No. 60647.
- B. Definitions.** In addition to definitions contained in R18-2-101 and R18-2-B1301, the following definitions apply to this rule.
1. “Continuous emissions monitoring system” or “CEMS” means the total equipment, required under the emission monitoring provisions in this Chapter, used to sample, condition (if applicable), analyze, and to provide, on a continuous basis, a permanent record of emissions.
 2. “Operating day” means any calendar day in which any of the following occurs:
 - a. Concentrate is smelted in the smelting furnace;
 - b. Copper or sulfur bearing materials are processed in the converters;
 - c. Blister or scrap copper is processed in the anode furnaces;
 - d. Molten metal, including slag, matte or blister copper, is transferred between vessels; or
 - e. Molten metal is cast into anodes or other intermediate or final products.
 3. “Out of control period” means the time that begins with the completion of the fifth, consecutive, daily calibration drift check with a calibration drift in excess of two times the allowable limit, or the time corresponding to the completion of the daily calibration drift check preceding the daily calibration drift check that results in a calibration drift in excess of four times the allowable limit, and the time that ends with the completion of the calibration check following corrective action that results in the calibration drifts at both the zero (or low-level) and high-level measurement points being within the corresponding allowable calibration drift limit.
- C. Sulfur Dioxide Emissions Limitations.**
1. Emissions from the Main Stack shall not exceed 1069.1 pounds per hour on a 14-operating day average unless 1,518 pounds or less is emitted during each hour of the 14-operating day period.
 2. The owner and operator shall not cause to be discharged into the atmosphere from any affected unit subject to 40 CFR 60 subpart P any gases which contain sulfur dioxide in excess of the limit set forth in 40 CFR § 60.163(a) (as in effect on July 1, 2016 and no later editions).
- D. Operational Standards.**
1. Process equipment and control device operations. At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate smelter processes and associated emission control and/or control equipment in a manner consistent with good air pollution control practices for minimizing SO₂ emissions to the levels required by subsection (C). Determination of whether acceptable operating and maintenance procedures are being used will be based on all information available to the Director and EPA Region IX, which may include, but is not limited to, monitoring results, review of operating and maintenance procedures and records, and inspection of the relevant equipment.
 2. Capture system and control device operations and maintenance plan. The owner or operator shall develop and implement an operations and maintenance plan for each capture system and/or control device used to ventilate or control process gas or emissions from the flash furnace including matte tapping, slag skimming, and slag return operations; converter primary hoods, converter secondary hoods, tertiary ventilation system, and anode refining operations. The operations and maintenance plan must address the following requirements as applicable to each capture system and/or control device.
 - a. Monitoring devices. The plan shall provide for installation, operation, calibration, and maintenance of appropriate monitoring devices to measure and record operating limit values or settings at all times the required capture and control system is operating, except during periods of monitor calibration, repair and malfunction. The initial plan shall provide for volumetric flow monitoring on the vent gas baghouse (inlet or outlet), each converter primary hood, each converter secondary hood, the tertiary ventilation system and the anode furnace baghouse (inlet or outlet). All monitoring devices shall be accurate within +/-10 percent and calibrated according to manufacturer’s instructions. If direct measurement of the exhaust flow is infeasible due to physical limitations or exhaust characteristics, the owner or operator may propose a reliable equivalent method for approval. Initial monitoring may be adjusted as provided in subsection (D)(2)(e). Dampers that are manually set and remain in the same position while the capture system is operating are exempt from these monitoring requirements. Capture system damper position setting(s) shall be specified in the plan.
 - b. Operational limits. The owner or operator shall establish operating limits in the operations and maintenance plan for the capture systems and/or control devices that are representative and reliable indicators of the performance of the capture system and control device operations. The initial operating limits may be adjusted as provided in subsection (D)(2)(e). Initial operating limits shall include the following:
 - i. Identification of those modes of operation when the double dampers between the flash furnace vessel and the vent gas system will be closed and the interstitial space evacuated to the acid plant.
 - ii. A minimum air flow for the furnace ventilation system and associated damper positions for each matte tapping hood or slag skimming hood when operating to ensure that the operation(s) are within the confines or influence of the capture system.
 - iii. A minimum air flow for the secondary hood baghouse and associated damper positions for each slag return hood to ensure that the operation is within the confines or influence of the capture system’s ventilation draft during times when the associated process is operating.
 - iv. A minimum air infiltration ratio for the converter primary hoods of 1:1 averaged over 24 converter Blowing hours, rolled hourly measured as volumetric flow in primary hood less the volumetric flow of tuyere Blowing compared to the volumetric flow of tuyere Blowing.
 - v. A minimum secondary hood exhaust rate of 35,000 SCFM during converter Blowing, aver-

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- aged over 24 converter Blowing hours, rolled hourly.
- vi. A minimum secondary hood exhaust rate of 133,000 SCFM during all non-Blowing operating hours, averaged over 24 non-Blowing hours, rolled hourly.
 - vii. A minimum negative pressure drop across the secondary hood when the doors are closed equivalent to 0.007 inches of water.
 - viii. A minimum exhaust rate on the tertiary hooding of 400,000 ACFM during all times material is processed in the converter aisle, averaged over 24 hours and rolled hourly.
 - ix. Fan amperes or minimum air flow for the anode furnace baghouse and associated damper positions for each anode furnace hood to ensure that the anode furnace off-gas port is within the confines or influence of the capture system's ventilation draft during times when the associated furnace is operating.
 - x. The anode furnace charge mouth shall be kept covered when the tuyeres are submerged in the metal bath except when copper is being charged to or transferred from the furnace.
 - xi. The temperatures of the acid plant catalyst bed, which shall at minimum, meet the manufacturer's recommendations.
 - xii. The acid plant catalyst replenishment criteria, which shall at minimum, meet the manufacturer's recommendations.
- c. Preventative maintenance. The owner or operator must perform preventative maintenance on each capture system and control device according to written procedures specified in the operation and maintenance plan. The procedures must include a preventative maintenance schedule that is consistent with the manufacturer's or engineer's instructions, or operator's experience working with equipment, and frequency for routine and long-term maintenance. This provision does not prohibit additional maintenance beyond that required by the plan.
 - d. Inspections. The owner or operator must perform inspections in accordance with written procedures in the operations and maintenance plan for each capture system and control device that are consistent with the manufacturer's, engineer's or operator's instructions for each system and device.
 - e. Plan development and revisions.
 - i. The owner or operator shall develop and keep current the plan required by this Section. Any plan or plan revision shall be consistent with this Section, shall be designed to ensure that the capture and control system performance conforms to the attainment demonstration in the Hayden 2010 Sulfur Dioxide National Ambient Air Quality Standards Nonattainment Area State Implementation Plan (SIP), and shall be submitted to the Department for review. Any plan or plan revision submitted shall include the associated manufacturer's recommendations and/or instructions used for capture system and control device operations and maintenance.
 - ii. The owner or operator shall submit the initial plan to the Department no later than May 1, 2018 and shall include the initial volumetric flow monitoring provisions in subsection (D)(2)(a), the initial operational limits in subsection (D)(2)(b), the preventative maintenance procedures in subsection (D)(2)(c), and the inspection procedures in subsection (D)(2)(d).
- iii. The owner or operator shall submit to the Department for approval a plan revision with changes, if any, to the initial volumetric flow monitoring provisions in subsection (D)(2)(a) and initial operational limits in subsection (D)(2)(b) not later than six months after completing a fugitive emissions study conducted in accordance with Appendix 14. The Department shall submit the approved changes to the volumetric flow monitoring provisions and operational limits pursuant to this subsection to EPA Region IX as a SIP revision not later than 12 months after completion of a fugitive emissions study.
 - iv. Other plan revisions may be submitted at any time when necessary. All plans and plan revisions shall be designed to achieve operation of the capture system and/or control device consistent with the attainment demonstration in the Hayden 2010 Sulfur Dioxide National Ambient Air Quality Standards Nonattainment Area SIP. Except for changes to the volumetric flow monitoring provisions in subsection (D)(2)(a) and operational limits in subsection (D)(2)(b), which shall require prior approval, plans and plan revisions may be implemented upon submittal and shall remain in effect until superseded or until disapproved by the Department. Disapprovals are appealable Department actions.
3. Emissions from the anode furnace baghouse stack shall be routed to the Main Stack.
- E. Monitoring.**
1. To determine compliance with subsection (C)(1) the owner or operator of the Hayden Smelter shall install, calibrate, maintain, and operate a CEMS for continuously monitoring and recording SO₂ concentrations and stack gas volumetric flow rates at the following locations.
 - a. The exit of the acid plant;
 - b. The exit of the secondary hood particulate control device after the High Surface Area (HSA) lime injection system;
 - c. The exit of the flash furnace particulate control device after the HSA lime injection system;
 - d. The tertiary ventilation system prior to mixing with any other exhaust streams; and
 - e. The anode furnace baghouse stack prior to mixing with any other exhaust streams.
 2. Except during periods of systems breakdown, repairs, maintenance, out-of-control periods, calibration checks, and zero and span adjustments, the owner or operator shall continuously monitor SO₂ concentrations and stack gas volumetric flow rates at each location in subsection (E)(1).
 3. For purposes of this section, continuous monitoring means the taking and recording of at least one measurement of SO₂ concentration and stack gas flow rate reading from the effluent of each affected stack, outlet, or other approved measurement location in each 15-minute period when the associated process units are operating. Fifteen-minute periods start at the beginning of each

