Proposed Rule 1430 Control of Emissions from Grinding Operations at Forging Facilities

Working Group Meeting #3

October 26th, 2016

Review of Rule Development Activities to Date

1st Working Group Meeting

- Background
- Air quality glass plate samples at Carlton Forge Works
- Beginning of Ambient Air Monitoring
- Summary of initial facility site visits
- General scope of proposed rule

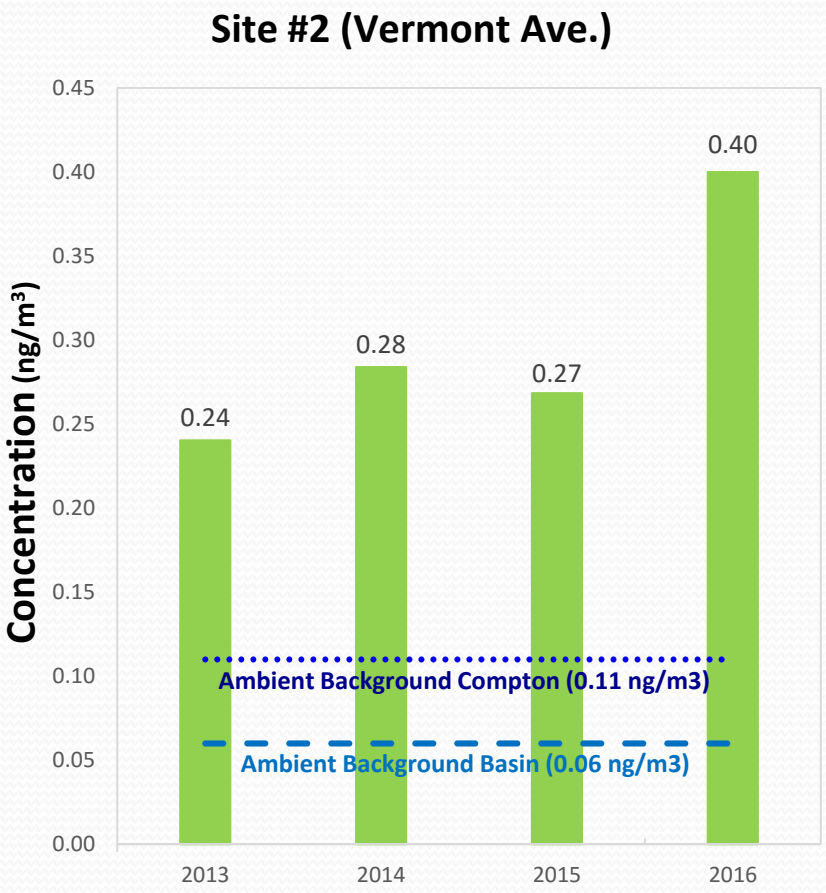
2nd Working Group Meeting

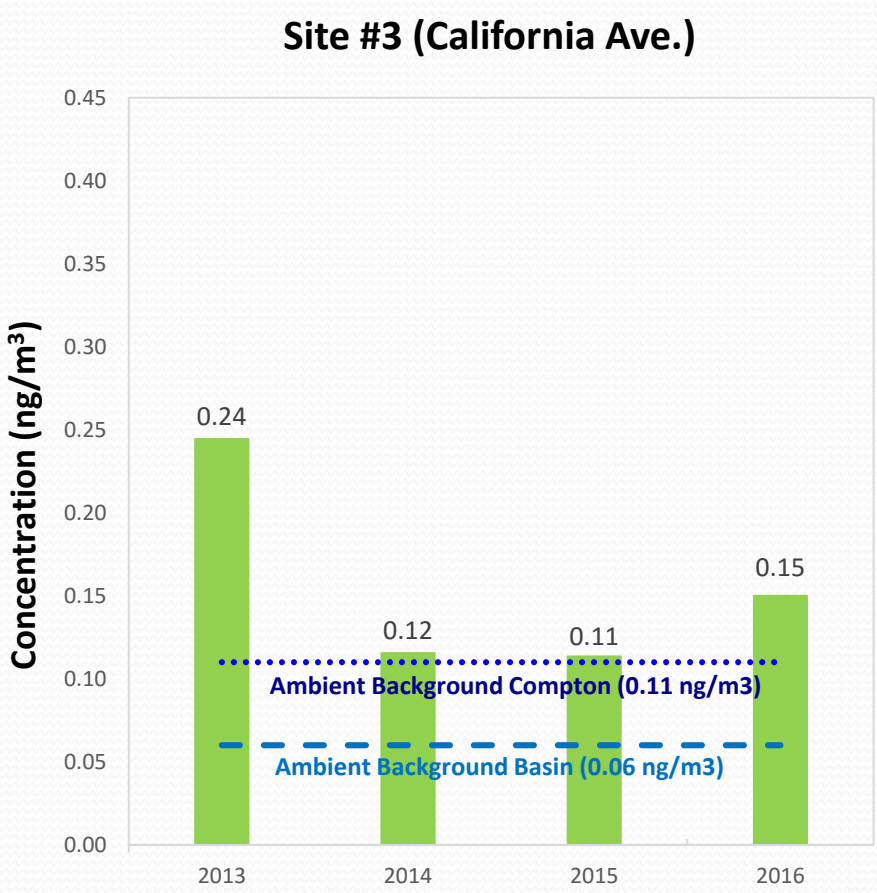
- Update on additional site visits
- Summary of information gathering, evaluation of emissions sources, existing emissions controls, and available emissions control strategies
