Proposed Amended Rule 1407

Working Group #2

November 9, 2017
Summary of Working Group #1

- Rule development process
- Current Rule 1407 requirements
- Potentially affected facilities
- Breakdown of furnace data
- Site visits and surveys
Purpose and Applicability

• **Purpose**
  • Reduce emissions of:
    • Current 1407: Arsenic, cadmium, and nickel
    • PAR 1407: Include hexavalent chromium

• **Applicability**
  • Current 1407: Non-ferrous metal melting operations
  • PAR 1407: Include ferrous metal melting operations
Stainless Steel

• Chromium
  • Stainless steel contains 10.5-28% chromium
  • At high temperatures, hexavalent chromium can be formed from the oxidation of chromium\(^1\)

• Nickel
  • The majority of the stainless steels contain 8-10% nickel

\(^1\) https://www.osha.gov/SLTC/hexavalentchromium/
Hexavalent Chromium

• Hexavalent chromium was identified as a carcinogenic toxic air contaminant in 1986 by the California Air Resources Board

• Can occur as an aerosol or particulate matter in the air

• Exposure to hexavalent chromium can cause both cancer and non-cancer health effects
  • Inhalation over a long period time increases risk of lung and nasal cancer
  • Non-cancer effects include irritation of nose, throat and lungs including nasal sores and perforation of the membrane separating the nostrils
PAR 1407 Control Approach

**Point Source Controls**
Point source pollution controls to reduce metal particulate emissions at source

**Total Enclosure**
Building enclosure, with minimal openings for ingress and egress to contain fugitive metal particulate emissions

**Housekeeping**
Housekeeping provisions to minimize fugitive metal particulates from becoming airborne
Requirements – Point Source

• Current 1407
  • Vent all emission points to an emission collection system ducted to a control device that reduces the particulate emissions by 99%

• PAR 1407 – Initial Concepts
  • Deliberating between basing requirements on emission of specific toxics or emission of particulates
  • Considering the option to meet either control efficiency or mass emission rate
Requirements – Source Tests

- **Current 1407**
  - One-time source test to determine control efficiency of the particulate control device
    - SCAQMD Method 5.2 – Determination of Particulate Matter Emissions from Station Sources Using Heated Probe and Filter
    - Alternative method approved by Executive Officer
  - Executive Officer may require additional source testing periodically or when the process is changed

- **PAR 1407 – Initial Concepts**
  - Proposing periodic source testing
### Control Efficiency vs Mass Emission

<table>
<thead>
<tr>
<th>Source Test Requirement</th>
<th>Control Efficiency</th>
<th>Mass Emission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing at Inlet</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Testing at Outlet</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Low Inlet at Source</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- **Source Testing**
  - Control efficiency requires testing the inlet and outlet
  - Mass emission requires testing only the outlet (cost savings)

- **Low Inlet Source**
  - Mass emission is easier to verify than control efficiency

- Mass emission provides a more absolute amount of a specific compound that will be allowed from a point source
Emission Control Device Monitoring

- Current 1407
  - Requires maintenance plan and use of measuring devices

- PAR 1407 will remove maintenance plan and instead enhance current parametric monitoring
  - Monitoring of key parameters can identify operational issues of air pollution control equipment
    - More continuous status of operating conditions
    - Indication that emissions are not well controlled
    - Alert the operator of operational issues or needed maintenance on the pollution control equipment
Emission Control Device Monitoring – Flow Meter

- **Current 1407**
  - Flow meter to indicate air velocity in the duct leading to or from the control device

- **PAR 1407**
  - Flow meter with continuous data acquisition system to monitor the air velocity in the duct
  - Smoke test once every three months to demonstrate capture efficiency
Emission Control Device Monitoring – Pressure Gauge

• Current 1407
  • Magnehelic or light sensitive gauge with an alarm system to indicate the pressure drop