- clock hour, and run consecutively. All CEMS required by subsection (E)(1) shall complete at least one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.
4. If the owner or operator can demonstrate to the Director that measurement of stack gas volumetric flow rate in the outlet of any particular piece of SO₂ control equipment would yield inaccurate results or would be technologically infeasible, then the Director may allow measurement of the flow rate at an alternative sampling point.
 5. The owner or operator shall demonstrate that the CEMS required by subsection (E)(1) meet all of the following requirements:
 - a. The SO₂ CEMS installed and operated under this Section meets the requirements of 40 CFR 60, Appendix B, Performance Specification 2 and Performance Specification 6. The CEMS on the anode furnace baghouse stack and tertiary ventilation system shall complete an initial Relative Accuracy Test Audit (RATA) in accordance with Performance Specification 2. The RATA runs shall be tied to when the anode furnace is in use and, for the tertiary system, when the converters are in operation and/or material is being transferred in the converter aisle. Asarco may petition the Department and EPA Region IX on the criteria for subsequent RATAs for the anode furnace baghouse stack or tertiary ventilation system CEMS. The petition shall include submittal of CEMS data during the year.
 - b. The SO₂ CEMS installed and operated under this Section meets the quality assurance requirements of 40 CFR 60, Appendix F.
 - c. The owner or operator shall notify the Director in writing at least 30 days in advance of the start of the relative accuracy test audit (RATA) performed on the CEMS.
 - d. The Director shall approve the location of all sampling points for monitoring SO₂ concentration and stack gas volumetric flow rates and the appropriate span values for the monitoring systems. This approval shall be in writing before installation and operation of the measurement instruments.
 - e. The measurement system installed and used under this subsection is subject to the manufacturer's recommended zero adjustment and calibration procedures at least once per operating day unless the manufacturer specifies or recommends calibration at shorter intervals, in which case the owner or operator shall follow those specifications or recommendations. The owner or operator shall make available a record of these procedures that clearly shows instrument readings before and after zero adjustment and calibration.
 - f. The owner or operator shall maintain on hand and ready for immediate installation sufficient spare parts or duplicate systems for the CEMS required by this Section to allow for the replacement within six hours of any monitoring equipment part that fails or malfunctions during operation.
 6. The owner or operator of the Hayden Smelter may petition the Department to substitute annual stack testing for the tertiary ventilation or the anode furnace baghouse stack CEMS if the owner or operator demonstrates, for a period of two years, that either CEMS contribute(s) less than five percent individually of the total sulfur dioxide emissions. The Department must determine the demonstration adequate to approve the petition. Annual stack testing shall use EPA Methods 1, 4, and 6C in 40 CFR 60 Appendix A or an alternate method approved by the Department and EPA Region IX. Annual stack testing shall commence no later than the one year after the date the continuous emission monitoring system was removed. The owner or operator shall submit a test protocol to the Department at least 30 days in advance of testing. The protocol shall provide for three or more 24-hour runs unless the owner or operator justifies a different period and the Department approves such different period. Reports of testing shall be submitted to the Department no later than 60 days after testing or 30 days after receipt, whichever is later. The report shall provide an emissions rate, in the form of a pound per hour or pound per unit of production factor, that shall be used in the compliance demonstration in subsection (F)(1). Except as provided herein, the owner or operator shall otherwise comply with section R18-2-312 in conducting such testing.
- F. Compliance Demonstration Requirements.**
1. For purposes of determining compliance with the emission limit in subsection (C)(1) the owner or operator shall calculate emissions for each operating day as follows:
 - a. Sum the hourly pounds of SO₂ vented to each uncontrolled shutdown ventilation flue and through each monitoring point listed in subsection (E)(1) for the current operating day and the preceding 13-operating days to calculate the total pounds of SO₂ emissions over the 14-operating day averaging period, as applicable.
 - b. Divide the total amount of SO₂ emissions calculated from subsection (F)(1)(a) by 336 to calculate the 14-operating day average SO₂ emissions.
 - c. If the calculation in subsection (F)(1)(b) exceeds 1069.1 pounds per hour, then the owner or operator shall sum the hourly pounds of SO₂ vented to each uncontrolled shutdown ventilation flue and through each monitoring point listed in subsection (E)(1) for each hour of the current operating day and each hour of the preceding 13-operating days to ascertain if any hour exceeded 1,518 pounds per hour.
 2. When no valid hour or hours of data have been recorded by a continuous monitoring system required by subsections (E)(1) and (E)(2) and the associated process unit is operating, the owner or operator shall calculate substitute data for each such period according to the following procedures:
 - a. For a missing data period less than or equal to 24 hours, substitute the average of the hourly SO₂ concentrations recorded by the system for the hour before and the hour after the missing data period.
 - b. For a missing data period greater than 24 hours, substitute the greater of:
 - i. The 90th percentile hourly SO₂ concentrations recorded by the system during the previous 720 quality-assured monitor operating hours.
 - ii. The average of the hourly SO₂ concentrations recorded by the system for the hour before and the four hours after the missing data period.
 - c. Notwithstanding subsections (F)(3)(a) and (F)(3)(b), the owner or operator may present any credible evidence as to the quantity or concentration of emissions during any period of missing data.
 3. The owner or operator shall determine compliance with the requirements in subsection (D)(2) as follows:

