

PROPOSED AMENDED RULE 1407. CONTROL OF EMISSIONS OF ARSENIC, CADMIUM, AND NICKEL FROM NON-FERROUSCHROMIUM METAL MELTING OPERATIONS

(a) Purpose

The purpose of this rule is to reduce emissions of arsenic, cadmium, and nickel from non-ferrouschromium metal melting operations.

(b) Applicability

This rule applies to ~~all persons who own or operate~~ an owner or operator of a facility conducting non-ferrouschromium metal melting operation(s), including but not limited to, smelters (primary and secondary), foundries, die-casters, coating processes (galvanizing and tinning), and other miscellaneous processes such as dip soldering, brazing, and aluminum powder production.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

- (1) ALUMINUM AND ALUMINUM-BASED ALLOY is any metal that ~~is~~ contains at least 80 percent aluminum by weight.
- (2) APPROVED CLEANING METHODS are techniques to clean while minimizing fugitive dust emissions consisting of wet wash, wet mop, damp cloth, low pressure spray, or vacuum equipped with filter(s) rated by the manufacturer to achieve a 99.97% control efficiency for 0.3 micron particles.
- (3) BAG LEAK DETECTION SYSTEM is a system that monitors electrical charge transfer based on triboelectric or electrostatic induction to continuously monitor bag leakage and similar failures by detecting changes in particle mass loading in the exhaust.
- (4) BUILDING ENCLOSURE is a building or physical structure, or portion of a building, enclosed with a floor, walls, and a roof to prevent exposure to the elements (e.g. precipitation or wind), with limited enclosure openings to allow access for people, vehicles, equipment, or parts such that openings to the exterior and on opposite ends of the building enclosure where air can pass through are not simultaneously open.

- (5) CAPTURE VELOCITY is the minimum hood induced air velocity necessary to capture and convey air contaminants into an emission collection system.
- (26) CLEAN ALUMINUM SCRAP is any scrap that is composed solely of aluminum or aluminum alloys (including anodized aluminum) and that is free of paints, oils, greases, coatings, rubber, or plastics.
- (37) COPPER OR COPPER BASED ALLOYS is any metal that is contains more than 50 percent copper by weight, including, but not limited to, brass and bronze.
- (4) DISTRICT ~~is the South Coast Air Quality Management District.~~
- (58) DUST FORMING MATERIAL is any material containing more than 15 percent by weight of particulate matter less than 0.84 millimeter (mm) equivalent diameter as determined by ASTM C136-84a "Standards for Sieve Analysis of Fine and Coarse Aggregates" using a Number 20 U.S. Bureau of Standards sieve with 0.84 mm square openings or an alternate method deemed acceptable by the Executive Officer ~~or his designee.~~
- (69) EMISSION COLLECTION SYSTEM is any equipment installed for the purpose of directing, taking in, confining, and conveying an air contaminant, and which conforms to design and operation specifications given in the most current edition of ~~Industrial Ventilation, Guidelines and Recommended Practices~~ *Industrial Ventilation: A Manual of Recommended Practice for Design*, published by the American Conference of Governmental and Industrial Hygienists (~~20th Edition or thereafter~~) at the time the a complete permit application is deemed complete by the South Coast AQMD is on file with the District.
- (10) EMISSION CONTROL DEVICE is any equipment installed in the ventilation exhaust system of a non-chromium metal melting furnace or after the emission collection system for the purpose of collecting and reducing metal emissions.
- (7) EMISSION POINT ~~is any location where molten metal is or can be exposed to air, including, but not limited to, furnaces, crucibles, refining kettles, ladles, tap holes, pouring spouts, and slag channels. A mold or die in which metal is cooling is not considered an emission point.~~
- (811) ENCLOSED STORAGE AREA is any space used to contain materials that has a wall or partition on at least three sides or three-quarters of its circumference and that screens the materials stored therein to prevent emissions of the material to the air.
- (12) ENCLOSURE OPENING is any permanent opening that is designed to be part of a building enclosure, such as passages, doorways, bay doors, roof openings, and

windows. Stacks, ducts, and openings to accommodate stacks and ducts are not considered enclosure openings.

- (913) FACILITY is a source at which non-chromium metal melting operations are conducted, and is any real or personal property which is located on one or more contiguous or adjacent parcels of property in actual contact or separated solely by a public roadway or other public right-of-way and is owned or operated by the same person or person(s), corporation, government agency, public district, public officer, association, joint venture, partnership, or any combination of such entities.
- (14) FOUNDRY is any facility, operation, or process where a metal or a metal alloy is melted and casted.
- (1015) FUGITIVE METAL DUST EMISSIONS are metal emissions from non-chromium metal melting operations sources that enter the atmosphere without passing through a stack or vent designed to direct or control their flow or that escape from a properly designed and operated emission collection systems. Fugitive emissions broadly include emissions from process or open sources. Process sources include, but are not limited to, emissions from storage and handling of materials such as baghouse dust. Open sources include, but are not limited to, emissions from entrainment of solid particulates by the forces of wind or machinery acting on exposed sources such as dust settled from charging and tapping of metallurgical furnaces.
- (11) FUGITIVE EMISSIONS CONTROL is any equipment, activity, or process that is utilized to reduce fugitive emissions.
- (12) GOOD OPERATING PRACTICES are any specific activities necessary to maintain the collection and control efficiencies as designed and permitted for. These activities include, but are not limited to, verifying operating specifications such as production throughput, temperature control, cleaning cycles, air flow and velocity, and inspecting equipment, such as filter cartridges or bags in a baghouse, pressure gauges, duct work, blowers and components of the control equipment, through a general maintenance and inspection program.
- (13) HARD LEAD is an alloy containing at least 90 percent lead and more than 0.001 percent arsenic by weight or 0.001 percent cadmium by weight.
- (14) MOLTEN METAL is metal or metal alloy in a liquid state, in which a cohesive mass of metal will flow under atmospheric pressure and take the shape of a container in which it is placed.
- (16) FUNCTIONALLY SIMILAR FURNACE is a furnace used for metal melting that is the same type of furnace (electric, induction, cupola, reverberatory, etc.) used at a facility to melt the same alloys.