- Evaluation of ambient air data from Paramount monitoring efforts
- Initial rule concepts

Rule Development Activities Since 2nd Working Group Meeting

- Reviewed potential emissions control strategies based on information available to date
- Additional site visit at Carlton Forge Works
- Collecting additional samples from baghouse catches
  - SCAQMD staff analyzing samples to determine metals present for different metal forging operations
- Updated results from ambient air monitoring activities in Paramount

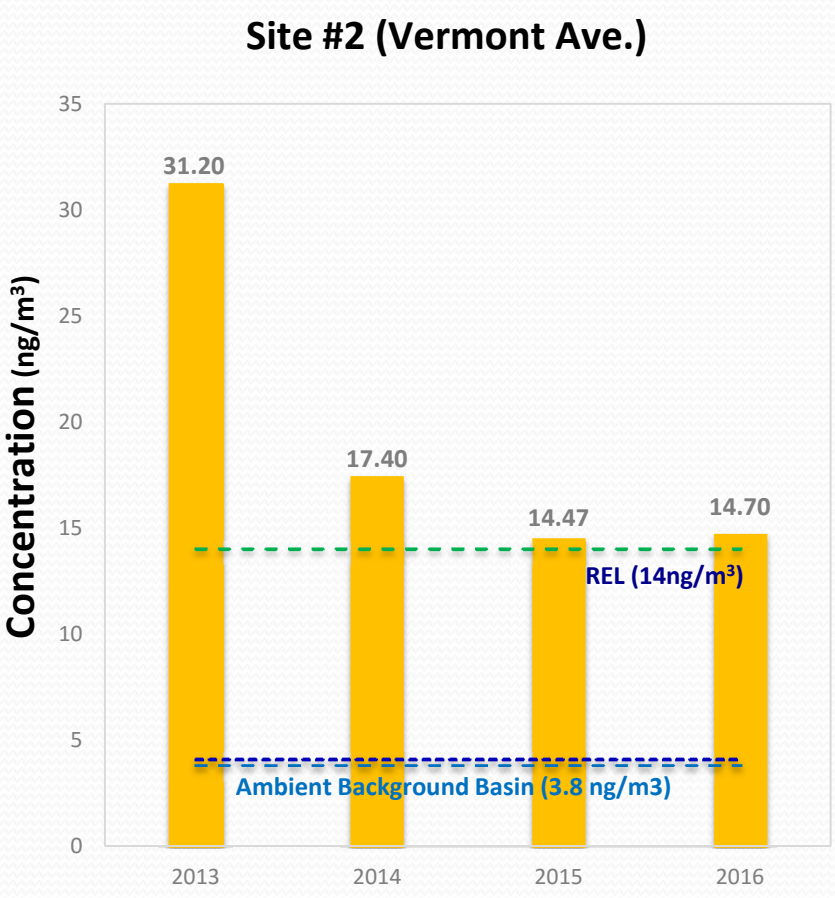
Hexavalent Chromium Ambient Air Monitoring Results-Updated through August 2016