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- a. Maintaining and operating the emissions capture and control equipment in accordance with the capture system and control device operations and maintenance plan required in subsection (D)(2) and recording operating parameters for capture and control equipment as required in subsection (D)(2)(b); and
 - b. Conducting a fugitive study in accordance with Appendix 14 starting not later than 6 months after completion of the Converter Retrofit Project authorized by Significant Permit Revision No. 60647. The fugitive study shall demonstrate, as set forth in Appendix 14, that fugitive emissions from the smelter are consistent with estimates used in the attainment demonstration in the Hayden 2010 Sulfur Dioxide National Ambient Air Quality Standards Nonattainment Area SIP.
4. The owner or operator shall include periods of startup, shutdown, malfunction, or other upset conditions when determining compliance with the emission limits in subsection (C).
5. The owner and operator shall demonstrate compliance with the limit in subsection (C)(2) in accordance with 40 CFR §§ 60.165 and 60.166 (as in effect on July 1, 2016 and not later editions).
- G. Recordkeeping.**
- 1. The owner or operator shall maintain a record of each operation and maintenance plan required under subsection (D)(2).
 - 2. The owner or operator shall maintain the following records for at least five years:
 - a. All measurements from the continuous monitoring system required by subsection (E)(1), including the date, place, and time of sampling or measurement; parameters sampled or measured; and results. All measurements will be calculated daily.
 - b. All records of quality assurance and quality control activities for emissions measuring systems required by subsection (E)(1).
 - c. All records of calibration checks, adjustments, maintenance, and repairs conducted on the continuous monitoring systems required by subsection (E); including records of all compliance calculations required by subsection (F).
 - d. All records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of concentrate drying, smelting, converting, anode refining and casting emission units; any malfunction of the associated air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device required by subsection (E)(1) is inoperative or not operating correctly.
 - e. All records of planned and unplanned shutdown ventilation flue utilization events and calculations used to determine emissions from shutdown ventilation flue utilization events if the owner or operator chooses to use the alternative compliance determination method.
 - f. All records of major maintenance activities and inspections conducted on emission units, capture system, air pollution control equipment, and CEMS, including those set forth in the operations and maintenance plan required by subsection (D)(2).
 - g. All records of operating days and production records required for calculations in subsection (F).
- h. All records of fugitive emissions studies and study protocols conducted in accordance with Appendix 14.
 - i. All records of reports and notifications required by subsection (H).
- H. Reporting.**
- 1. The owner or operator shall notify the Director in writing at least 30 days in advance of the start of relative accuracy test audit (RATA) procedures performed on the continuous monitoring systems required by subsection (E)(1).
 - 2. Within 30 days after the end of each calendar quarter, the owner or operator shall submit a data assessment report to the Director in accordance with 40 CFR Part 60, Appendix F for the continuous monitoring systems required by subsection (E).
 - 3. The owner or operator shall submit an excess emissions and monitoring systems performance report or summary report form in accordance with 40 CFR § 60.7(c) to the Director quarterly for the continuous monitoring systems required by subsection (E)(1). Excess emissions means any 14-operating day average as calculated in subsection (F) in excess of the emission limit in subsection (C)(1), any period in which the capture and control system was operating outside of its parameters specified in the capture system and control device operation and maintenance plan in subsection (D)(2). For any 14-operating day period exceeding 1069.1 pounds per hour that the owner or operator claims does not exceed the limit in subsection (C)(1) because all hours in the operating period are below 1,518 pounds per hour, the owner or operator shall submit the CEMS data for each hour during that period. All reports shall be postmarked by the 30th day following the end of each calendar quarter time period.
 - 4. The owner or operator shall provide the following to the Director:
 - a. The owner or operator shall notify the Director of commencement of construction of any equipment necessary to comply with the operational or emission limits.
 - b. The owner or operator shall submit semiannual progress reports on construction of any such equipment postmarked by July 30 for the preceding January-June period and January 30 for the preceding July-December period.
 - c. The owner or operator shall submit notification of initial startup of any such equipment within 15 business days of such startup.
- I. Preconstruction review.** This Section is determined to be Reasonably Available Control Technology (RACT) for SO₂ emissions from the operations subject to subsection (C) for purposes of minor source NSR requirement addressed in R18-2-334.

Historical Note

New Section R18-2-B1302 made by final rulemaking at 23 A.A.R. 767, effective on the earlier of July 1, 2018, or 180 calendar days after completion of all Converter Retrofit Project improvements authorized by Significant Permit Revision No. 60647 (Supp. 17-1).

PART C. MIAMI, ARIZONA, PLANNING AREA~~R18-2-C1301. Reserved~~**Historical Note**

~~New Section R18-2-C1301 reserved at 23 A.A.R. /67~~

~~(Supp. 17-1)~~**R18-2-C1302. Limits on SO₂ Emissions from the Miami Smelter****A. Applicability.**

1. This Section applies to the owner or operator of the Miami Smelter. It establishes limits on SO₂ emissions from the Miami Smelter and monitoring, recordkeeping and reporting requirements for those limits.
2. Effective date. Except as otherwise provided, the provisions of this Section shall take effect on the later of the effective date of the Administrator's action approving it as part of the state implementation plan or January 1, 2018.

B. Definitions. In addition to general definitions contained in R18-2-101, the following definitions apply to this rule.

1. "Capture system" means the collection of components used to capture gases and fumes released from one or more emission points, and to convey the captured gases and fumes to one or more control devices. A capture system may include, but is not limited to, the following components as applicable to a given capture system design: duct intake devices, hoods, enclosures, ductwork, dampers, manifolds, plenums, and fans.
2. "Electric furnace" means a furnace in which copper matte and slag are heated by electrical resistance without the mechanical introduction of air or oxygen.
3. "IsaSmelt[®] furnace" means a furnace in which air, oxygen, and fuel are injected through a top-submerged lance into a molten slag bath to produce slag and copper matte.
4. "Miami Smelter" means the primary copper smelter located near Miami, Gila County, Arizona at latitude 33°24'50"N and longitude 110°51'25"W.
5. "Out of control period" means the time that begins with the completion of the fifth, consecutive, daily calibration drift check with a calibration drift in excess of two times the allowable limit, or the time corresponding to the completion of the daily calibration drift check preceding the daily calibration drift check that results in a calibration drift in excess of four times the allowable limit, and the time that ends with the completion of the calibration check following corrective action that results in the calibration drifts at both the zero (or low-level) and high-level measurement points being within the corresponding allowable calibration drift limit.
6. "Operating day" means any calendar day in which any of the following occurs:
 - a. Concentrate is smelted in the Electric furnace or IsaSmelt[®] furnace;
 - b. Copper or sulfur bearing materials are processed in the converters;
 - c. Blister or scrap copper is processed in the anode furnaces or mold vessel;
 - d. Molten metal, including slag, matte or blister copper, is transferred between vessels;
 - e. Molten metal is cast into molds, anodes, or other intermediate or final products;
 - f. Power is provided to the electric furnace to make or maintain a molten bath; or
 - g. The anode furnace is heated to make or maintain a molten bath.

C. Sulfur Dioxide Emission Limitations. Combined SO₂ emissions from the tail gas stack, vent fume stack, aisle scrubber stack, bypass stack, and smelter roofline fugitives shall not exceed 142.45 pounds per hour on a 30-day rolling average basis.**D. Operational Standards.**

1. Process Equipment and control device operations. At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate smelter processes and associated emission control devices in a manner consistent with good air pollution control practices for minimizing SO₂ emissions from the process gases associated with the IsaSmelt[®] furnace, electric furnace, and converters at least to the levels required by subsection (C). Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director and EPA Region IX, which may include, but is not limited to, monitoring results, review of operating and maintenance procedures and records, and inspection of the relevant equipment.
2. Capture system and control device operations and maintenance plan. The owner or operator shall develop and implement an operations and maintenance plan for each capture system and control device used to ventilate or control process gas or emissions associated with the IsaSmelt[®] furnace, electric furnace, and converters. The owner or operator shall submit the initial plan to the Department and EPA Region IX for review and approval by July 1, 2017.
 - a. The operations and maintenance plan must address the following requirements as applicable to each capture system and control device:
 - i. Monitoring devices. The plan shall provide for installation, operation, calibration, and maintenance of appropriate monitoring devices to measure and record operating limit or range values at all times the required system is operating. Dampers that are manually set and remain in the same position while the capture system is operating are exempt from these monitoring requirements.
 - ii. Operational limits and ranges. The owner or operator shall establish operating limits and ranges in the plan for each capture system and control device that are representative and reliable indicators of capture system performance and control device operation. If selected as an operational limit or range, capture system damper position settings shall be specified in the plan.
 - iii. Preventative maintenance. The owner or operator must perform preventative maintenance for each capture system and control device according to written procedures in the plan. The procedures must include a preventative maintenance schedule that is consistent with the manufacturer's or engineer's instructions and specified frequency for routine and long-term maintenance.
 - iv. Inspections. The owner or operator must perform inspections in accordance with written procedures in the plan for each capture system and control device, including position verification of any manual damper settings specified in the plan, that are consistent with the manufacturer's or engineer's instructions for each system and device.
 - b. The owner or operator shall operate and maintain each capture system and each control device in accordance with the plan required by subsection

(D)(2) and as approved by the Department and EPA Region IX, except as provided herein. Until receiving initial approval of the plan, the owner or operator shall operate and maintain each capture system and each control device in accordance with the plan as initially submitted pursuant to subsection (D)(2). The owner or operator shall submit plan revisions for review by the Department and EPA Region IX. At any time, the Department and/or EPA Region IX may require the owner or operator to revise the plan if determined to be inconsistent with subsection (D)(2)(a). Within 60 days of receiving written notification from the Department or EPA Region IX specifying such inconsistency, the owner or operator shall submit a proposal to the Department and EPA Region IX that addresses the inconsistency. The owner or operator shall maintain a current copy of the plan onsite and available for review and inspection upon request.

