

PROPOSED RULE 1407.1. EMISSIONS OF TOXIC AIR CONTAMINANTS FROM CHROMIUM ALLOY MELTING OPERATIONS

(a) Purpose

The purpose of this rule is to gather information and quantify arsenic, cadmium, chromium, hexavalent chromium, and nickel emissions from chromium alloy melting operations.

(b) Applicability

This rule shall apply to the owner and operator of any facility conducting chromium alloy melting operation(s) including, but not limited to, smelters (primary and secondary), foundries, die-casters, and other miscellaneous melting processes.

(c) Definitions

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

- (1) ALLOY STEEL is a steel that is alloyed with a variety of elements, in addition to carbon, in total amounts between 1.0% and 50% by weight.
- (2) CASTING is the formation of metallic parts or casts by pouring molten metal into a mold and core assembly or into a mold for ingots, sows, or cylinders.
- (3) CHROMIUM ALLOY is any alloy steel, stainless steel, superalloy, or any metal that is at least 0.5% chromium by weight.
- (4) DIE-CASTER is any facility, operation, or process where molten metal is forced under pressure into a mold cavity.
- (5) DROSS is the impurities discharged, in solid state, from the metal melting process.
- (6) DUCT SECTION is any length of duct, including angles and bends, which is contiguous between processes, emission collection systems, emission control devices, or ventilation inlets or outlets. Examples include ducting between a furnace and heat exchanger; baghouse and scrubber; and scrubber and blower, or the exhaust stack itself.
- (7) EMISSION COLLECTION SYSTEM is any equipment, including the associated ducting, installed for the purpose of directing, taking in, confining, and conveying toxic metal air contaminants and dust emissions.

Proposed Rule 1407.1 (Cont.)

- (8) EMISSION CONTROL DEVICE is any equipment installed in the ventilation system of a point source or after the emission collection system designed to reduce toxic metal air contaminants and dust emissions from metal melting operations.
- (9) 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.
- (10) FACILITY 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.
- (11) FOUNDRY is any facility, operation, or process where metal or a metal alloy is melted and cast.
- (12) FUGITIVE METAL EMISSIONS are emissions of metal-containing material from locations other than emission point sources including, but not limited to, foot and vehicular traffic and storage piles where the dust forming material at the emission source contains metals.
- (13) MECHANICAL FINISHING is a metal removal or reshaping process including, but not limited to, abrasive blasting, burnishing, grinding, polishing, and sawing.
- (14) METAL is any ferrous (iron-based) metals and alloys and non-ferrous (non-iron-based) metals and alloys. Examples of metals include, but are not limited to, iron, stainless steel, and their iron-based alloys and aluminum, brass, bronze, cadmium chromium, copper, gold, lead, manganese, mercury, nickel, platinum, silver, tin, titanium, tungsten, and zinc, and their non-ferrous alloys.
- (15) 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.
- (16) 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 the container in which it is placed.
- (17) POINT SOURCE is any process or equipment used for melting operations to process chromium alloys.
- (18) RERUN SCRAP is any material 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 arsenic, cadmium, chromium, or nickel, intended for re-

Proposed Rule 1407.1 (Cont.)

melting including, but not limited to, sprues, gates, risers, foundry returns, and similar material.

- (19) 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. SCRAP does not include rerun scrap.
- (20) SLAG is the by-product material discharged, in melted state, from the metal melting process.
- (21) SMELTER is any facility, operation, or process where heat is applied to ore in order to melt out a base metal.
- (22) STAINLESS STEEL is a steel alloy with a minimum of 10.5% chromium content by mass.
- (23) STEEL is a metal alloy of iron and carbon and other elements.
- (24) SUPERALLOY is a heat-resistant metal alloy based on nickel, nickel-iron, or cobalt.

(d) Operational Information Survey Requirements

Within [60 Days After Date of Adoption], the owner or operator of a facility conducting chromium alloy melting operation(s) shall submit a completed survey that includes:

- (1) Casting techniques performed on chromium alloys;
- (2) Mechanical finishing activities performed on chromium alloys;
- (3) For each metal melting furnace melting chromium alloys:
 - (A) South Coast Air Quality Management District (SCAQMD) application or permit number and device identification number, if applicable;
 - (B) The equipment make, model, serial number, date of manufacture, and date of installation;
 - (C) Furnace type;
 - (D) Size and capacity;
 - (E) Range of operating temperatures;
 - (F) Minimum, average, and maximum weight of metal processed per batch and per day, based on data from calendar year 2018;
 - (G) Fuel type, if gas-fired, include British Thermal Unit (BTU) gas rating and burner age;
 - (H) Refractory information, including, but not limited to, type of refractory brick and refractory coating, chromium content, frequency of refractory brick replacement and refractory coating application, based on data from calendar year 2018, if applicable;

Proposed Rule 1407.1 (Cont.)

