

Proposed Rule 1430.1

Control of Emissions from Grinding Operations at Forging Facilities

Working Group Meeting #1

October 7, 2015

Background

- Beginning in 2012, the public raised air quality concerns about forging operations
- Staff conducted sampling and monitoring
 - Found elevated levels of metals from metal finishing/grinding operations from forging facility
 - Decline of ambient levels after implementation of improved or additional controls at monitored forging facility
- Staff began rulemaking process to evaluate emissions from forging operations and need for additional controls

Stakeholder Working Group

- Comprised of stakeholders including industry, environmental groups, community members, and agencies
- Provides stakeholders opportunity to discuss elements of proposed rule with staff
- Assist staff in understanding
 - Key issues and concerns
 - Industry terms, industry practices, etc.
- Working group meetings held throughout the rule development process and open to the public

General Overview of Rulemaking Process

Information Gathering



Initial Objective and Scope



Develop Rule Concepts



Draft of Proposed Rule Language

Information Gathering

- Overall objective is to identify where additional controls are needed
- Evaluate emission sources within operation through:
 - Site visits
 - Permit and emissions database
 - Other resources
- Pollutants and emissions levels
 - SCAQMD emissions and permitting database
 - Testing data – source tests, ambient data, settling plates, wipe samples
- Existing pollution controls and best management practices
- Existing regulatory requirements

Forging Facility Site Visits

- SCAQMD conducts site visits to better understand:
 - Processes associated with forging operations
 - Emissions sources
 - Controls for point source and fugitive emissions
- Rules staff visited 13 forging facilities – more planned

Facilities Visited

- | | | |
|------------------------------------|----------------------------|----------------|
| • Foot Axle & Forge Company | • Schlosser Forge Facility | • Shultz Steel |
| • Carlton Forge Works | • Pacific Forge Inc | • Weber Metals |
| • Quality Aluminum Forge, LLC | • Press Forge Co | • Firth Rixson |
| • California Drop Forge | • Continental Forge | • Ajax Forge |
| • Aluminum Precision Products Inc. | | |

Forging Facilities

- Based on SCAQMD permitting database 22 forging facilities identified
- Potentially more facilities will be identified
- Summary of the types of facilities
 - 13 facilities forge aerospace parts
 - 2 facilities forge aerospace parts and oil industry
 - Other facilities forge automotive parts and other industrial applications
- General types of metal alloys forged
 - Aluminum
 - Titanium
 - Steel
 - Varying percentages of alloys

Forging Process

Billet or Ingot Preparation

- Cutting or sawing
- Grinding and buffing
- Heat Treating

Forging

- Hot billet or ingot moved to forging area
- Lubricants sprayed on billet or ingot prior to and/or during forging process
- Forging process begins

“Finishing” Operations

- Abrasive blasting
- Grinding
- Cutting
- Buffing

Billet or Ingot Preparation – Cutting, Sawing, Grinding, and Buffing

- Description of activity
 - Sawing and Cutting - billets can be cut to specified sizes and weights
 - Grinding and Buffing - irregularities can be removed from the surface of metal billets and ingots to achieve desired finish, dimensional accuracy, machine-ability and strength
- Emissions
 - Fugitive metal particulates may be generated if not adequately controlled
- Current control approaches observed and/or permitted
 - Most activities conducted within an enclosure
 - Most activities conducted under a hood vented to air filtration or collection device
- Applicable SCAQMD rules
 - Exempt from permitting under Rule 219

Billet or Ingot Preparation – Heat Treating

- Description of activity
 - Billets and ingots are heated using furnaces prior to and/or during the forging process
 - Furnaces vary in heating capacity and size
- Emissions
 - Combustion emissions from natural gas furnaces – NO_x, SO_x, PM
- Current control approaches observed and/or permitted
 - Low-NO_x burners
- Applicable SCAQMD rules
 - Rule 1147
 - RECLAIM for NO_x facilities >4 tons per year

Forging - Presses

- Description of activity
 - Forging includes pressing, hammering, rolling, or piercing of metal using a mechanical or manual tool
 - Types of forges
 - Drop forge press
 - Hammer press
 - Mechanical press
 - Ring roller
- Emissions
 - Electric and manual presses have no on-site emissions
 - Steam powered presses may have NO_x, SO_x, and PM emissions if powered by natural gas (some may use waste heat from furnace)
- Current control approaches observed and/or permitted
 - Operating within a building enclosure
- Applicable SCAQMD Rules
 - For steam boilers – Rule 1146