E. Monitoring.

1. To determine compliance with subsection (C), the owner or operator shall install, calibrate, maintain, and operate continuous monitoring systems to monitor and record SO₂ concentrations and stack gas volumetric flow rates at the following locations.
 - a. The acid plant tail gas stack;
 - b. The vent fume stack;
 - c. The aisle scrubber stack; and
 - d. The bypass stack.
2. To determine compliance with the emission limit in subsection (C), the owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system to monitor and record fugitive SO₂ concentrations at the Miami Smelter roofline.
3. Except during periods of continuous monitoring system breakdown, repairs, maintenance, out-of-control periods, calibration checks, and zero and span adjustments, the owner or operator shall continuously monitor SO₂ concentrations and stack gas volumetric flow rates at each location specified in subsection (E)(1) and use the monitored concentrations and volumetric flow rates when demonstrating compliance with the SO₂ emission limit in subsection (C) in accordance with subsection (F).
4. Except during periods of continuous monitoring system breakdown, repairs, maintenance, out-of-control periods, calibration checks and zero and span adjustments, the owner or operator shall continuously monitor fugitive SO₂ emissions at the Miami Smelter roofline and use the monitored concentrations and volumetric flow rates when demonstrating compliance with the SO₂ emission limit in subsection (C) in accordance with subsection (F).
5. For purposes of subsections (E)(3) and (E)(4), continuous monitoring means the taking and recording of at least one measurement of SO₂ concentration and stack gas flow rate reading from the effluent of each affected stack, outlet, or other approved measurement location in each 15-minute period when the associated process units are operating. Fifteen-minute periods start at the beginning of each clock hour, and run consecutively. All continuous monitoring systems required by subsection (E)(1) shall complete at least one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.
6. ~~If the owner or operator can demonstrate to the Director and EPA Region IX that measurement of stack gas volumetric flow rate in the outlet of any particular piece of~~

~~SO₂ control equipment would yield inaccurate results or would be technologically infeasible, then the Director and EPA Region IX may allow measurement of the flow rate at an alternative sampling point.~~

7. The owner or operator shall demonstrate that the continuous monitoring systems required by subsection (E)(1) meet all of the following requirements:
 - a. Each SO₂ continuous monitoring system shall meet the specifications under 40 CFR 60, Appendix B, Performance Specification 6.
 - b. Each SO₂ continuous monitoring system installed and operated under this Section shall also meet the quality assurance requirements of 40 CFR 60, Appendix F, Procedure 1.
 - c. The owner or operator shall notify the Director in writing at least 30 days in advance of the start of the relative accuracy test audit (RATA) procedures performed on each continuous monitoring system.
 - d. The Director shall approve the location of all sampling points for monitoring SO₂ concentrations and stack gas volumetric flow rates in writing before installation and operation of measurement instruments.
 - e. The span of each continuous monitoring system for the acid plant tail stack, vent fume stack, and aisle scrubber stack shall be set at a SO₂ concentration of zero to 0.20 percent by volume.
 - f. The span of the continuous monitoring system for the bypass stack shall be set at a SO₂ concentration of zero to 20 percent by volume.
 - g. The zero (or low-level value between 0 and 20 percent of the span value) and span (50 to 100 percent of span value) calibration drifts shall be checked at least once each operating day in accordance with a written procedure. The zero and span must, at a minimum, be adjusted whenever either the 24-hour zero drift or the 24-hour span drift exceeds two times the limit in 40 CFR Part 60, Appendix B, Performance Specification 2. The system must allow the amount of the excess zero and span drift to be recorded and quantified.
 - h. The owner or operator shall maintain on hand and ready for immediate installation sufficient spare parts or duplicate systems for the continuous monitoring system equipment required by this Section to allow for the replacement within six hours of any monitoring system equipment part that fails or malfunctions during operation.
8. The owner or operator shall develop and implement a roofline fugitive emissions monitoring plan for the continuous monitoring system required by subsection (E)(2). The owner or operator shall submit the initial plan to the Department and EPA Region IX for review and approval by July 1, 2017.
 - a. The roofline fugitive emissions monitoring plan must address the following requirements:
 - i. The continuous monitoring system required by subsection (E)(2) must include measurement of fugitive emissions from, at a minimum, the Converter, Electric Furnace, Anode Furnace, and IsaSmelt[®] systems that is representative of total fugitive emissions.
 - ii. Each measurement system shall include at least one SO₂ analyzer and sufficient sampling locations that ensure collection of a representative sample along the roof monitor for each monitor

- system. The number of sample probes and their locations for each monitoring system shall account for the physical configuration of the vent, the locations of emitting activities relative to the vent, and heat generated by the equipment served by the vent.
- iii. Each measurement system shall include validation of adequate velocity for flow measurements and sufficient flow and temperature sensors to ensure calculation of representative exhaust flows through each vent. The number of such sensors and their locations for each monitoring system shall account for the physical configuration of the vent, the locations of emitting activities relative to the vent, and heat generated by the equipment served by the vent.
 - iv. Each measurement system shall include an on-site data collection system that continuously logs and stores the measured SO₂ concentration, the measured flow velocity, and the measured temperature.
 - v. An appropriate range for zero-span drift shall be established for all SO₂ analyzers to ensure proper calibration and operation. Unless otherwise provided in the roofline fugitive emissions monitoring plan required by subsection (E)(8), the zero (or low-level) value determination shall be made using a gas containing between zero to 20 percent of the span value for SO₂ and the span (or high-level) value determination shall be made using a certified gas with a value between 50 and 100 percent of the span value for SO₂. For each SO₂ analyzer, a daily zero-span check shall be performed by introducing zero gas and a known concentration of span gas to the analyzer. If the zero or span drift for an analyzer is greater than five percent of the span gas concentration for five consecutive days or greater than 10 percent of the span gas concentration for one day, the analyzer shall be found to be operating improperly and appropriate measures shall be taken to return the analyzer to proper operation. The zero-span check shall be repeated after any such corrective action is taken.
 - vi. All SO₂ analyzers shall be inspected quarterly by the owner or operator and inspected annually by an independent auditor. The inspections shall be conducted in accordance with the data accuracy assessment requirements of 40 CFR 60, Appendix F, Procedure 1, Section 5 or as otherwise provided in the roofline fugitive emissions monitoring plan required by subsection (E)(8). The quarterly inspections consist of two certified concentrations of SO₂ to each sample probe system and comparing the known concentrations to the concentrations logged by the corresponding on-site data collection system to generate a relative error for each system.
 - vii. The flow and temperature data shall be checked daily for proper operation of flow and temperature sensors in accordance with the roofline fugitive emissions monitoring plan required by subsection (E)(8). If a flow or temperature sensor is found to be operating improperly, appropriate measures shall be taken to return the sensor to proper operation.
 - viii. All temperature sensors shall be inspected annually. The inspection shall be conducted according to the manufacturer's specification. A temperature sensor tolerance range representative of proper sensor operation shall be established in the roofline fugitive emissions monitoring plan required by subsection (E)(8). If a temperature sensor is found to measure outside of an established tolerance range, the sensor shall be found to be operating improperly and appropriate measures shall be taken to return the sensor to proper operation.
 - ix. All flow sensors shall be calibrated semi-annually with calibration tools according to the manufacturer's specifications. A calibration tool range representative of proper sensor operation shall be established in the roofline fugitive emissions monitoring plan required by subsection (E)(8). If a flow sensor is found to measure outside of an established range, the sensor shall be found to be operating improperly and appropriate measures shall be taken to return the sensor to proper operation.
- b. The owner or operator shall operate and maintain the continuous monitoring system required by subsection (E)(2) in accordance with the roofline fugitive emissions monitoring plan required by subsection (E)(2) and as approved by the Department and EPA Region IX, except as provided herein. Until receiving initial approval of the plan, the owner or operator shall operate and maintain the continuous monitoring system required by subsection (E)(2) in accordance with the plan as initially submitted pursuant to subsection (E)(2). The owner or operator shall keep the plan current and consistent with subsection (E)(8)(a). The owner or operator shall maintain a current copy of the plan onsite and available for review and inspection upon request. The Department and/or EPA Region IX may require the owner or operator to revise the plan if determined to be inconsistent with subsection (E)(8)(a). Within 60 days of receiving written notification from the Department or EPA Region IX specifying such inconsistency, the owner or operator shall submit a proposal to the Department and EPA Region IX that addresses the inconsistency.
- F. Compliance Demonstration Requirements.**
1. Within 180 days of the effective date set forth in subsection (A)(2), the owner or operator shall demonstrate compliance with the emission limit in subsection (C) by calculating SO₂ emissions for each operating day as follows:
 - a. Sum the hourly pounds of SO₂ measured by the continuous monitoring systems required by subsection (E)(1) and (E)(2) for the current operating day and the preceding 29 operating days to calculate the total pounds of SO₂ emissions over the 30-operating day averaging period.
 - b. Multiply the operating days occurring during a 30-day averaging period by 24 to calculate the total operating hours over the most recent 30-operating day period.
 - c. Divide the total amount of SO₂ emissions calculated from subsection (F)(1)(a) by the total operating