- (17) LOW PRESSURE SPRAY is a liquid stream with a pressure of 35 pounds per square inch or less.
- (18) METAL CUTTING is a process used to abrasively cut ingot, log, billet stock, castings, or formed parts not conducted under a continuous flood of metal removal fluid.
- (19) METAL GRINDING is a process used to grind ingot, log, billet stock, castings, or formed parts not conducted under a continuous flood of metal removal fluid.
- (1520) METAL MELTING FURNACE is any apparatus in which metal is brought to a liquid state including, but not limited to, blast, crucible, cupola, direct arc, electric arc, hearth, induction, pot, and sweat furnaces, and refining kettles, regardless of the heating mechanism. ~~METAL MELTING FURNACE does not include any apparatus in which metal is heated but does not reach a molten state, such as a sintering furnace or an annealing furnace.~~
- (21) MOLTEN METAL is metal or metal alloy in a liquid state, in which a cohesive mass of metal will flow under atmospheric pressure and take the shape of a container in which it is placed.
- (22) METAL REMOVAL FLUID is a fluid used at the tool and workpiece interface to facilitate the removal of metal from the part, cool the part and tool, extend the life of the tool, or to flush away metal chips and debris, but does not include minimum quantity lubrication fluids used to coat the tool workpiece interface with a thin film of lubricant and minimize heat buildup through friction reduction. Minimum quantity lubrication fluids are applied by pre-coating the tool in the lubricant, or by direct application at the tool workpiece interface with a fine mist.
- (1423) NEW SAND is any sand not exposed to the casting process.
- (24) NON-CHROMIUM METAL is any metal that contains less than 0.5 percent by weight total chromium content as determined on a monthly weighted average.
- (17) ~~NON-FERROUS METAL is any metal that contains aluminum, arsenic, cadmium, copper, lead, zinc or their alloys.~~
- (18) ~~PARTICULATE MATTER OR PM is any material, except uncombined water, which exists in a finely divided form at standard conditions of temperature and pressure (293^o K and 760 mm mercury).~~
- (19) ~~FINE PARTICULATE MATTER OR PM₁₀ is any material, except uncombined water, which exists in a finely divided form at standard conditions of temperature and pressure (293^o K and 760 mm mercury).~~

- (20) ~~PARTICULATE MATTER CONTROL SYSTEM~~ is any device or series of devices designed and operated in a manner intended to remove or reduce fine particulate matter (<10 µm) from an air or gas stream.
- (21) ~~PERSON~~ is any firm, business establishment, association, partnership, corporation or individual, whether acting as principal, agent, employee or other capacity, including any governmental entity or charitable organization as defined in Health and Safety Code Section 39047.
- (22) ~~PROCESS EMISSION CONTROL~~ is any equipment installed and operated to control emissions of toxic metals from an emission point.
- (23) ~~PURE LEAD~~ is any alloy that is at least 90 percent lead and contains no more than 0.001 percent cadmium by weight and no more than 0.001 percent arsenic by weight.
- (2425) RERUN SCRAP is any material that includes sprues, gates, risers, foundry returns, and similar material intended for remelting that has been generated at the facility as a consequence of a casting or forming process but has not been coated or surfaced with any other material and:-
- (A) Was generated at the metal melting facility as a consequence of a casting or forming process; or
 - (B) Was generated offsite of the metal melting facility as a consequence of a casting or forming process from materials generated at the metal melting facility, has not been sold or distributed in commerce, and includes documentation confirming that the materials were generated at the metal melting facility.
- (2526) RINGLEMANN RINGELMANN CHART is the Ringlemann-Ringelmann Chart published in the United States review of Mine Information Circular No. 1C8333, (May 1967), as specified in the Health and Safety Code Section 41701 (b).
- (25) ~~RERUN-SCRAP~~ is any material that includes sprues, gates, risers, foundry returns, and similar material intended for remelting that has been generated at the facility as a consequence of casting or forming process but has not been coated or surfaced with any material containing cadmium, arsenic, or nickel.
- (2627) SCRAP is any metal or metal-containing material that has been discarded or removed from the use for which it was produced or manufactured and which is intended for reprocessing. This does not include rerun scrap.
- (2728) SOLDER is any metal in which the sum of the lead and tin content is greater than 50 percent by weight and which is used to join two metals or join a metal and to any other metal.

(28) ~~TYPE METAL is any lead-based alloy used for Linotype machines.~~

(d) Emission Control Requirements

~~Any person who owns or operates a non-ferrous melting facility shall be in compliance with all the requirements specified in subdivisions (d) and (e), no later than July 6, 1996.~~

(1) Until compliance with the provisions pursuant to paragraphs (d)(3) or (d)(4), an owner or operator of a non-chromium melting operation shall vent All all emission points shall be vented to an emission collection system designed and operated in accordance with the manufacturer specifications, which was submitted in the permit application to the DistrictSouth Coast AQMD, and the conditions specified in the issued permit.

(2) Until compliance with the provisions pursuant to paragraphs (d)(3) or (d)(4), an owner or operator of a non-chromium metal melting operation shall vent The the gas stream from any emission collection system shall be ducted to a control device which shall reduce the particulate emissions by 99 percent or more by weight.

(3) No later than January 1, 2021, an owner or operator of a non-chromium metal melting operation shall reduce emissions from a non-chromium metal melting furnace by a minimum of 99 percent, as demonstrated through a source test pursuant to subdivision (h), of:

(A) Arsenic by a minimum of 99 percent;

(B) Cadmium by a minimum of 99 percent; and

(C) Nickel by a minimum of 99 percent.

(4) As an alternative to paragraph (d)(3), an owner or operator of a non-chromium metal melting operation may elect to demonstrate facility-wide mass emission limits for each of the specific pollutants above from all non-chromium metal melting furnaces and associated emission control devices by demonstrating through a source test pursuant to subdivision (h), achievement of the following limits:

(A) Arsenic: less than 0.095 pounds per calendar year 0.000066 pounds per hour, in lieu of the emission limit in subparagraph (d)(3)(A);

(B) Cadmium: less than 0.74 pounds per calendar year 0.000514 pounds per hour, in lieu of the emission limit in subparagraph (d)(3)(B); or

(C) Nickel: less than 12.2 pounds per calendar year 0.00848 pounds per hour, in lieu of the emission limit in subparagraph (d)(3)(C).

For purposes of this rule, only point sources that have a source test result of greater than X pounds per hour shall be included in determining the total facility mass emission rates for arsenic, cadmium, and nickel.

- (35) Until compliance with the provisions pursuant to paragraphs (d)(3) or (d)(4), The an owner or operator of a non-chromium metal melting operation shall not allow the temperature of the gas stream entering any particulate matter control device that is part of the emission collection system shall not to exceed 360 degrees Fahrenheit, unless it can be demonstrated and is approved in writing by the District Executive Officer, that a control efficiency of 99 percent or more for arsenic and cadmium, as demonstrated through a source test pursuant to subdivision (hg), will be achieved at a higher temperature.
- (4) ~~The control efficiency of the particulate control device shall be determined by a source test conducted in accordance with SCAQMD Method 5.2—Determination of Particulate Matter Emissions from Stationary Sources Using Heated Probe and Filter. An alternate test method to Method 5.2 may be used if it is approved by the Executive Officer or his designee of the California Air Resources Board. The control efficiency shall be calculated using the following equation:~~

$$\frac{C_{in} - C_{out}}{C_{in}} \times 100 = \% \text{ emission reduction}$$

Where: C_{in} = mass of particulate matter at the inlet to the control device

C_{out} = mass of particulate matter at the outlet of the control device

Mass = sum of the filter catch, probe catch, impinge catch, and solvent extract

~~The Executive Officer or his designee may require additional source testing periodically to verify continued compliance or when the process is changed.~~

- (5) ~~Good operating practices shall be used by the facility, and demonstrated through a maintenance program and the use measuring devices, or other procedures approved by the District, to maintain air movement and emission collection efficiency by the system consistent with the design criteria for the system:~~
- (A) ~~Maintenance Program~~
- ~~The maintenance program shall specify at a minimum the following:~~
- (i) ~~Maximum allowable variation from designed values of operating parameters, such as air velocity in the hood and ducts and pressure drop across the control device.~~