- (I) Minimum, average, and maximum operating temperatures, based on data from calendar year 2018;
 - (J) The equipment make, model, serial number, date of manufacture, and date of installation of associated Emission Collection System(s) and/or Emission Control Device(s), and corresponding SCAQMD application or permit number and device identification number, if applicable; and
 - (K) Metals and alloys melted, based on data from calendar year 2018; and
 - (4) Housekeeping activities routinely performed, including schedule, method(s) used, and location(s) of activities.
- (e) Source Test Requirements
- (1) The owner or operator of a facility conducting chromium alloy melting operation(s) shall submit a Source Test Protocol to the Executive Officer for approval no later than *[60 Days After Date of Adoption]* or as required by a SCAQMD permit.
 - (2) The Source Test Protocol shall include the source test criteria of the end user and all assumptions, required data, calculated targets and the following:
 - (A) All proposed pollutant and capture efficiency test methods;
 - (B) Proposed analytical detection limits;
 - (C) Planned sampling parameters; and
 - (B) Information on equipment, logistics, personnel, and other resources necessary.
 - (3) The Executive Officer will approve or reject the Source Test Protocol and notify the owner or operator. Approval or rejection will be based on whether the Source Test Protocol was prepared consistent with this subdivision and material deviation from source test protocol guidelines. If the Source Test Protocol is rejected:
 - (A) Within 30 days of the date of notification by the Executive Officer of Source Test Protocol rejection, an owner or operator shall revise and resubmit a Source Test Protocol that corrects all identified deficiencies.
 - (B) The Executive Officer will either approve the revised and resubmitted Source Test Protocol or modify the revised Source Test Protocol and approve it as modified.
 - (4) No later than 90 days after approval of the Source Test Protocol, the owner or operator of a facility conducting chromium alloy melting operation(s) shall perform the following source tests for mass emissions and concentration on the metal melting furnace pursuant to this subdivision at the inlet and the outlet to the

Proposed Rule 1407.1 (Cont.)

associated emissions control device pursuant to the approved source test protocol for the following pollutants:

- (A) Particulate matter;
 - (B) Arsenic, cadmium, chromium and nickel; and
 - (C) Hexavalent chromium.
- (5) The owner or operator of a facility conducting chromium alloy melting operation(s) shall conduct source tests pursuant to this subdivision and in accordance with one of the following applicable test methods as approved by the Executive Officer:
- (A) Particulate matter by:
 - (i) SCAQMD Method 5.1 – *Determination of Particulate Matter Emissions from Stationary Sources Using a Wet Impingement Train;*
 - (ii) SCAQMD Method 5.2 – *Determination of Particulate Matter Emissions from Stationary Sources Using Heated Probe and Filter;*
or
 - (iii) SCAQMD Method 5.3 – *Determination of Particulate Matter Emissions from Stationary Sources Using an In-Stack Filter;*
 - (B) Arsenic, cadmium, chromium, and nickel by CARB Method 436 – *Determination of Multiple Metal Emissions from Stationary Sources;* and
 - (C) Chromium and hexavalent chromium by CARB Method 425 – *Determination of Total Chromium and Hexavalent Chromium Emissions from Stationary Sources.*
- (6) The owner or operator of a facility conducting chromium alloy melting operation(s) shall source test the metal melting furnace melting chromium alloy:
- (A) With an emissions control device;
 - (B) Melting the alloy with the highest chromium concentration in the final product processed in the facility; and
 - (C) Operating with the highest throughput, if there are multiple furnaces that meet subparagraphs (e)(6)(A) and (e)(6)(B).
- (7) The owner or operator of a facility conducting chromium alloy melting operation(s) may use an alternative furnace in the facility and/or final product processed in the facility pursuant to (e)(6), if the Executive Officer approves a request in writing. Approval or rejection will be based on the furnace, final product processed, schedule, and throughput.
- (8) At the time the source tests are conducted, the owner or operator of a facility conducting chromium alloy melting operation(s) shall perform capture efficiency testing that includes:

Proposed Rule 1407.1 (Cont.)