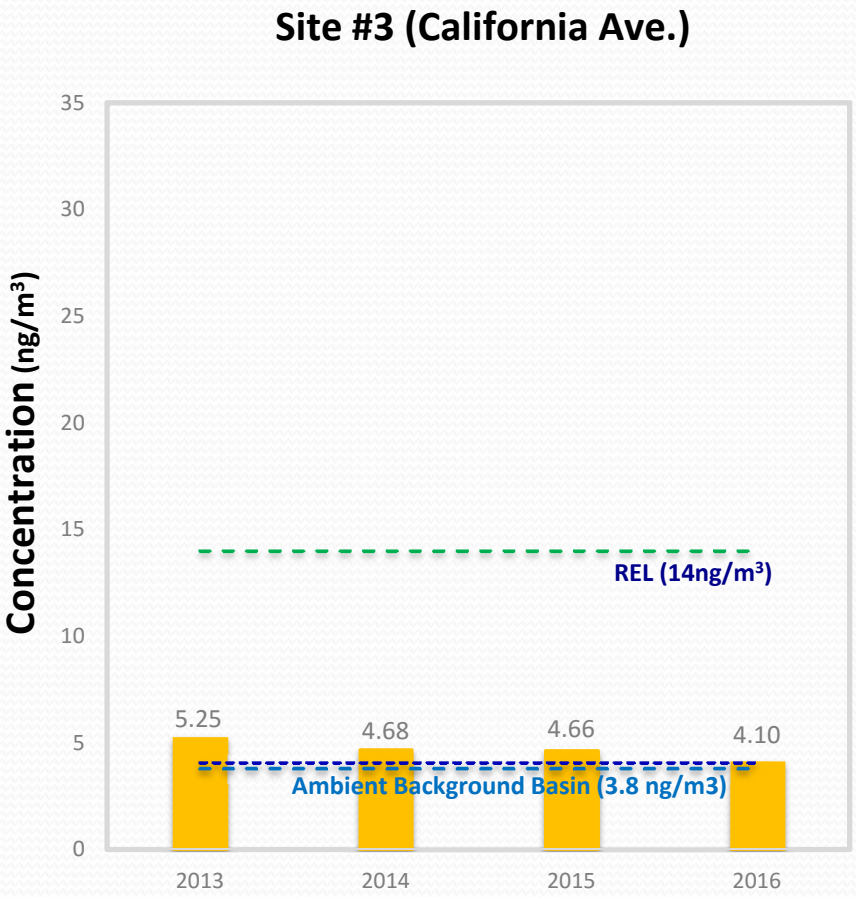




* 2013 and 2016 data are partial years

Nickel Ambient Air Monitoring Results-Updated through August 2016





---- Ambient Background Compton (4.06 ng/m³)

* 2013 and 2016 data are partial years

Proposed Rule 1430

Rule Structure

- Purpose
- Applicability
- Key Definitions
- Point Source Emission Control Requirements
- Total Enclosure Requirements
- Source Testing Requirements
- Housekeeping Requirements
- Recordkeeping Requirements
- Exemptions

Purpose and Objectives

- Purpose: To reduce toxic and particulate matter emissions from metal grinding operations at metal forging facilities
- Objectives
  - Reduce exposure to metal particulate from grinding operations from metal forging operations to surrounding communities
  - Reduce public nuisance impacts from metal grinding operations from metal forging operations

Applicability

- Applies to 22 metal forging facilities that conduct metal grinding operation onsite
  - Aerospace and defense parts
  - Automobile parts
  - Oil field parts
  - Other industrial applications
- Metal cutting operations conducted with coolants (wet cutting) will be excluded
- May expand applicability to other sources within forging operation if expanded monitoring in Paramount shows need