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- hours calculated from subsection (F)(1)(b) to calculate the 30-day rolling hourly average SO₂ emissions.
2. For the continuous monitoring systems required by subsections (E)(1) and (E)(2), hourly emissions shall be computed as follows:
 - a. Except as provided under subsection (F)(2)(c), for a full operating hour (any clock hour with 60 minutes of unit operation), at least four valid data points are required to calculate the hourly average, i.e., one data point in each of the 15-minute quadrants of the hour.
 - b. Except as provided under subsection (F)(2)(c), for a partial operating hour (any clock hour with less than 60 minutes of unit operation), at least one valid data point in each 15-minute quadrant of the hour in which the unit operates is required to calculate the hourly average.
 - c. For any operating hour in which required maintenance or quality-assurance activities are performed:
 - i. If the unit operates in two or more quadrants of the hour, a minimum of two valid data points, separated by at least 15 minutes, is required to calculate the hourly average; or
 - ii. If the unit operates in only one quadrant of the hour, at least one valid data point is required to calculate the hourly average.
 - d. If a daily calibration error check is failed during any operating hour, all data for that hour shall be invalidated, unless a subsequent calibration error test is passed in the same hour and the requirements of subsection (F)(2)(c) are met, based solely on valid data recorded after the successful calibration.
 - e. For each full or partial operating hour, all valid data points shall be used to calculate the hourly average.
 - f. Data recorded during periods of continuous monitoring system breakdown, repair, maintenance, out of control periods, calibration checks, and zero and span adjustments shall not be included in the data averages computed under subsection (F)(3).
 - g. Either arithmetic or integrated averaging of all data may be used to calculate the hourly average. The data may be recorded in reduced or non-reduced form.
 3. When no valid hour or hours of data have been recorded by a continuous monitoring system required by subsections (E)(1) and (E)(2) and the associated process unit is operating, the owner or operator shall calculate substitute data for each such period according to the following procedures:
 - a. For a missing data period less than or equal to 24 hours, substitute the average of the hourly SO₂ concentrations recorded by the system for the hour before and the hour after the missing data period.
 - b. For a missing data period greater than 24 hours, substitute the greater of:
 - i. The 90th percentile hourly SO₂ concentrations recorded by the system during the previous 720 quality-assured monitor operating hours; or
 - ii. The average of the hourly SO₂ concentrations recorded by the system for the hour before and the hour after the missing data period.
 4. The owner or operator shall include periods of startup, shutdown, malfunction, or other upset conditions when determining compliance with the emission limit in subsection (C).
- G. Recordkeeping.**
1. The owner or operator shall maintain records as specified in the capture system and control device operations and maintenance plan required under subsection (D)(2) and the rooftop fugitive emissions monitoring plan required under subsection (E)(8).
 2. The owner or operator shall maintain the following records for at least five years:
 - a. All measurements from the continuous monitoring systems required by subsection (E)(1) and (E)(2); including the date, place, and time of sampling or measurement, parameters sampled or measured, and results.
 - b. All records of all compliance calculations required by subsection (F).
 - c. All records of quality assurance and quality control activities conducted on the continuous monitoring systems required by subsection (E)(1) and (E)(2).
 - d. All records of continuous monitoring system breakdowns, repairs, maintenance, out of control periods, calibration checks, and zero and span adjustments for the continuous monitoring systems required by subsection (E)(1) and (E)(2).
 - e. All records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of Smelter processes; any malfunction of the associated air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device required by subsection (E)(1) and (E)(2) is inoperative.
 - f. All records of all major maintenance activities conducted on emission units, capture system, air pollution control equipment, and continuous monitoring systems; including those set forth in the operations and maintenance plan required by subsection (D)(2).
 - g. All records of reports and notifications required by subsection (H).
- H. Reporting**
1. Within 30 days after the end of each calendar quarter, the owner or operator shall submit a data assessment report to the Director in accordance with 40 CFR Part 60, Appendix F, Procedure 1 for the continuous monitoring systems required by subsection (E).
 2. The owner or operator shall submit an excess emissions and monitoring systems performance report and/or summary report form in accordance with 40 CFR § 60.7(c) to the Director semiannually for the continuous monitoring systems required by subsection (E)(1) and (E)(2). All reports shall be postmarked by the 30th day following the end of each six-month period.
 3. The owner or operator shall provide the following to the Director:
 - a. Notification of commencement of construction of the project improvements and equipment authorized by Significant Permit Revision No. 53592 to comply with the operational or emission limits in this Section no later than 30 days after such date.
 - b. Semiannual progress reports on construction of any such improvements and equipment on January 1 and July 1 of each calendar year until construction is complete.
 - c. Notification of initial startup of any such improvements and equipment within 15 days after such date.
- I. Preconstruction review.** This Section is determined to be Reasonably Available Control Technology (RACT) for SO₂ emissions from the operations subject to subsection (C) for

purposes of minor source NSR requirements addressed in R18-2-334.

Historical Note

New Section R18-2-C1302 made by final rulemaking at 23 A.A.R. 767, on the later of the effective date of the Administrator's action approving it as part of the state implementation plan or January 1, 2018.

A14. Appendix 14. Procedures for Sulfur Dioxide and Lead Fugitive Emissions Studies for the Hayden Smelter

A14.1. Applicability

This appendix applies to the owner or operator of the primary copper smelter located in Hayden, Arizona at latitude 33°0'15"N and longitude 110°46'31"W.

A14.2. Study Objectives

The owner or operator shall conduct fugitive emissions studies to derive a measurement or accurate estimate of total fugitive sulfur dioxide and lead emissions from the Hayden smelter during operations, including planned and unplanned start-up and shutdown periods and malfunctions, for the processes identified in A14.3 below. The studies shall include uncaptured fugitive sulfur dioxide emissions from the smelter processing units, but not emissions due solely to the use of fuel for space heating or steam generation, burners at anode casting, or slag pouring at the slag dump. The studies shall evaluate the extent to which correlations may exist between fugitive sulfur dioxide, lead, and particulate matter (PM/PM10/PM2.5) emissions, and shall develop such correlations as feasible.

The studies shall also be used to help validate that the operating conditions or ranges specified in the capture and control device maintenance and operations plans required in R18-2-B1301(D)(2) and R18-2-B1302(D)(2) are consistent with operating conditions demonstrating attainment of the 2008 Lead National Ambient Air Quality Standards (NAAQS) in the Hayden 2008 Lead NAAQS Nonattainment Area State Implementation Plan (SIP) and the 2010 Sulfur Dioxide NAAQS in the Hayden 2010 Sulfur Dioxide NAAQS Nonattainment Area SIP.