- ~~(ii) Areas to be visually inspected, such as the clean side of the baghouse and ducts operating under positive pressure, and the required frequency of such inspections.~~
 - ~~(iii) Methods of documenting compliance with these requirements, such as a log of such inspections and records of observations and measurements.~~
 - ~~(B) Measuring Devices~~
 - ~~(i) Flow Meter~~

~~Flow meter (s) shall be installed in the collection system to indicate the air velocity in the duct leading to or from the control device~~
 - ~~(ii) Pressure Gauge~~

~~A magnehelic or a light sensitive gauge shall be installed to indicate the pressure drop. This gauge should have a high and low setting for the pressure drop and should trigger an alarm system when the high or low set points are exceeded or the cleaning cycle when the high set point is reached.~~
 - ~~(iii) Broken Bag Detector~~

~~A broken bag detector with an alarm system shall be installed in the dry filter control device to sound an alarm, if there are broken or damaged filter media or leaks in the baghouse.~~
 - ~~(iv) Temperature Gauge~~

~~A thermocouple and a temperature controller to monitor the temperature to the inlet of the control device shall be installed.~~
- ~~(e) Fugitive Emission Control~~
 - ~~(16) No activity associated with non-ferrous chromium metal melting at a facility, including furnace operation, casting, emission control system operation, and the storage, handling, or transfer of any materials (except new sand) shall discharge into the air any air contaminant, other than uncombined water vapor, for a period aggregating more than three minutes in any one hour which is:~~
 - ~~(A) Half as dark or darker in shade as that designed as Number 1 on the ~~Ringlemann~~Ringelmann Chart, as published by the United States Bureau of Mines; or~~
 - ~~(B) Of such opacity so as to obscure an observer's view to a degree equal to or greater than smoke as described in subparagraph (e)(1)(A)(d)(6)(A) or 10 percent opacity.~~

- (7) An owner or operator of a non-chromium metal melting operation where an emission control device is used to capture and control emissions from the non-chromium metal melting operation shall not allow visible emissions from a non-chromium metal melting furnace to meander out of the direct path to the collection location(s) of the emission collection system.
- (8) No later than July 1, 2020, the owner or operator of non-chromium metal melting furnaces existing prior to [Date of Adoption], shall submit complete South Coast AQMD permit applications for emission control devices to the Executive Officer.

(e) Housekeeping Requirements

- (1) An owner or operator of a non-chromium metal melting operation shall control fugitive metal dust emissions by conducting the following housekeeping requirements:
 - (2A) Dust-forming metal-containing material including, but not limited to, dross, ash, ~~or~~ feed material, trash, or debris, shall be stored in an enclosed storage area, a building enclosure, or stored in a manner which meets the requirements of paragraph (e)(1): covered containers to prevent any metal dust emissions. Containers shall remain covered at all times, except when material is actively deposited into a receptacle, and shall be free of liquid and dust leaks;
 - (3B) Material collected by an ~~particulate matter~~emission control system device shall be discharged into closed containers or an enclosed system that is completely sealed to prevent any metal dust emissions;
 - (C) All areas where furnace and casting operations occur and waste generated from housekeeping activities is stored, disposed of, recovered, or recycled shall be cleaned at least weekly using an approved cleaning method; and
 - (D) All areas where furnace, casting, metal cutting, and metal grinding operations occur shall not be cleaned using dry cleaningsweeping or compressed air cleaning.
- (4) Surfaces that are subjected to vehicular or foot traffic shall be vacuumed, wet mopped, or otherwise maintained in accordance with a District approved housekeeping plan, which shall be submitted as part of the compliance plan.
- (2) Effective [30 days after Date of Adoption], an owner or operator of a non-chromium metal melting operation shall control fugitive metal dust emissions by conducting the following housekeeping requirements:

- (A) Collection vents, openings, and ducting of each non-chromium metal melting operation emission control device shall be inspected quarterly and if necessary, cleaned using an approved cleaning method;
- (B) Any stack that is a source of emissions associated with non-chromium metal melting operations shall not utilize a weather cap that restricts the flow of exhaust air;
- (C) Unless located within a building enclosure or an enclosed storage area, slag and any waste generated from the housekeeping requirements of this subdivision and the construction or maintenance activities of subdivision (f), shall be transported within closed conveyor systems or in covered containers to prevent any fugitive metal dust emissions. This subparagraph shall not be applicable to the transport of high temperature materials exceeding 500 degrees Fahrenheit;
- (D) The following locations shall be cleaned, at a minimum, weekly using an approved cleaning method:
 - (i) Floors within 20 feet of a work station or work stations dedicated to metal grinding or metal cutting operations not conducted under a continuous flood of metal removal fluid;
 - (ii) Floors within 20 feet of any entrance/exit point of an enclosed storage area or building enclosure that houses the grinding or cutting operations not conducted under a continuous flood of metal removal fluid; and
 - (iii) Floors within 10 feet of the transfer points of an emission control device dedicated to the metal grinding or metal cutting operations not conducted under a continuous flood of metal removal fluid;
- (E) Dust-forming metal-containing material including slag or materials generated from housekeeping, construction, or maintenance requirements of this subdivision, shall be stored in an enclosed storage area, a building enclosure, or covered containers to prevent any metal dust emissions. Containers shall remain covered at all times, except when material is actively deposited into a receptacle, and shall be free of liquid and dust leaks; and
- (F) After any construction or maintenance activity or event, including, but not limited to, accidents, process upsets, or equipment malfunction that results in the deposition of fugitive metal dust emissions, the area where the

construction or maintenance activity occurred shall be cleaned within an hour using an approved cleaning method.

(f) Compliance ScheduleBuilding Enclosure Requirements

- ~~(1) All facilities subject to this rule, including those seeking an exemption pursuant to paragraph (i)(1) and/or (i)(2), shall submit a compliance plan no later than January 6, 1995, to show how they will comply with all the applicable provisions of the rule or to demonstrate proof of exemption.~~

~~The compliance plan shall, at a minimum, contain the following information:~~

- ~~(A) how the exemption (i)(1) and (i)(2) may apply;~~
- ~~(B) How the control measure or proposed alternate control measure, (h), will meet the requirements of (d)(1) through (d)(4);~~
- ~~(C) How the maintenance program measures for the control device will ensure continuous compliance; and,~~
- ~~(D) How the housekeeping measures will minimize fugitive emissions.~~

~~Those seeking exemptions pursuant to (i)(3) through (i)(6), may submit in writing a letter, instead of a compliance plan, to the District, providing proof of exemption.~~

- ~~(2) Facilities required to install or modify control equipment pursuant to this rule shall submit permit to construct application(s) by no later than July 6, 1995, and shall comply with the rule no later than July 6, 1996.~~

- ~~(1) No later than July 1, 2020, an owner or operator of a non-chromium metal melting operation shall conduct all metal melting, metal grinding, and metal cutting operations, in a building enclosure.~~