Key Definitions

- BILLET GRINDING – is grinding using a billet grinder that is designed to prepare large billets for forging
- SWING GRINDING – is grinding using a swing grinder designed with full lateral movement typically used to prepare medium and large billets
- STAND GRINDING – is grinding using a stand grinder that is usually single speed and used for smaller castings and lighter metal removal
- HAND GRINDING – is grinding using a hand grinder power tool that prepares, cuts, grinds and polishes (finishes) smaller castings, also known as, angle grinders, disc grinders, or side grinders

General Approach

Point Source Controls at Grinding Operation

- Pollution control device that contains or filters metal particulate at grinding operations

Physical Containment (Building Enclosure)

- Captures fugitive emissions that are not captured by the point source controls

Housekeeping Measures

- Clean up metal particulate that lands on surfaces in and around facility before it becomes airborne

Point Source Requirements at Grinding Operation

- Three main point source requirements:
  1. Point Source Emission Standard
  2. Collection Efficiency
  3. Proximity of Grinding to Pollution Controls
- Individual or series of grinding stations must be vented to an emissions control device

Collection and Control Efficiency for Point Source Requirements

Point Source Emission Standard
Ensures that the pollution control devices will meet a specified standard such as 98% control efficiency or an emission limit

Collection Efficiency
Ensures the pollution control device has the appropriate air flow to collect the emissions

Proximity of Grinding to Collection Device
Ensures grinding operation is at the appropriate distance to achieve the required Collection Efficiency

Point Source Emission Standard for Grinding Operation

- Staff is developing an emission standard for point source control for grinding operations at forging facilities
- Considerations in establishing point source emission standard
  - Equivalent or more stringent to Rule 1155 emission standard of 0.01 grains/dry cubic standard meter
  - Rule 1401 equivalent:
    - Key toxic drivers based on bag house catch samples
    - Proximity to sensitive receptors
    - Basic source parameters such as stack height, temperature, and velocity

Collection Efficiency for Grinding Operations

- Each point source must meet the minimum capture velocity requirement specified by the applicable standards of the U.S. Industrial Ventilation Manual including, but not limited to the following:
  - Meet design standards (e.g. hood size, booth dimensions)
  - Ventilation requirements shall be based on the most recent version of U.S. Industrial Ventilation Manual that is applicable at the time permit application is submitted

Collection Efficiency for Grinding Operation *(continued)*

- Provisions to ensure maintaining collection efficiency
  - Conduct a periodic smoke test once every 3 months for each emission collection system, unless, performing such test presents an unreasonable risk to safety
  - Smoke test must be performed from the location that grinding activity occurs
  - Periodic measurement of inward face velocity of pollution control equipment
- Each emission collection system and emission control device must be permitted

Proximity of Grinding Operation to Collection Device

- Grinding must be conducted within a maximum distance to the collection device (hood) specified by the U.S. Industrial Ventilation Manual to minimize fugitive emissions
- Owner or operator must clearly mark areas to ensure grinding activities are conducted in the appropriate area to achieve the collection efficiency
- Collection device should be free of any obstructions that would inhibit airflow

Total Enclosures Types

- Purpose of total enclosures is to contain fugitive dust that is not captured by the point source controls
- Two general types of total enclosures

1. Total enclosure with negative air (EPA Method 204)
   - Four sided structure with a roof that is free of gaps or openings
   - Openings of the total enclosure have a specified inward face velocity- 200 fpm
   - Air within the total enclosure is directed to an air pollution control device
2. Total enclosure (without negative air)
   - Four sided structure with a roof that is free of gaps or openings
   - No requirements for negative air within the total enclosure
   - Provisions to minimize cross draft and release of fugitive dust through openings by using physical barriers such as roll up doors, plastic curtains, air curtains, etc.