A14.3. Processes Evaluated

From the fugitive emissions studies, the owner or operator shall develop an emission factor or accurate estimate of fugitive emissions for sulfur dioxide and lead during operations, including planned and unplanned start-up and shutdown periods and malfunctions, produced by each of the following smelting processes:

- i. Flash furnace building, including flash furnace and dryer operations
- ii. Converter aisle, including converter and related operations
- iii. Anode furnace aisle, including oxidizing, poling and related operations

A14.4. Averaging Periods

The emission estimate shall include the average pounds per hour emission factor for the fugitive lead and sulfur dioxide emissions from each step in the smelting process identified in A14.3. The estimate shall include all time periods, including planned and unplanned start-up and shutdown periods and malfunctions.

A14.5. Methods and Study Protocols

The owner or operator shall submit to the Department and EPA Region IX for review and approval study protocols at least six months prior to conducting fugitive emission studies. Study protocols must be approved by the Department and EPA Region IX prior to commencement of fugitive emissions studies. Study protocols shall specify the method(s) used to meet the study objectives as

described in A14.2, including during all recurring operating scenarios from all processes identified in A14.3.

Each fugitive emissions measurement system shall include validation of adequate velocity for flow measurements (i.e., the expected exhaust velocity is within the measurement range of the instrument), and have a sufficient number of flow and temperature sensors to ensure calculation of representative exhaust flows through each roof monitor vent. The number of such sensors and their locations for each monitoring system shall account for the physical configuration of the roof monitor vent, the locations of emitting activities relative to the roof monitor vent, and heat generated by the equipment served by the roof monitor vent.

The fugitive emissions studies shall include operation and process information to help understand the emission impacts of startup, shutdown, malfunctions, and significant changes in process operations. This shall include, for example, dates, times and duration of these events, cause of malfunctions, and descriptions of process changes.

After the completion of each fugitive emissions study, the owner or operator shall modify study methods based on data and lessons learned from previous studies, and submit such modified methods in the proceeding study protocols prior to conducting future emissions studies.

A14.6. Study Duration, Frequency, and Submission Schedule

The first fugitive emissions study must commence not later than six months after the completion of the Converter Retrofit Project authorized by Significant Permit Revision No. 60647. The second study commencement date shall occur within the same calendar quarter, but five years later from the date of commencement of the first study. The owner or operator shall submit the results of each fugitive emissions study in a report to the Department and EPA Region IX for review and approval not later than six months after completing a study. The data collection portion of the first and second fugitive emissions studies shall be conducted for a period of 12 months to assess the content and quantity of fugitive sulfur dioxide and lead emissions.

A14.7. Study Reports and Subsequent Studies

At minimum, fugitive emission study reports submitted pursuant to A14.6 must include:

- i. Resultant emission factors used to determine fugitive emissions of sulfur dioxide and lead.
- ii. Resultant average fugitive lead emissions for each process identified in A14.3.
- iii. Resultant peak one-hour fugitive sulfur dioxide emissions for each process identified in A14.3.
- iv. Seasonal differences, if any.
- v. Comparisons of results from past studies, if any.
- vi. Descriptions and identification of volumetric flow monitoring provisions in R18-2-B1301(D)(2)(a) and R18-2-B1302(D)(2)(a) and operational limits R18-2-B1301(D)(2)(b) and R18-2-B1302(D)(2)(b) that are associated with fugitive emissions.
- vii. An analysis of whether the results from a study demonstrate that the volumetric flow monitoring provisions in R18-2-B1301(D)(2)(a) and R18-2-B1302(D)(2)(a) and the operational limits in R18-2-B1301(D)(2)(b) and R18-2-B1302(D)(2)(b) continuously ensure that actual fugitive sulfur dioxide and lead emissions are consistent with the modeled emission rates used in the attainment demonstrations in the Hayden 2008 Lead NAAQS Nonattainment Area SIP and the Hayden 2010 Sulfur Dioxide

NAAQS Nonattainment Area SIP. The analysis must also identify subsequent fugitive emissions studies, if any, needed to remedy inaccurate operational limits and volumetric flow monitoring provisions and to ensure attainment of the 2008 Lead NAAQS and 2010 Sulfur Dioxide NAAQS. The scope, duration, and frequency of any subsequent fugitive emissions studies must also be identified. This provision and the report's conclusion neither require nor prohibit future emission studies.

- viii. An analysis of whether supplemental modeling is needed to demonstrate that resultant fugitive emissions from a study provide attainment of the 2008 Lead NAAQS and 2010 Sulfur Dioxide NAAQS.
- ix. A summary of methods as followed per approved study protocols.

A14.8. Revisions to Operations and Maintenance Plan

If an analysis conducted in accordance with A14.7(vi) demonstrates that fugitive emissions associated with volumetric flow monitoring provisions in R18-2-B1301(D)(2)(a) and R18-2-B1302(D)(2)(a) and operational limits in R18-2-B1301(D)(2)(b) and R18-2-B1302(D)(2)(b) may exceed the modeled emission rates used in the Hayden 2008 Lead NAAQS Nonattainment Area SIP attainment demonstration and/or the Hayden 2010 Sulfur Dioxide NAAQS Nonattainment Area SIP attainment demonstration, and result in an increased likelihood of a NAAQS exceedance based on modeling required under A14.9, then the owner or operator shall submit to the Department for approval, not later than six months after completing a study, recommended changes to operational limits and volumetric flow monitoring provisions as an operations and maintenance plan revision pursuant to R18-2-B1301(D)(2)(e) and R18-2-B1302(D)(2)(e) that would achieve necessary fugitive emissions levels to demonstrate attainment of the NAAQS at the same level of assurance as in the attainment demonstrations. Until receiving approval of the plan revision, the owner or operator shall operate and maintain the volumetric flow monitoring provisions and the operational limits in accordance with the plan as initially submitted pursuant to R18-2-B1301(D)(2)(e) and R18-2-B1302(D)(2)(e). Additionally, the owner and operator shall submit new attainment demonstrations pursuant to A14.9, making appropriate demonstrations of attainment at adjusted fugitive emissions levels.

Similarly, if an analysis conducted in accordance with A14.7(vi) demonstrates that fugitive emissions associated with the volumetric flow monitoring provisions in R18-2-B1301(D)(2)(a) and R18-2-B1302(D)(2)(a) and operational limits in R18-2-B1301(D)(2)(b) and R18-2-B1302(D)(2)(b) may exceed the modeled emission rates used in the Hayden 2008 Lead NAAQS Nonattainment Area SIP attainment demonstration and/or the Hayden 2010 Sulfur Dioxide NAAQS Nonattainment Area SIP attainment demonstration, and result in an increased likelihood of a NAAQS exceedance based on modeling required under A14.9, then the Department shall submit appropriate changes to the operational limits and volumetric flow monitoring provisions, and any revised attainment demonstration pursuant to A14.9, if applicable, to EPA Region IX as a SIP revision not later than 12 months after completion of a fugitive emissions study.

A14.9. Supplemental Modeling

If an analysis conducted in accordance with A14.7(vii) demonstrates that fugitive emissions associated with volumetric flow monitoring provisions in R18-2-B1301(D)(2)(a) and R18-2-B1302(D)(2)(a) and operational limits in R18-2-B1301(D)(2)(b) and R18-2-B1302(D)(2)(b) are greater than the modeled emission rates used in the Hayden 2008 Lead NAAQS Nonattainment Area SIP attainment demonstration and/or the Hayden 2010 Sulfur Diox-

ide NAAQS Nonattainment Area SIP attainment demonstration, the owner or operator shall remodel to demonstrate whether the 2010 Sulfur Dioxide NAAQS and/or 2008 Lead NAAQS will be attained as such higher rates. The owner or operator shall submit such modeling to the Department and EPA Region IX for review and approval not later than six months after completing a fugitive emissions study.