- (1) No later than July 1, 2020, an owner or operator of a non-chromium metal melting operation shall conduct all metal melting, metal grinding, and metal cutting operations in a building enclosure. If the building enclosure contains enclosure openings to the exterior that are on opposite ends of the building enclosure where air can pass through any space where non-chromium metal melting, metal grinding, or metal cutting operations occur, an owner or operator of a non-chromium metal melting operation shall close at least one end all enclosure openings on one end for each pair of opposing ends of the building enclosure, except during the passage of vehicles, equipment, or people, by using one or more of the following:

- (A) Door that automatically closes;
- (B) Overlapping plastic strip curtains;
- (C) Vestibule;

- (D) Airlock system;
 - (E) Barrier, such as a large piece of equipment that restricts air from moving through the building enclosure; or
 - (F) Alternative method to minimize the release of dust-forming metal-containing fugitive emissions from the building enclosure that an owner or operator of a facility can demonstrate to the Executive Officer is an equivalent or more effective method(s) to prevent dust-forming metal-containing fugitive emissions escaping a building enclosure.
- (2) No later than [60 days after Date of Adoption], an owner or operator of a non-chromium metal melting operation shall notify the Executive Officer if any of the requirements specified in paragraphs (f)(1) and (f)(2) cannot be complied with due to conflicting requirements set forth by the United States Department of Labor Occupational Safety and Health Administration (OSHA), California Division of Occupational Safety and Health (Cal/OSHA), or other municipal codes or agency requirements directly related to worker safety. A Building Enclosure Compliance Plan shall be submitted to the Executive Officer for review and approval no later than [90 days after Date of Adoption] for facilities existing before [Date of Adoption], and prior to initial start-up for all other operations. The Building Enclosure Compliance Plan shall be subject to plan fees specified in Rule 306 – Plan Fees and include:
- (A) An explanation as to why any of the provisions specified in paragraph (f)(1) are in conflict with the requirements set forth by OSHA, Cal/OSHA, or other municipal codes or agency requirements directly related to worker safety; and
 - (B) Alternative compliance measure(s) that will be implemented to minimize the release of dust-forming metal-containing fugitive emissions to the outside of the building enclosure.
- (3) The Executive Officer shall notify an owner or operator of a non-chromium metal melting operation in writing whether the Building Enclosure Compliance Plan is approved or disapproved.
- (A) If the Building Enclosure Compliance Plan is disapproved, an owner or operator shall resubmit the Building Enclosure Compliance Plan within 30 calendar days after notification of disapproval of the Building Enclosure Compliance Plan. The resubmitted Building Enclosure Compliance Plan shall include any information to address deficiencies identified in the disapproval letter. In the alternative, an owner or operator may appeal the

Building Enclosure Compliance Plan disapproved by the Executive Officer to the Hearing Board pursuant to Rule 216 – Appeals and Rule 221 – Plans.

(B) The Executive Officer will either approve the revised and resubmitted Building Enclosure Compliance Plan or modify the Building Enclosure Compliance Plan and approve it as modified. An owner or operator may appeal the Building Enclosure Compliance Plan modified by the Executive Officer to the Hearing Board pursuant to Rule 216 – Appeals and Rule 221 – Plans.

(4) An owner or operator of a non-chromium metal melting operation shall implement the Building Enclosure Compliance Plan, as approved by the Executive Officer, no later than 90 days after receiving notification of approval for facilities existing before [Date of Adoption], and prior to initial start-up for all other facilities. Compliance with the approved alternative compliance measures shall constitute compliance with the applicable provisions of paragraphs (f)(1) and (f)(2).

(g) Recordkeeping

(1) ~~Facilities subject to subdivision (d) shall maintain on site for a period of two years, and make available to the District upon request, a record of the results of any source testing required by the District to demonstrate that the particulate matter control device(s) are operating as required by paragraph (d)(2).~~

(2) ~~Facilities seeking an exemption under paragraphs (i)(1) and/or (i)(2) or (i)(3) shall maintain for two years records of the amount and type of metal processed in those furnaces including results of analyses as required to support exemptions under paragraph (i)(2). These records shall be made available to the District upon request.~~

(h) Alternative Emissions Control

~~The District may approve an alternative emission control measure proposed by a facility if the facility operator can demonstrate to the satisfaction of the Executive Officer or his designee that the alternative control measure is enforceable, achieves equivalent or greater reductions in emissions and risk, and achieves the reduction within the same time period as required by this rule. The Executive Officer or his designee shall revoke this approval if the facility operator fails to adequately implement the alternative approach or the alternative approach does not reduce emissions as required.~~

(g) Source Testing Requirements

- (1) ~~At least 60 days prior to conducting a source test pursuant to paragraphs (g)(2) through (g)(4), No later than October 1, 2020 for the initial source test required pursuant to paragraph (g)(2), and no later than three months prior to the deadline for the periodic source test required pursuant to paragraph (g)(3),~~ an owner or operator of a non-chromium metal melting operation shall submit a source test protocol to the Executive Officer for approval. The source test protocol shall include the following:

 - (A) The source test criteria, all assumptions, and required data;
 - (B) Calculated target arsenic, cadmium, and nickel concentrations or mass emission standards;
 - (C) Planned sampling parameters;
 - (D) Information on equipment, logistics, personnel, and other resources necessary to conduct an efficient and coordinated source test; and
 - (E) Evaluation of the capture efficiency of the emission collection system.
- (2) No later than January 1, 2021, an owner or operator of a non-chromium metal melting operation shall conduct an initial source test of all non-chromium metal melting furnaces to determine compliance with the emission limits for arsenic, cadmium, and nickel pursuant to paragraphs (d)(3) and (d)(4).
- (3) An owner or operator of a non-chromium metal melting operation shall conduct a source test of all non-chromium metal melting furnaces once every 60 months after the initial source test to demonstrate compliance with the emissions limits for arsenic, cadmium, and nickel pursuant to paragraphs (d)(3) and (d)(4).
- (4) An owner or operator of a non-chromium metal melting operation may source test an uncontrolled furnace and apply the emission rate established by the source test results proportionately to all uncontrolled functionally similar furnaces at the facility.
- (5) An owner or operator with a new or modified non-chromium metal melting furnace or emission control device for a non-chromium metal melting furnace installed on or after [Date of Adoption], shall submit a source test protocol pursuant to subparagraphs (g)(1)(A) through (g)(1)(E) within 90 days after its Permit to Construct is issued by the Executive Officer and conduct the initial source test for the emission control device no later than 120 days after the approval of the source test protocol.
- (6) An owner or operator of a non-chromium metal melting operation shall notify the Executive Officer, in writing, of the intent to conduct source testing, one week prior

to conducting any source test required by paragraphs (g)(2) through (g)(5) and (i)(3). A change in the source test date shall be reported to the Executive Officer made to 1-800-CUT-SMOG, ~~in writing,~~ at least twenty four hours prior to cancelling or rescheduling.