- (A) Quantitative velocity measurements using a hot-wire anemometer, a vane anemometer, or a device or method approved by the Executive Officer; and
 - (B) Qualitative visual demonstration using smoke generators.
- (9) The owner or operator of a facility conducting chromium alloy melting operation(s) shall perform materials composition testing pursuant to paragraphs (f)(2) and (f)(3) of the following materials from one batch processed during the chromium and hexavalent chromium source test:
- (A) All raw material(s). Facilities melting scrap shall test, at a minimum, three different pieces from each batch of scrap;
 - (B) Molten material;
 - (C) Final product;
 - (D) Slag;
 - (E) Dross; and
 - (F) Baghouse catch.
- If the slag, dross, or baghouse catch is not accessible immediately during or after the source test, then it shall be tested immediately after it becomes accessible.
- (10) The owner or operator of a facility conducting chromium alloy melting operation(s) may use alternative or equivalent source test methods and materials composition tests as defined in 40 CFR Part 60.2, if approved in writing by the Executive Officer.
- (11) The owner or operator of a facility conducting chromium alloy melting operation(s) shall use a test laboratory approved under the SCAQMD Laboratory Approval Program for the source test, capture efficiency testing, and materials composition testing. If there is no approved laboratory, then the testing procedures used by the laboratory may be used, if approved by the Executive Officer in writing.
- (12) The owner or operator conducting chromium alloy melting operation(s) shall notify the Executive Officer in writing at least 10 calendar days prior to conducting any test required by this subdivision.
- (13) No later than 60 days after the completion of the source tests, the owner or operator of a facility conducting chromium alloy melting operation(s) shall submit to the Executive Officer, using a format approved by the Executive Officer, reports from source tests, capture efficiency, and materials composition testing conducted.
- (14) Beginning [*Date of Adoption*], the owner or operator of a facility conducting chromium alloy melting operation(s) required to source test pursuant to this subdivision may submit to the Executive Officer, a request for SCAQMD to

Proposed Rule 1407.1 (Cont.)

conduct the source tests. The Executive Officer will accept the first three submittals.

- (15) In lieu of complying with paragraphs (e)(1) through (e)(13), the owner or operator of a facility conducting chromium alloy melting operation(s) may submit, no later than [60 Days After Date of Adoption], a completed SCAQMD-approved source test report conducted up to twelve months prior to [Date of Adoption] that meets the requirements of paragraphs (e)(4) through (e)(11).

(f) **Materials Composition Testing**

- (1) No later than [180 Days After Date of Adoption], the owner or operator of a facility conducting chromium alloy melting operation(s) not required to source test pursuant to subdivision (e) shall perform materials composition testing for one batch representative of melting the alloy with the highest chromium concentration in the final product processed in the facility pursuant this subdivision of the following materials:

- (A) All raw material(s). Facilities melting scrap shall test, at a minimum, three different pieces from each batch of scrap;
- (B) Molten material;
- (C) Final product;
- (D) Slag; and
- (E) Dross.

If the slag or dross is not accessible immediately during or after the batch is processed, then it shall be tested immediately after it becomes accessible.

- (2) Materials composition testing shall determine the content of arsenic, cadmium, chromium, hexavalent chromium, and nickel in percent by weight.
- (3) Materials composition testing shall be in accordance with the following test methods most applicable to the sample matrix and as approved by the Executive Officer:
 - (A) U.S. EPA 200.7 – *Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry*;
 - (B) U.S. EPA 6010D – *Inductively Coupled Plasma-Optical Emissions Spectrometry*;
 - (C) U.S. EPA 6020B – *Inductively Coupled Plasma-Mass Spectrometry*;
 - (D) U.S. EPA 6200 – *Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*;
 - (E) U.S. EPA 7196A – *Chromium, Hexavalent (Chelation/Extraction)*; and/or

Proposed Rule 1407.1 (Cont.)

- (F) U.S. EPA 7199 – *Determination of Hexavalent Chromium in Drinking Water, Groundwater and Industrial Wastewater Effluents by Ion Chromatography.*
- (4) The owner or operator of a facility performing materials composition testing may use alternative materials composition tests methods, if approved in writing by the Executive Officer.
- (g) Recordkeeping Requirements
 - (1) Between January 1, 2019 and January 1, 2020, the owner or operator of a facility conducting chromium alloy melting operation(s) shall make records of the following:
 - (A) For each metal melting furnace melting chromium alloys, monthly records of run hours and weight and type of raw materials processed including, but not limited to, additives, alloys, ingots, scrap, and reruns;
 - (B) Raw material vendor information for chromium alloys; and
 - (C) For each baghouse venting furnace melting operations of chromium alloys, records of weight of the baghouse catch per container and date collected.
 - (2) The owner or operator of a facility conducting chromium alloy melting operation(s) shall maintain records for a period of not less than three years and make such records available to the Executive Officer upon request.
 - (3) No later than February 1, 2020, the owner or operator of a facility conducting chromium alloy melting operation(s) shall submit to the Executive Officer, using a format approved by the Executive Officer, records pursuant to paragraph (g)(1).
- (h) Exemptions
 - (1) Equipment and operations subject to the requirements of Rules 1420 – Emissions Standard for Lead, 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities, or 1420.2 – Emission Standards for Lead from Metal Melting Facilities, shall be exempt from the requirements of this rule.
 - (2) A facility that produces a total of no more than one ton per year of all chromium alloys from melting operations shall be exempt from the requirements of this rule.
 - (3) Furnaces with a capacity of 25 pounds or less shall be exempt from the requirements of this rule.