If the revised modeling demonstrates that the 2010 Sulfur Dioxide NAAQS and/or 2008 Lead NAAQS will be attained, the Department shall submit such modeling demonstration and revised fugitive emissions assumptions as a SIP revision to EPA Region IX not later than 12 months after completion of a fugitive emissions study. Alternatively, the owner or operator shall propose additional emission control requirements to revise the SIP, or any combination of revised control measures and modeled attainment, to demonstrate attainment of the 2010 Sulfur Dioxide NAAQS and/or 2008 Lead NAAQS.

Historical Note

A14, Appendix 14 made by final rulemaking at 23 A.A.R. 722, effective May 7, 2017 (Supp. 17-1).

A15. Appendix 15. Test Methods for Determining Opacity and Stabilization of Unpaved Roads

A15.1. Applicability

This appendix applies to unpaved roads at the primary copper smelter located in Hayden, Arizona at latitude 33°0'15"N and longitude 110°46'31"W.

A15.2. Opacity Test Method

The purpose of this test method is to estimate the percent opacity of fugitive dust plumes caused by vehicle movement on unpaved roads. This method can only be conducted by an individual who has received certification as a qualified observer. Qualification and testing requirements can be found in Section A15.4 of this appendix.

A15.2.1. Step 1

Stand at least 16.5 feet from the fugitive dust source in order to provide a clear view of the emissions with the sun oriented in the 140° sector to the back. Following the above requirements, make opacity observations so that the line of vision is approximately perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

A15.2.2. Step 2

Record the fugitive dust source location, source type, method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the fugitive dust source. Also record the time, estimated distance to the fugitive dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position to the fugitive dust source, and color of the plume and type of background on the visible emission observation from both when opacity readings are initiated and completed.

A15.2.3. Step 3

Make opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make opacity observations approximately 1 meter above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at

five seconds. The zero-second observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.

A15.2.4. Step 4

Record the opacity observations to the nearest 5 percent on an observational record sheet. Each momentary observation recorded represents the average opacity of emissions for a 5-second period. While it is not required by the test method, EPA recommends that the observer estimate the size of vehicles which generate dust plumes for which readings are taken (e.g. midsize passenger car or heavy-duty truck) and the approximate speeds the vehicles are traveling when readings are taken.

A15.2.5. Step 5

Repeat Step 3 (Section A15.2.3 of this appendix) and Step 4 (Section A15.2.4 of this appendix) until you have recorded a total of 12 consecutive opacity readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

A15.2.6. Step 6

Average the 12 opacity readings together. If the average opacity reading equals 20 percent or lower, the source is in compliance.

A15.3. Silt Content Test Method

The purpose of this test method is to estimate the silt content of the trafficked parts of unpaved roads. The higher the silt content, the more fine dust particles that are released when cars and trucks drive on unpaved roads.

A15.3.1. Equipment

A15.3.1.1. A set of sieves with the following openings: 4 millimeters (mm), 2 mm, 1 mm, 0.5 mm and 0.25 mm (or a set of standard/commonly available sieves), a lid, and collector pan.

A15.3.1.2. A small whisk broom or paintbrush with stiff bristles and dustpan 1 ft. in width. (The broom/brush should preferably have one, thin row of bristles no longer than 1.5 inches in length).

A15.3.1.3. A spatula without holes.

A15.3.1.4. A small scale with half-ounce increments (e.g., postal/package scale).

A15.3.1.5. A shallow, lightweight container (e.g., plastic storage container).

A15.3.1.6. A sturdy cardboard box or other rigid object with a level surface.

A15.3.1.7. A basic calculator.

A15.3.1.8. Cloth gloves (optional for handling metal sieves on hot, sunny days).

A15.3.1.9. Sealable plastic bags (if sending samples to a laboratory).

A15.3.1.10. A pencil/pen and paper.

A15.3.2. Step 1

Look for a routinely traveled surface, as evidenced by tire tracks. (Only collect samples from surfaces that are not damp due to precipitation or dew. This statement is not meant to be a standard in itself for dampness where watering is being used as a control measure. It is only intended to ensure that surface testing is done in a representative manner.) Use caution when taking samples to ensure personal safety with respect to passing vehicles. Gently press the edge of a dustpan (1 foot in width) into the surface four times to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch or 1 cm in the 1 square foot area. If you reach a hard, underlying subsurface that is < 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 1 cm. In order to confirm that samples are collected to 1 cm in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a metric ruler is held perpendicular to the dowel.

At this point, you can choose to place the sample collected into a plastic bag or container and take it to an independent laboratory for silt content analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.

A15.3.3. Step 2

Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it. Transfer the entire sample collected in the dustpan to the container, minimizing escape of dust particles. Weigh the sample and record its weight.

A15.3.4. Step 3

Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.

A15.3.5. Step 4

Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush. (On windy days, use the trunk or door of a car as a wind barricade.) Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up, down and sideways for at least 1 minute.

A15.3.6. Step 5

Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass (e.g., material in each sieve [besides the top sieve that captures a range of larger elements] should look the same size). If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute. (You only need to reassemble the sieve(s) that contain material, which requires further sifting.)

A15.3.7. Step 6

After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container originally used to collect and weigh the entire sample. Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves; only the collector pan. Weigh the container with the material from the collector pan and record its weight.

A15.3.8. Step 7

If the source is an unpaved road, multiply the resulting weight by 0.38. The resulting number is the estimated silt loading. Then, divide by the total weight of the sample you recorded earlier in Step 2 (Section A15.3.3 of this appendix) and multiply by 100 to estimate the percent silt content.

A15.3.9. Step 8

Select another two routinely traveled portions of the unpaved road and repeat this test method. Once you have calculated the silt loading and percent silt content of the 3 samples collected, average your results together.

A15.3.10. Step 9

Examine results. If the average silt loading is less than 0.33 oz/ft², the surface is STABLE. If the average silt loading is greater than or equal to 0.33 oz/ft², then proceed to examine the average percent silt content. If the source is an unpaved road and the average percent silt content is 6 percent or less, the surface is STABLE. If your field test results are within 2 percent of the standard (for example, 4–8 percent silt content on an unpaved road), it is recommended that you collect 3 additional samples from the source according to Step 1 (Section A15.3.2 of this appendix) and take them to an independent laboratory for silt content analysis.

A15.3.11. Independent Laboratory Analysis

You may choose to collect 3 samples from the source, according to Step 1 (Section A15.3.2 of this appendix), and send them to an independent laboratory for silt content analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is: U.S. Environmental Protection Agency (1995), "Procedures for Laboratory Analysis of Surface/Bulk Dust Loading Samples", (AP-42 Fifth Edition, Volume I, Appendix C.2.3 "Silt Analysis"), Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina.

A15.4. Qualification and Testing

A15.4.1. Certification Requirements

To receive certification as a qualified observer, a candidate must be tested and demonstrate the ability to assign opacity readings in 5 percent increments to 25 different black plumes and 25 different white plumes, with an error not to exceed 15 percent opacity on any one reading and an average error not to exceed 7.5 percent opacity in each category. Candidates shall be tested according to the procedures described in Section A15.4.2 of this appendix. Any smoke generator used pursuant to Section A15.4.2 of this appendix shall be equipped with a smoke meter which meets the requirements of Section A15.4.3 of this appendix. Certification tests that do not meet the requirements of Sections A15.4.2 and A15.4.3 of this appendix are not valid. The certification shall be valid for a period of 6 months, and after each 6-month period the qualification procedures must be repeated by an observer in order to retain certification.

A15.4.2. Certification Procedure

The certification test consists of showing the candidate a complete run of 50 plumes, 25 black plumes and 25 white plumes, generated by a smoke generator. Plumes shall be presented in random order within each set of 25 black and 25 white plumes. The candidate assigns an opacity value to each plume and records the observation on a suitable form. At the completion of each run of 50 readings, the score of the candidate is determined. If a candidate fails to qualify, the complete run of 50 readings must be repeated in any retest. The smoke test may be administered as part of a smoke school or training program, and may be preceded by training or familiariza-

tion runs of the smoke generator, during which candidates are shown black and white plumes of known opacity.