- (7) An owner or operator of a non-chromium metal melting operation shall notify the Executive Officer within five calendar days of when the facility knew or should have known of any source test result(s) that exceeded any of the emission standards specified in subdivision (d). Notifications shall be made to 1-800-CUT-SMOG and followed up in writing to the Executive Officer with the results of the source tests within 10 calendar days of notification.
- (8) An owner or operator shall conduct source tests while operating at a minimum of 80 percent of the equipment's permitted capacitythroughput and in accordance with California Air Resources Board (CARB) Method 436 – *Determination of Multiple Metal Emissions from Stationary Sources*.
- (A) The total sample volume for each sample must be sufficient to achieve analytical results at the method reporting limit. Alternatively, collect a minimum sample volume of 150 dry standard cubic feet for each sample. Assuming the following method reporting limits:
- (i) Arsenic ≤ 0.2 microgram per sample;
 - (ii) Cadmium ≤ 0.2 microgram per sample; and
 - (iii) Nickel ≤ 0.2 microgram per sample.
- (B) For the purposes of this rule, if at least one test run is below the limit of detection, the following quantification procedures shall be used:
- (i) In situations in which all test runs and analyses consistently indicate levels below the limit of detection, the compound can be identified as “not detected” and its inclusion will not be required.
 - (ii) In cases in which one or more of the test runs and analyses show measured values above the limit of detection, the runs or analysis that were below the limit of detection shall be assign one half of the limit of detection for that run.
- (9) An owner or operator of a non-chromium metal melting operation may use alternative or equivalent source test methods as defined in United States Environmental Protection Agency (U.S. EPA) 40 CFR Part 60, Section 60.2, if approved in writing by the Executive Officer, in addition to the CARB, or the U.S. EPA, as applicable.

- (10) An owner or operator of a non-chromium metal melting operation shall use a test laboratory approved under the South Coast AQMD Laboratory Approval Program for the source test methods cited in this subdivision. If there is no approved laboratory, then approval of the testing procedures used by the laboratory may be granted by the Executive Officer on a case-by-case basis based on South Coast AQMD protocols and procedures.
- (11) When more than one source test method or set of source test methods are specified for any testing, the application of these source test methods to a specific set of test conditions is subject to approval by the Executive Officer. In addition, a violation established by any one of the specified source test methods or set of source test methods shall constitute a violation of the rule.
- (12) An existing source test conducted on or after January 1, 2016 for a non-chromium metal melting furnace or emission control device for a non-chromium metal melting furnace existing before [Date of Adoption] may be used as the initial source test specified in paragraph (g)(2) to demonstrate compliance with the emission limits of subdivision (d) so long as the source test meets the following criteria:
 - (A) The source test conducted is the most recent since January 1, 2016;
 - (B) The source test demonstrated compliance with the emission limit requirements of subdivision (d); and
 - (C) The source test was conducted using applicable and approved test methods and test laboratories specified in paragraphs (g)(8) through (g)(10).
- (13) Reports from source testing conducted pursuant to subdivision (g) and paragraph (i)(3) shall be submitted to the South Coast AQMD within 90 days of completion of source testing.

(i) **Exemptions**

~~(1) Small Quantity Exemptions.~~

~~A facility shall be exempt from subdivisions (d) and (e), if they meet either one of the following conditions:~~

- ~~(A) The facility melts a total of no more than one ton per year of all non-ferrous metals;~~
- ~~or~~
- ~~(B) For facilities melting solely metals listed in Table I, [not including any metal or alloy that meets the purity exemption of paragraph (i)(2)], the eligibility for exemption shall be determined using the following formula:~~

$$A/A_0 + B/B_0 + C/C_0 + \dots \leq 1$$

Where A, B, C, ..., are quantities of Table I metals melted and A₀, B₀, C₀, ..., are the exemption limits listed in Table I.

- (i) For each metal listed in Table I, divide the quantity melted by the specific exemption limit listed.
- (ii) Sum the resulting fractions for all the metals.
- (iii) If the sum does not exceed 1.0, the facility qualifies for exemption under paragraph (i)(1).

Table I
Exemption Limits For Metal Melted

<u>Metal</u>	<u>Exemption Limit</u> (tons per year)
Pure Lead	400
Hard Lead	200
Aluminum Scrap	125
Aluminum Ingot containing more than 0.004 percent cadmium or 0.002 percent arsenic by weight	125
Solder	100
Zinc Scrap	30
Copper or copper-based alloys (except scrap) containing more than 0.004 percent cadmium or 0.002 percent arsenic by weight	30
Type Metal	25

- (2) **Metal or Alloy Purity Exemption**
Facilities or furnaces which do not melt scrap except clean aluminum scrap or rerun scrap and which melt a metal or alloy (other than metals listed in Table I) which is shown by laboratory analysis to have less than 0.004 percent of cadmium and less than 0.002 percent of arsenic by weight are exempt from subdivisions (d) and (e).
- (3) **Clean Aluminum Scrap**

~~Furnaces used exclusively to process clean aluminum scrap or a mixture of clean aluminum scrap and aluminum ingot to produce extrusion billet are exempt from paragraphs (d)(1) through (d)(5).~~

(4) ~~Aluminum Scrap Furnaces~~

~~The combustion chamber in a reverberatory furnace is exempt from the requirements of paragraphs (d)(1) through (d)(5) if the furnace meets the following conditions:~~

~~(A) The furnace is used solely to melt aluminum and aluminum-based alloys; and,~~

~~(B) The furnace is constructed with a charging well or similar device in which feed is added to molten metal in a separate chamber.~~

(5) ~~Aluminum Pouring Exemption~~

~~Ladles, launders or other equipment used to convey aluminum from a melting or holding furnace to casting equipment is exempt from the requirements of paragraphs (d)(1) through (d)(5).~~

(6) ~~Rule 1420 – Emissions of Lead~~

~~Facilities that emit lead and who have demonstrated 99 percent or greater control efficiency for particulate matter or 98 percent or greater for lead pursuant to the requirement of Rule 1420 paragraph (e)(2), shall be exempt from the requirement of paragraph (d)(2) provided:~~

~~(A) The source test method used meets the requirement of paragraph (d)(4) for particulate matter or SCAQMD Method 12.1 for lead; and,~~

~~(B) The inlet temperature to the control device meets the requirement of paragraph (d)(3).~~

(7) ~~Control Devices for Fugitive Emissions~~

~~Devices used solely to control fugitive emissions are exempt from the requirements of (d)(1) through (d)(5).~~

(jh) Applicable Material Testing Methods Requirements

(1) Until January 1, 2021, an owner or operator of a non-chromium metal melting operation shall use One one of the following methods as identified in subparagraphs (jh)(1)(A) through (jh)(71)(F) or an alternate method deemed acceptable approved, in writing, by the Executive Officer or his designee shall be used. Sampling for these methods shall comply with ASTM E 88-58 (1986), “Standard Practice for Sampling Nonferrous Metals and Alloys in Cast Form for Determination of Chemical Composition.”