• PAR 1407
  • Gauge with a continuous data acquisition system to monitor the pressure drop across the filter
  • Source test required if the pressure across the filter is not maintained
Emission Control Device Monitoring – Broken Bag Detector

• Current 1407
  • Broken bag detector to sound an alarm if there are broken/damaged filter media or leaks

• PAR 1407
  • Bag Leak Detection System (Rule 1155) to continuously monitor bag leakage and failures
Total Enclosures

• Current 1407
  • No requirements for metal melting operations to occur inside a building enclosure

• PAR 1407
  • Proposing all metal melting operations be conducted in a total enclosure

• Building Enclosures
  • Provides a secondary containment of fugitive emissions
  • Prevents exposure to the elements
  • Minimizes cross-draft

Total Enclosure

• Permanent containment structure
• Completely enclosed with floors, walls and a roof
• Limited openings to allow access and egress of people and vehicles
  • Minimize openings using automatic roll-up doors, plastic strip curtains, etc. to:
Housekeeping Requirements

- **Current 1407**
  - Housekeeping Plan submitted with the Compliance Plan which specifies how housekeeping measures will minimize fugitive emissions

- **PAR 1407**
  - Remove Housekeeping Plan and incorporate specific provisions similar to those in other recently amended rules
  - Designed to minimize fugitive dust in and around building enclosures where metal melting processes are located
    - Fugitive dust that accumulates on surfaces can become airborne potentially exposing surrounding land uses
Ambient Air Monitoring

- Current 1407
  - No provisions for ambient air monitoring

- PAR 1407
  - Will not include provisions for mandatory or an on-ramp for ambient monitoring
  - Ambient monitoring for Rule 1407 facilities to be addressed in Proposed Rule 1480

- Proposed Rule 1480 – Toxics Monitoring
  - Ambient monitoring of toxic air contaminants
Current 1407 Exemptions

- Small Quantity
- Metal or Alloy Purity
- Aluminum
  - Clean aluminum scrap
  - Aluminum scrap furnaces
  - Aluminum pouring
- Rule 1420 – Emissions Standard for Lead
- Control Devices for Fugitive Emissions
Small Quantity Exemption

- **Current 1407**
  - Melts less than one ton per year of all non-ferrous metals; or
  - Using formula and Exemption Limits listed in Table I

- **PAR 1407**
  - Retain an exemption for total metal melted
    - Reassess one ton per year threshold
  - Reassess need for formula and Exemption Limits in Table I
Metal or Alloy Purity Exemption

• Current 1407
  • Furnaces that do not melt scrap (except for clean aluminum scrap or rerun scrap); and
  • Metal or alloy melted must have less than 0.004% cadmium and 0.002% arsenic

• PAR 1407
  • Reassess percentage limit for cadmium and arsenic
  • Include percentage limit for hexavalent chromium and nickel
Aluminum Exemptions

• Current 1407
  • Clean aluminum scrap or mixture of clean aluminum scrap or aluminum ingots to produce extrusion billets
  • Combustion chamber in a reverberatory aluminum furnace constructed with a charging well
  • Aluminum pouring equipment

• PAR 1407
  • Reassess aluminum exemptions
Exemption for Rule 1420 – Emissions Standard for Lead

• Current 1407
  • Exempt from control efficiency requirement if meets Rule 1420 requirements

• PAR 1407
  • Make consistent with new Rule 1420 requirements
  • Additional rule exemptions?
Exemption for Control Devices for Fugitive Emissions

- Current 1407
  - Devices used solely to control fugitive emissions

- PAR 1407
  - Remove exemption for control devices for fugitive emissions
    - Ensure that fugitive emission control devices are operated and maintained at approved control efficiencies
Schedule

• Site Visits               Ongoing
• Additional Working Groups TBD
• Public Workshop          February 2018
• Stationary Source Committee March 16, 2018
• Set Hearing              April 6, 2018
• Public Hearing           May 4, 2018
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