Total Enclosure Requirements

- All grinding areas must be conducted within a total enclosure
- Total enclosures must be installed no later than 1 year after date of rule adoption
- Total enclosures shall be designed in a manner that does not conflict with requirements set forth by the Occupational and Safety Hazard Assessment regarding worker safety
- The owner or operator of a metal forging facility shall minimize cross-draft conditions of a total enclosure by:
  - Closing openings that result in decrease in collection of metal particulate emissions for an emission collection system
  - Close openings include vents, windows, passages, doorways, bay doors, and roll-up doors when not in use
  - Other acceptable methods to minimize cross-draft conditions include installing plastic strip curtains or vestibules

Total Enclosure with Negative Air Vented to Pollution Controls

- Considering compliance option that would allow a lower collection efficiency at grinding operation if:
  - Total enclosure was under negative pressure and was vented to pollution controls
  - Must meet EPA Method 204 for total enclosures (200 fpm at enclosure openings)
  - Pollution control for total enclosure must meet same emission standard as point source controls for grinding operations
  - Increased housekeeping requirements
  - Increased monitoring – digital differential monitoring system
  - Considering other additional requirements

Monitoring and Maintenance Requirements- Emission Collection System

- Baghouse Control Devices (SCAQMD Rule 1155 Equivalent)
  - Install and operate baghouse leak detection system on all baghouse systems
  - Maintain and operate in accordance with manufacturer specifications (e.g., frequency of bag replacement)
- Add-On Control Devices
  - Continuously monitor for pressure changes across air pollution control device using a pressure differential gauge
  - Replace filter per manufacturer specifications (e.g., HEPA)

Source Testing Requirements- Emission Collection System

- Submit a pre-test protocol to the Executive Officer for approval:
  - New and modified point sources – within 60 calendar days of installation
  - Existing point sources – within 60 calendar days of rule adoption
- Conduct source test within 60 calendar days from approval of the pre-test protocol
- Source test must demonstrate emission standard and collection efficiency
- Require source test of all point sources once every three years
- Notify the Executive Officer in writing one week prior to conducting any rule-required source test
- Source test shall be conducted while operating at a minimum of 80% of equipment permitted capacity

Housekeeping Requirements

- No later than 30 days from [date of rule adoption], the owner or operator shall either daily wet mop or vacuum the following:
  - Areas where metal containing wastes generated from grinding operations are stored, disposed of, recovered or recycled; and
  - Within 20 feet of metal grinding work station(s) that accumulate metal-containing dust
  - Within 20 feet of any entrance/exit point for a total enclosure or emissions control device dedicated to grinding operations
  - Within 10 feet of pollution control device
- Monthly wet mop or vacuum floor of total enclosure of areas where grinding operations occur

Housekeeping Requirements

- Store and transport all grind waste capable of generating any amount of fugitive metallic dust (e.g., waste from baghouse catch) in sealed container, unless located within a total enclosure
- Immediately wet mop or vacuum all areas beneath and surrounding the baghouse up to 10 feet upon change-out of the catch (i.e., drum, container, etc.)

Recordkeeping

- Weekly housekeeping records for the following:
  - Interior and exterior wet mopping or vacuuming
  - Pressure measurements of add-on control devices
- Monthly records of the following:
  - Throughput volume of forged metal
  - Volume of grinding operations based material collected in the baghouse catch
- Air Pollution Control Equipment
  - Point source emission control maintenance requirements
  - Air pollution control equipment breakdowns or malfunctions (holes, tears in bags, equipment failure, etc.)
  - Maintenance and monitoring records of air pollution control equipment (date of bag replacements, pressure drop readings, etc.)

Potential Exceptions?

- Ancillary grinding operations
  - Grinders not used in the primary forging process
    - For example, tool shop grinders, maintenance grinders, etc.
- Low emitting grinding operations
  - Grinding conducted with a coolant
    - For example, grinding units that apply a continuous stream of coolant to the grinding wheel while in operation
  - Small hand grinders
    - Grinders that are characterized by a small chuck, drum, or shank diameter, for example, “tootsie roll” grinders
  - Grinders used for small forgings
    - For example, grinders used to grind small fasteners such as bolts or screws
  - Facilities that contain minimal grinding
    - For example, less than “x” hours of grinding activity or generate less than “x” amount of grinding dust

Schedule

- Public Workshop – January 2017
- Board Hearing - March 2017

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