- (4A) To determine the composition of alloys defined in paragraph (c)-(1) and to determine the cadmium content of aluminum alloys to evaluate eligibility for exemption under paragraphs ~~(i)(2)~~ and ~~(k)(3)~~, one of the following methods shall be used:
 - (Ai) ASTM E 227-67 (1982), “Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique;”
 - (Bii) ASTM E 607-90, “Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Point-to-Plane Technique, Nitrogen Atmosphere;” or
 - (Ciii) ASTM E 1251-88, “Standard Method for Optical Emission Spectrometric Analysis of Aluminum and Aluminum Alloys by the Argon Atmosphere, Point-to-Plane Unipolar Self-Initiating Capacitor Discharge.”
- ~~(2) To determine alloy composition as defined in paragraphs (e)(13) and (e)(23), ASTM E 117-64 (1985) “Standard Method for Spectrographic Analysis of Pig Lead by the Point to Plane Technique” shall be used.~~
- (3B) To determine alloy composition as defined in paragraph (c)(~~26~~29), ASTM E 46-87 “Test Method for Chemical Analysis of Lead and Tin-Base Solder” shall be used.
- (4C) To determine cadmium concentration in zinc and zinc alloys to evaluate eligibility for exemption under paragraph ~~(i)(23)~~, ASTM E 536-84 (1988), “Standard Test Method for Chemical Analysis of Zinc and Zinc Alloys” shall be used.
- (5D) To determine cadmium concentration in copper and copper based alloys to evaluate eligibility for exemption under paragraph ~~(i)(23)~~, ASTM E 53-86a “Standard Test Method for Chemical Analysis of Copper” shall be used.
- (6E) To determine arsenic concentration in copper and copper based alloys to evaluate eligibility for exemption under paragraph ~~(i)(23)~~, ASTM E 62-89, “Standard Test Method for Chemical Analysis of Copper and Copper Alloys” shall be used.
- (7F) To determine arsenic content in aluminum or zinc (or any other alloy in which determination of arsenic by spectrochemical methods is compromised by interference) to evaluate eligibility for exemption under paragraph ~~(i)(23)~~, U.S.-EPA Method 7061 (Revision 1, December, 1987), “Arsenic (Atomic Absorption, Gaseous Hydride),” U.S. EPA Test Methods

for Evaluating Solid Waste Physical and Chemical Methods, First Update (3rd Edition), January, 1988; EPA/530/SW-846.3-1; PB 89-14876 shall be used. For aluminum alloys, ~~sample digestion shall employ the hydroxide digestion technique~~ Method 1 listed in Attachment A – Digestion of Metal Aluminum Sample for Determining Arsenic shall be employed.

- (2) An owner or operator of a non-chromium metal melting operation shall use one of the methods identified in paragraph (h)(3) to conduct the following material testing:
 - (A) Monthly analyses to determine the weighted average percentage of arsenic, cadmium, chromium, and nickel contained in metals and alloys melted in non-chromium metal melting furnaces; and
 - (B) Quarterly analyses to determine the weight percentage of arsenic, cadmium, chromium, and nickel contained in bulk samples of baghouse catches of baghouses associated with non-chromium metal melting operations.
- (3) An owner or operator of a non-chromium metal melting operation shall use one of the following test methods most applicable to the sample matrix, method detection limit, and interferences and as approved by the Executive Officer:
 - (A) U.S. EPA-approved method(s);
 - (B) Most current ASTM International method(s);
 - (C) Metallurgical assay(s) for raw materials; or
 - (D) Alternative method(s) approved, in writing, by the Executive Officer.

(i) Emission Control Device Monitoring

- (1) Bag Leak Detection System

Effective January 1, 2021, an owner or operator of a non-chromium metal melting operation shall operate, calibrate, and maintain a Bag Leak Detection System for all baghouses subject to Rule 1407 pursuant to the requirements of Rule 1155 – Particulate Matter (PM) Control Devices.
- (2) Effective January 1, 2021, for each emission control device, an owner or operator of a non-chromium metal melting operation shall use a gauge to continuously monitor the pressure drop across the emission control device filter. The gauge shall be located so that it is easily visible and in clear sight of an owner or operator or maintenance personnel. For the purposes of this requirement, an owner or operator shall ensure that the monitoring device:
 - (A) Is equipped with ports to allow for periodic calibration in accordance with manufacturer’s specifications;
 - (B) Is calibrated according to manufacturer’s specifications at least once every calendar year;

- (C) Is equipped with a continuous data acquisition system (DAS). The DAS shall record the data output from the monitoring device at a frequency of at least once every 60 minutes;
 - (D) Generates a data file from the computer system interfaced with each DAS each calendar day saved in Microsoft Excel (xls orxlsx) format or other format as approved by the Executive Officer. The file shall contain a table of chronological date and time and the corresponding data output value from the monitoring device in inches of water column. The operator shall prepare a separate data file each day showing the four-hour average pressure readings recorded by this device each calendar day; and
 - (E) Is maintained in accordance with manufacturer's specifications.
- (3) An owner or operator of a non-chromium metal melting operation emission control device shall be required to conduct a source test pursuant to subdivision (g), if the pressure across the **filter emission control device** is not maintained within the range specified by the manufacturer or according to conditions of the Permit to Operate for the emission control device as determined by hourly or more frequent recordings by the DAS for the averaging periods below, no later than 30 days after the discrepancy is detected:
- (A) A four-hour time period on three or more separate days over 60 consecutive days; or
 - (B) Any consecutive 24-hour period.
- (4) Effective January 1, 2021, an owner or operator of a non-chromium metal melting operation shall operate the emission collection system associated with an emission control device at a minimum capture velocity specified in the most current edition of the *Industrial Ventilation: A Manual of Recommended Practice for Design*, published by the American Conference of Governmental Industrial Hygienists, at the time a permit application is deemed complete with the South Coast AQMD.
- (5) Effective January 1, 2021, for each emission collection system subject to this subdivision, an owner or operator of a non-chromium metal melting operation shall conduct **and pass** a smoke test during source testing, pursuant to paragraphs (g)(2) through (g)(5), and at least once every six months thereafter, using the procedure set forth in Attachment B – Smoke Test to Demonstrate Capture Efficiency for Emission Collection Systems of an Emission Control Device **Pursuant to Paragraph (j)(5)** of this rule. The smoke test does not need to be performed if conducting the smoke test can be demonstrated to the Executive Officer that the smoke test would create an unreasonable risk. **If the emission collection system failed a smoke test,**

the owner or operator of a non-chromium metal melting operation shall not use the associated furnace(s) for production until the emission collection system passes a smoke test.

(6) Effective January 1, 2021, for each emission collection system, an owner or operator of a non-chromium metal melting operation shall use a calibrated anemometer to measure the slot velocity of each slot and pressure at each push air manifold at least once every six months, based on its location within a non-chromium metal melting operation and its design configuration.

(A) An emission collection system designed with a hood or enclosure shall maintain a capture velocity of at least 200 feet per minute as measured at the face of the enclosure or maintain at least the minimum slot velocity that verifies 100 percent collection efficiency measured in the most recent source test ~~or smoke test.~~

(B) An emission collection system without an enclosing hood that is designed with collection slots shall maintain a capture velocity of at least 2,000 feet per minute or maintain at least the minimum slot velocity that verifies 100 percent collection efficiency measured in the most recent source test ~~or smoke test.~~

(C) An emission collection system designed with a canopy hood without an enclosure shall maintain a capture velocity of at least 200 feet per minute across the entirety of all open sides extending from the perimeter of the hood and operating without cross drafts or maintain at least the minimum slot velocity that verifies 100 percent collection efficiency measured in the most recent source test.