A15.4.3. Smoke Generator Specifications

Any smoke generator used for the purpose of Section A15.4.2 of this appendix shall be equipped with a smoke meter installed to measure opacity across the diameter of the smoke generator stack. The smoke meter output shall display in-stack opacity, based upon a path length equal to the stack exit diameter on a full 0 percent to 100 percent chart recorder scale. The smoke meter optical design and performance shall meet the specifications shown in Table 1 of this appendix. The smoke meter shall be calibrated as prescribed in Section A15.4.3.1 of this appendix prior to conducting each smoke reading test. At the completion of each test, the zero and span drift shall be checked, and if the drift exceeds plus or minus 1 percent opacity, the condition shall be corrected prior to conducting any subsequent test runs. The smoke meter shall be demonstrated, at the time of installation, to meet the specifications listed in Table 1 of this appendix. This demonstration shall be repeated following any subsequent repair or replacement of the photocell or associated electronic circuitry, including the chart recorder or output meter, or every 6 months, whichever occurs first.

A15.4.3.1. Calibration

The smoke meter is calibrated after allowing a minimum of 30 minutes warm-up by alternately producing simulated opacity of 0 percent and 100 percent. When stable response at 0 percent or 100 percent is noted, the smoke meter is adjusted to produce an output of 0 percent or 100 percent, as appropriate. This calibration shall be repeated until stable 0 percent and 100 percent readings are produced without adjustment. Simulated 0 percent and 100 percent opacity values may be produced by alternately switching the power to the light source on and off while the smoke generator is not producing smoke.

A15.4.3.2. Smoke Meter Evaluation

The smoke meter design and performance are to be evaluated as follows:

A15.4.3.2.1. Light Source

Verify, from manufacturer's data and from voltage measurements made at the lamp, as installed, that the lamp is operated within plus or minus 5 percent of the nominal rated voltage.

A15.4.3.2.2. Spectral Response of Photocell

Verify from manufacturer's data that the photocell has a photopic response (i.e., the spectral sensitivity of the cell shall closely approximate the standard spectral-luminosity curve for photopic vision which is referenced in (b) of Table 1 of this appendix).

A15.4.3.2.3. Angle of View

Check construction geometry to ensure that the total angle of view of the smoke plume, as seen by the photocell, does not exceed 15°. Calculate the total angle of view (ϕ_v) as follows:

$$\text{Total Angle of View} = 2 \tan^{-1} (d/2L)$$

where:

d = The photocell diameter + the diameter of the limiting aperture; and

L = The distance from the photocell to the limiting aperture. The limiting aperture is the point in the path between the photocell and the smoke plume where the angle of view is most restricted. In smoke generator smoke meters, this is normally an orifice plate.

A15.4.3.2.4. Angle of Projection

Check construction geometry to ensure that the total angle of projection of the lamp on the smoke plume does not exceed 15°. Calculate the total angle of projection (ϕ) as follows:

$$\text{Total Angle of Projection} = 2 \tan^{-1} (d/2L)$$

where:

d = The sum of the length of the lamp filament + the diameter of the limiting aperture; and

L = The distance from the lamp to the limiting aperture.

A15.4.3.2.5. Calibration Error

Using neutral-density filters of known opacity, check the error between the actual response and the theoretical linear response of the smoke meter. This check is accomplished by first calibrating the smoke meter, according to Section A15.4.3.1 of this appendix, and then inserting a series of three neutral-density filters of nominal opacity of 20 percent, 50 percent, and 75 percent in the smoke meter path length. Use filters calibrated within plus or minus 2 percent. Care should be taken when inserting the filters to prevent stray light from affecting the meter. Make a total of five nonconsecutive readings for each filter. The maximum opacity error on any one reading shall be plus or minus 3 percent.

A15.4.3.2.6. Zero and Span Drift

Determine the zero and span drift by calibrating and operating the smoke generator in a normal manner over a 1-hour period. The drift is measured by checking the zero and span at the end of this period.

A15.4.3.2.7. Response Time

Determine the response time by producing the series of five simulated 0 percent and 100 percent opacity values and observing the time required to reach stable response. Opacity values of 0 percent and 100 percent may be simulated by alternately switching the power to the light source off and on while the smoke generator is not operating.

Table 1: Smoke Meter Design and Performance Specifications

Parameter	Specification
a. Light source	Incandescent lamp operated at nominal rated voltage
b. Spectral response of photocell	Photopic (daylight spectral response of the human eye)
c. Angle of view	15° maximum total angle
d. Angle of projection	15° maximum total angle
e. Calibration error	Plus or minus 3 percent opacity; maximum
f. Zero and span drift	Plus or minus 1 percent opacity, 30 minutes
g. Response time	Less than or equal to 5 seconds

Historical Note

A15, Appendix 15, to include Table 1, made by final rule-making at 23 A.A.R. 767, effective May 7, 2017 (Supp. 17-1).

ARTICLE 14. CONFORMITY DETERMINATIONS

R18-2-1401. Definitions

Terms used in this Article but not defined in this Article, Article 1 of this Chapter, or A.R.S. § 49-401.01 shall have the meaning given them by the CAA, Titles 23 and 40 U.S.C., other EPA regulations, or other USDOT regulations, in that order of priority. The following definitions and the definitions contained in Article 1 of this Chapter and in A.R.S. § 49-401.01 shall apply to this Article:

1. "ADEQ" means the Arizona Department of Environmental Quality.
2. "ADOT" means the Arizona Department of Transportation.
3. "Applicable implementation plan" is defined in § 302(g) of the CAA and means the portion (or portions) of the implementation plan, or most recent revision thereof, which has been approved under § 110, or promulgated under § 110(c), or promulgated or approved pursuant to regulations promulgated under § 301(d) and which implements the relevant requirements of the CAA.
4. "CAA" means the Clean Air Act, as amended.
5. "Cause or contribute to a new violation" for a project means either of the following:
 - a. To cause or contribute to a new violation of a standard in the area substantially affected by the project or over a region which would otherwise not be in violation of the standard during the future period in question, if the project were not implemented.
 - b. To contribute to a new violation in a manner that would increase the frequency or severity of a new violation of a standard in such area.
6. "Consultation" means that one party confers with another identified party, provides access to all appropriate information to that party needed for meaningful input, and, prior to taking any action, considers the views of that party and responds in accordance with the procedures established in R18-2-1405.
7. "Control strategy implementation plan revision" is the applicable implementation plan which contains specific strategies for controlling the emissions of and reducing ambient levels of pollutants in order to satisfy CAA requirements for demonstrations of reasonable further progress and attainment (CAA §§ 182(b)(1), 182(c)(2)(A), 182(c)(2)(B), 187(a)(7), 189(a)(1)(B), and 189(b)(1)(A); and §§ 192(a) and 192(b), for nitrogen dioxide).
8. "Control strategy period" with respect to particulate matter less than 10 microns in diameter (PM₁₀), carbon monoxide (CO), nitrogen dioxide (NO₂), or ozone precursors (volatile organic compounds (VOC) and oxides of nitrogen (NO_x)), means that period of time after EPA approves control strategy implementation plan revisions containing strategies for controlling PM₁₀, NO₂, CO, or ozone, as appropriate. This period ends when the state submits and EPA approves a request under § 107(d) of the CAA for redesignation to an attainment area.
9. "Design concept" means the type of facility identified by the project, e.g., freeway, expressway, arterial highway, grade-separated highway, reserved right-of-way rail transit, mixed traffic rail transit, exclusive busway, etc.
10. "Design scope" means the design aspects of a facility which will affect the proposed facility's impact on regional emissions, usually as they relate to vehicle or person carrying capacity and control, e.g., number of lanes or tracks to be constructed or added, length of project, signalization, access control including approximate number and location of interchanges, preferential treatment for high-occupancy vehicles, etc.
11. "EPA" means the United States Environmental Protection Agency.
12. "FHWA" means the Federal Highway Administration of USDOT.
13. "HWA or FTA project" means any highway or transit project which is proposed to receive funding assistance and approval through the Federal-Aid Highway program.