Forging - Lubricants

- Description of activity
 - Liquid and powder lubricants are used to facilitate release of die and forged metal
- Emissions
 - Visible emissions observed when lubricants contact die and forged metal
- Current control approaches observed and/or permitted
 - Operating within a building enclosure
- Applicable SCAQMD rules
 - VOC levels in lubricants regulated under SCAQMD Rule 1144
 - Emissions from heated process need further study

“Finishing” Operations

- Physical or chemical methods to either produce dimensional corrections to the forging or perform surface treatment
 - Abrasive Blasting
 - Buffing/Polishing
 - Sawing and Cutting
 - Grinding

Finishing - Abrasive Blasting

- Description of activity
 - Abrasive blasting is a stream of abrasive material that is propelled against a surface under high pressure to alter surface
 - Abrasive blasting is used to smooth or “clean” forged metal
- Emissions
 - Fugitive metal particulates may be generated if not adequately controlled
 - Fugitive particulate from shot material
- Current control approaches observed and/or permitted
 - Blast cabinet and room vented to an air pollution control system
 - Varying housekeeping of particulates on surfaces observed
- Applicable SCAQMD rules
 - SCAQMD permit required if volume of blast section > 53 ft³
 - Abrasive blasting regulated under Rule 1140

Finishing – Sawing, Cutting, Grinding and Buffing

- Description of activity
 - Sawing, cutting, grinding and buffing used to remove portions of forged metal that is not desired in the finished product
 - Types of grinding operations
 - Hand grinding
 - Swing grinding
 - Surface grinding
- Emissions
 - Fugitive metal particulates may be generated if not adequately controlled
 - Based on site visits and emission sampling, grinding can be a significant source of fugitive emissions
 - Decline of ambient levels after implementation of improved or additional controls at monitored forging facility

Finishing – Sawing, Cutting, Grinding and Buffing (*Continued*)

- Current control approaches observed and/or permitted
 - Enclosures (building or room)
 - Enclosures (building or room) with negative air venting to air pollution controls
 - Stations with a collection hood venting to control equipment
 - Types of air pollution control equipment
 - Baghouse, can be equipped with HEPA filters
 - Cyclone
 - Particulate Capture: bag or bin to store controlled particulates
 - Varying housekeeping and maintenance activities conducted such as sweeping, bag replacements, etc.
- Applicable SCAQMD rules
 - Exempt from permitting under Rule 219

Diesel Mobile Equipment

- Description of activity
 - Mobile equipment is used:
 - To move large billets and ingots
 - During forging process for large pieces
 - To move finished products
- Emissions
 - Diesel particulate
- Current control approaches observed and/or permitted
 - Mobile equipment is regulated under the California Air Resources Board
 - Source category would not be included in PR 1430.1

Summary of Information Gathering

Forging Process	Findings	Initial Regulatory Recommendation
Billet or Ingot Preparation – Cutting, sawing, grinding, and buffing	Exempt from permitting under Rule 219.	Regulatory requirements needed to control fugitive metal particulate
Billet or Ingot Preparation – Heat Treating	Regulated under Rule 1147 and RECLAIM.	No further regulatory action needed
Forging – Presses, ring rollers, and hammers	Depending on type of press, no on-site emissions or emissions regulated under Rule 1146 or RECLAIM.	No further regulatory action needed

Summary of Information Gathering *(Continued)*

Forging Process	Findings	Initial Regulatory Recommendation
Forging - Lubricants	Visible emissions generated when lubricants contacted dies and forged metal. VOC emissions regulated under Rule 1144.	<i>Further study needed to assess emissions from lubricants.</i>
Finishing – Abrasive Blasting	Regulated under Rule 1140.	No further regulatory action needed.
Finishing Grinding, Sawing, Cutting, Buffing	Exempt from permitting under Rule 219.	Regulatory requirements needed to control fugitive metal particulate

Proposed Rule 1430.1

- PR1430.1 – Will specifically address emissions from cutting, sawing, grinding, buffing operations at forging facilities in the Basin
- PR1430.1 - selected to be developed before 1430 series in order to immediately address a known problem based on:
 - Existing air monitoring data from Carlton Forge Works
 - Emissions sampling analysis conducted at three other forging facilities
 - Observations and information gathered from 13 site visits
- PR1430 – Will serve as an “umbrella” rule to address emissions from grinding operations at all sources in the Basin

Next Steps

- Refine scope of PR 1430.1
- Develop rule concepts
- Additional working group meetings
- Governing Board Hearing – Spring 2016

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