(j) Recordkeeping Requirements

An owner or operator of a non-chromium metal melting operation shall maintain records of the following:

(1) Monthly quantities of raw materials processed, including ingots, scrap, and reruns and the purchase records to verify these quantities;

(2) Material testing data as required by subdivision (h);
Monthly analyses to determine the weighted average percentage of arsenic, cadmium, chromium, and nickel contained in metals and alloys using one of the following:

(A) United States Environmental Protection Agency (U.S. EPA) approved method(s);

- (B) Applicable method(s) pursuant to subdivision (h);
- (C) Metallurgical assay; or
- (D) An alternative method approved by the Executive Officer;
- (3) Quarterly analyses to determine the weight percentage of arsenic, cadmium, chromium, and nickel contained in bulk samples of baghouse catches;
- (3) Source test data as required by subdivision (hg) and paragraph (i)(3);
- (4) Housekeeping activities conducted as required by subdivision (e);
- (5) Data files, inspection, calibration documentation, and maintenance of emission control devices as required by subdivision (i), including the name of the person conducting the activity and the dates and times at which specific activities were completed;
- (6) Anemometer data collected, including capture velocities, dates of measurement, and calibration documentation as required by paragraph (i)(6); and
- (7) Smoke test documentation as required in Attachment B – Smoke Test to Demonstrate Capture Efficiency for Emission Collection Systems of an Emission Control Device Pursuant to Paragraph (j)(5).

An owner or operator shall maintain all records for three years, with at least the two most recent years kept onsite, and made available to the South Coast AQMD upon request.

(ik) Exemptions

- (1) An owner or operator of a non-chromium metal melting operation that melts no more than one ton per year of all non-chromium metals shall only be subject to the recordkeeping provisions of the rule, pursuant to subdivision paragraph (j)(1).
- (2) Until January 1, 2021, for facilities melting solely metals listed in Table I – Exemption Limits for Metal Melted, [not including any metal or alloy which is shown by laboratory analysis to have less than 0.004 percent of cadmium and less than 0.002 percent of arsenic by weight], the eligibility for exemption from subdivisions (d) and (i) shall be determined using the formula:

$$A/A_0 + B/B_0 + C/C_0 + \dots \leq 1$$

Where A, B, C, ..., are quantities of Table I metals melted and

A₀, B₀, C₀, ..., are the exemption limits listed in Table I.

- (A) For each metal listed in Table I, divide the quantity melted by the specific exemption limit listed.
- (B) Sum the resulting fractions for all the metals.

(C) If the sum does not exceed 1.0, the facility qualifies for exemption under paragraph (k)(2).

Table I
Exemption Limits for Metal Melted

<u>Metal</u>	<u>Exemption Limit</u> <u>(tons per year)</u>
<u>Pure Lead¹</u>	<u>400</u>
<u>Hard Lead²</u>	<u>200</u>
<u>Aluminum Scrap</u>	<u>125</u>
<u>Aluminum Ingot containing more than</u> <u>0.004 percent cadmium or</u> <u>0.002 percent arsenic by weight</u>	<u>125</u>
<u>Solder</u>	<u>100</u>
<u>Zinc Scrap</u>	<u>30</u>
<u>Copper or copper-based alloys</u> <u>(except scrap) containing more than</u> <u>0.004 percent cadmium or</u> <u>0.002 percent arsenic by weight</u>	<u>30</u>
<u>Type Metal³</u>	<u>25</u>

1: Pure Lead is any alloy that contains at least 90 percent lead and contains no more than 0.001 percent cadmium by weight and no more than 0.001 percent arsenic by weight.

2: Hard Lead is an alloy containing at least 90 percent lead and more than 0.001 percent arsenic by weight or 0.001 percent cadmium by weight.

3: Type Metal is any lead-based alloy used for Linotype machines.

(3) Metal or Alloy Purity Exemption

An owner or operator of a non-chromium metal melting operation shall be exempt from subdivisions (d), (g), and (i) provided that the facility:

(A) Facilities that mMelts less than 8,400 tons per year of non-chromium metal in furnaces which do not melt more than one percent scrap except rerun scrap and which melt a metal or alloy which is shown by laboratory analysis to have less than 0.004 percent cadmium and less than 0.002 percent arsenic by weight on a monthly weighted average are exempt from subdivisions (d), (h), and (j); or

(B) Melts less than 84,000 tons per year of non-chromium metal in furnaces which do not melt more than one percent scrap except rerun scrap and which melt a metal or alloy which is shown by laboratory analysis to have less than 0.0004 percent cadmium and less than 0.0002 percent arsenic by weight on a monthly weighted average.

An owner or operator seeking exemption under subparagraphs (k)(3)(A) and (k)(3)(B) shall demonstrate eligibility through material testing pursuant to paragraph (h)(3).

(4) Clean Aluminum Scrap

Until January 1, 2021, furnaces used exclusively to process clean aluminum scrap or a mixture of clean aluminum scrap and aluminum ingot to produce extrusion billet are exempt from subdivisions (d), (g), and (i).

(5) Aluminum Scrap Furnaces

Until January 1, 2021, the combustion chamber in a reverberatory furnace is exempt from the requirements in subdivisions (d), (g), and (i) if the furnace meets the following conditions:

(A) The furnace is used solely to melt aluminum and aluminum based alloys; and

(B) The furnace is constructed with a charging well or similar device in which feed is added to molten metal in a separate chamber.

(6) Aluminum Pouring Exemption

Ladles, launders, or other equipment used to convey aluminum from a melting or holding furnace to casting equipment shall only be subject to the requirements in subdivisions (e), (f), and (j) of this rule.

~~(7)~~ Rules 1420, 1420.1, and 1420.2

Equipment and operations subject to the requirements of Rule 1420 – Emissions Standard for Lead, Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Facilities, or Rule 1420.2 – Emissions Standards for Lead from Metal Melting Facilities, shall be exempt from the requirements of this rule.

(7) Rules 1420 and 1420.2

Equipment and operations subject to the requirements of Rule 1420 – Emissions Standard for Lead and Rule 1420.2 – Emission Standards for Lead from Metal Melting Facilities shall only be subject to paragraph (d)(5). If a Regulation XIV rule is adopted or amended that includes a provision for facilities subject to Rules 1420 and 1420.2 that addresses arsenic emissions, equipment and operations subject to the requirements of Rules 1420 and 1420.2 shall be exempt from the requirements of this rule.

- (8) Rule 1420.1
Equipment and operations subject to the requirements of Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Facilities shall be exempt from the requirements of this rule.
- (9) The owner or operator of a non-chromium metal melting operation shall be exempt from subdivision (d) provided that the facility has a Health Risk Assessment or Air Toxics Inventory Report approved or prepared by the South Coast AQMD for the purpose of the Hot Spots Act or this rule that, as approved or prepared, is below a maximum individual cancer risk of ten in one million or a Facility Priority Score of less than ten. An owner or operator seeking exemption under this paragraph shall maintain onsite the Health Risk Assessment or Air Toxics Inventory Report as approved or prepared, and made available to the South Coast AQMD upon request.
- (10) Metal grinding or metal cutting operations conducted under a continuous flood of metal removal fluid are exempt from paragraphs (f)(1) and (f)(2).
- (11) Dip soldering, brazing, metal grinding or metal cutting operations conducted during repair or maintenance activities are exempt from the requirements of this rule.

ATTACHMENT A

Digestion of Metal Aluminum Sample for Determining Arsenic

1. Introduction:

Metal aluminum cannot react with nitric acid (HNO₃) or concentrated sulfuric acid (H₂SO₄). It can dissolve in dilute sulfuric acid or hydrochloric acid (HCl). Active hydrogen, generated during the acid digestion process, will reduce arsenic to arsine (AsH₃), which will escape from solution, resulting in a low or negative arsenic value. The proposed method sets up a protocol to dissolve metal alumina without loss of arsenic.

2 Reagent:

3M Sodium Hydroxide (NaOH), 10% Mercury Sulfate (HgSO₄) Solution, 30% Hydrogen Peroxide (H₂O₂),

———1:1 H₂SO₄, Concentrated HNO₃, and Tiling Copper.

3 Procedure:

3.1. Dissolve

3.1.1 Dissolve using NaOH (Method 1).

Weigh 0.5 g of metal aluminum sample to a 125 milliliter (ml) Erlenmeyer flask, add 15 ml of 3M NaOH solution, allow to react and dissolve about 20 minutes. Again add 10 ml of 3M NaOH, continue reaction until no gas bubbles are present and the sample is dissolved completely.

3.1.2 Dissolve using HgSO₄ (Method 2).

Weigh 0.5 g of metal aluminum sample to a 125 ml Erlenmeyer flask, add 10 ml of 10% HgSO₄ solution and 5 ml of 30% H₂O₂. After 20 minutes, add appropriate amount of HgSO₄. Allow reaction to continue until no gas bubbles are present. Add metal copper strips (large surface area) into the sample solution. After 10 minutes, withdraw the copper strips and add new copper strips. Repeat until the surface of the copper strips in sample solution do not change to a silver color. Withdraw all copper strips from sample solution.

3.2. Digestion

Add 3 ml of concentrated HNO₃, 5 ml of 1:1 H₂SO₄ into the sample solution obtained from 3.1.1 or 3.1.2. Heat slowly and evaporate the sample solution until sulfur trioxide (SO₃) fumes are present for 5 minutes. Cool and dilute the sample to 50.0 ml. Determine Arsenic by Atomic Absorption method.

ATTACHMENT B

Smoke Test to Demonstrate Capture Efficiency for Emission Collection Systems of an Emission Control Device Pursuant to Paragraph (j)(5)

1. Applicability and Principle:

1.1 Applicability

This method is applicable to all furnaces where an emission control device is used to capture and control emissions from non-chromium metal melting operations.

1.2 Principle

Collection of emissions from a non-chromium metal melting operation is achieved by the emission collection system associated with the emission control device for the non-chromium metal melting operation. Emission control efficiency at the exhaust of an emission control device is related to capture efficiency at the inlet of the emission collection system. For this reason, 100 percent capture efficiency shall be maintained. A smoke generator placed within the area where collection of emissions by the emission collection system occurs reveals this capture efficiency.

2. Apparatus:

2.1 Smoke Generator

The smoke generator shall be adequate to produce a persistent stream of visible smoke (e.g. Model S102 Regin Smoke Emitter Cartridges). The smoke generator shall not provide excessive momentum to the smoke stream that may create a bias in the determination of collection efficiency. If the smoke generator provides slight momentum to the smoke stream, it shall be released perpendicular to the direction of the collection velocity.

3. Testing Conditions:

3.1 Equipment Operation

Any equipment to be smoke tested that is capable of generating heat as part of normal operation shall be smoke tested under those normal operating conditions. Operating parameters of the equipment during the smoke test shall be recorded. The smoke test shall be conducted while the emission collection system and the emission control device are in normal operation. The position of any adjustable dampers that can affect air flow shall be documented. Precautions shall be taken by the facility to evaluate any potential physical hazards to ensure the smoke test is conducted in a safe manner.

3.2 Cross-Draft

The smoke test shall be conducted while the emission collection system and emission control device are in normal operation and under typical draft conditions representative of the facility's non-chromium metal melting operations. This includes cooling fans and enclosure openings affecting draft conditions including, but not limited to, vents, windows, doorways, bay doors, and roll-ups, as well as the operation of other work stations and traffic. The smoke generator shall be at full generation during the entire test and operated according to manufacturer's suggested use.

4. Procedure:

4.1 Collection Slots

4.1.1 For work stations equipped with collection slots or hoods, the smoke shall be released at points where emissions from non-chromium metal melting operations are generated (e.g. the point where melting occurs). ~~Observe the collection of the smoke to the collection location(s) of the system. An acceptable smoke test shall demonstrate a direct stream to the collection location(s) of the emission collection system without meanderings out of this direct path.~~ Smoke shall be released at points not to exceed 12 inches apart across ventilated work areas. ~~Record these observations at each of the points providing a qualitative assessment of the collection of smoke to the emission collection system.~~

4.1.2 Observe the collection of the smoke from the smoke generator and emissions from the operations to the collection location(s) of the emission collection system. Record these observations at each of the points providing a qualitative assessment of the collection of smoke and emissions to the emission collection system.

4.2 Equipment Enclosures

4.2.1 Equipment enclosures include equipment where emissions are generated inside the equipment, and the equipment is intended to have inward air flow through openings to prevent the escape of process emissions. The smoke shall be released at points outside of the plane of the opening of the equipment, over an evenly spaced matrix across all openings with points not to exceed 12 inches apart. ~~Observe the inward movement of the smoke to the collection location(s) of the emission collection system. An acceptable smoke test shall demonstrate a direct stream into the equipment~~

~~without meanderings out of this direct path. Record these observations at each of the points providing a qualitative assessment of the collection of smoke to the emission collection system.~~

4.2.2 Observe the inward movement of the smoke from the smoke generator and emissions from the operations to the collection location(s) of the emission collection system. Record these observations at each of the points providing a qualitative assessment of the collection of smoke and emissions to the emission collection system.

5. **Results:**

A passing smoke test shall demonstrate a direct stream of smoke and emissions to the collection location(s) of the emission collection system without meanderings out of this direct path.

6. **Documentation:**

The smoke test shall be documented by photographs or video at each point that clearly show the path of the smoke and emissions. Documentation shall also include a list of equipment tested and any repairs that were performed in order to pass the smoke test. As previously discussed, the documentation shall include the position of adjustable dampers, cross-draft conditions, and the heat input of the equipment, if applicable. The documentation shall be signed and dated by the person performing the test.