PROPOSED RULE (PR) 403.2

FUGITIVE DUST FROM LARGE ROADWAY PROJECTS

Working Group Meeting #3
December 14, 2021
Introduction

- Two previous working group meetings
  - 7.15.21 and 10.22.21
- Proposed rule first focused on construction demolition piles as a source of air quality impacts and resulting complaints
- Rulemaking is now focusing more on limited instances of large road construction project activities near heavily travelled roadways
  - Activities with highest potential for air quality impacts, on areas already exposed to poor air quality from near-roadway environment
Discussion Points From Last Working Group Meeting

- Potentially prohibited activates directly next to sensitive areas at certain large road construction projects (e.g., crushing and grinding)
  - Type and distance still being evaluated
- Definitions (e.g., “Areas of Public Exposure”, and “Large Road Construction Project”)
  - Preliminary definitions provided but still being evaluated
- Other issues – stakeholders requesting additional details on potential rule requirements, including controls and recordkeeping
Common Road Construction Activities

1. QUARRY: Excavators, 4WD Loaders, and ADTs work together loading larger rock into crushers.
2. CRUSHER / SCREENER: Breaks larger rock to suitable size for asphalt and concrete projects.
3. MILLING MACHINE: Provides crushed reclaimed/recycled material from road replacement.
4. ASPHALT PLANT(S): Screened aggregate and reclaimed asphalt material are mixed and supply hot asphalt to the project.
5. ROAD CONSTRUCTION SITE: Earthmoving and material handling equipment will be at the road construction site.
6. ROUGH GRADING: Dozers will do the rough grading for the road.
7. FINISH GRADING: Motor graders will do the finish grading.
8. COMPACTORS: Compactors will compact the graded road before the asphalt paver lays down hot asphalt.
9. ASPHALT PAYER: Lays down the hot asphalt.
10. ROLLERS: Rollers will compact the road after the hot asphalt has been laid.
11. CONCRETE PAVER: A concrete slip-form paver will pave concrete roads.

Activities Potentially Resulting in Large Road Construction Dust*

- Clearing, excavation, and grading (including trenching)
- Use of unpaved roads and staging areas (including road dust associated with on-site crushing and grinding equipment and associated vehicles; e.g., front loaders)
- Demolition of concrete facilities (structures including on-site crushing & grinding)
- Stockpiles (including recycled concrete)
- Aggregate and soil loading and unloading (transfer to and from construction vehicles; e.g., recycled material transfer to/from haul trucks)

*Adapted from CalTrans Construction Manual, Chapter 4, Section 4-1802 “Before Work begins”
PM10 Standards and Background Levels

- **Standards**
  - Federal standard = 150 ug/m$^3$, state standard = 50 ug/m$^3$ (24-hr average)
  - CEQA threshold = 10.4 ug/m$^3$ project impact during construction (24-hr average)
  - Rule 403 = 50 ug/m$^3$ upwind/downwind difference (instantaneous)

- **Background Levels**
  - PM10 levels in 2020 varied throughout the South Coast Air Basin, ranging from 43 to 124 ug/m$^3$ (24-hr max), and 17 to 52 ug/m$^3$ (annual average)
  - **Staff is currently not** considering any concentration limits or monitoring requirements as part of PR 403.2
Conceptual Examples of Road Construction Equipment and Associated PM 10 Emission Factors (EF)*

<table>
<thead>
<tr>
<th>Equipment Examples (non-tailpipe fugitive dust)</th>
<th>EF (lb/hr)</th>
<th>EF (lb/ton thru-put)</th>
<th>EF (lb/VMT)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grader</td>
<td>NA</td>
<td>NA</td>
<td>1.542546</td>
</tr>
<tr>
<td>Rubber Tired Dozer</td>
<td>0.75</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Bulldozer</td>
<td>0.75</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Screen PM10 (uncontrolled)</td>
<td>NA</td>
<td>0.00865</td>
<td>NA</td>
</tr>
<tr>
<td>Tertiary Crushing PM10 (uncontrolled)</td>
<td>NA</td>
<td>0.00243</td>
<td>NA</td>
</tr>
<tr>
<td>Concrete Saw</td>
<td>NA</td>
<td>0.001090968</td>
<td>NA</td>
</tr>
<tr>
<td>Excavator</td>
<td>NA</td>
<td>0.000088797</td>
<td>NA</td>
</tr>
<tr>
<td>Crane</td>
<td>NA</td>
<td>0.000088797</td>
<td>NA</td>
</tr>
<tr>
<td>Tractor/Loader/Backhoe</td>
<td>NA</td>
<td>0.000088797</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Equipment examples taken from California Emission Estimator Model (CalEEMod) and emission factors calculated based on US EPA AP-42: Compilation of Air Emission Factors.

NA = not applicable  
** VMT = Vehicle Miles Traveled
Dispersion Modeling

- Modeling can be used to illustrate potential air quality impacts from different situations
  - Useful when monitoring data is not available

- Next slide illustrates one hypothetical scenario of a road construction project
  - Scenario does not mimic an actual project, but is based on a default project construction scenario from CalEEMod, and from EPA’s AP-42 emission factors
    - Project is placed in a random near-road location, not at an actual project site
  - Scenario is not meant to be best case or worst case – rather it highlights activities with higher potential air quality impacts when not properly controlled
    - Examples: Crushing, loading/unloading of trucks/stockpiles, grading
Hypothetical Example of Large Road Construction Project Air Impacts**

*If background PM10 concentration is added in this example certain locations could exceed PM air quality health and safety standards

**Modeling analysis does not represent an actual project at this location
Potential Approach for PR 403.2

- PR 403.2 would place additional requirements on some road construction activities when they occur in close proximity to areas of public exposure:
  - Prohibition on certain activities
  - Additional fugitive dust controls for some activities
  - Advance project notification to the public and job-site signage
    - Identification of dust control supervisor
  - Recordkeeping of fugitive dust controls
Potential Prohibited Activities

- Staff is exploring activities with the highest potential air quality impact to nearby areas of public exposure, and that also have opportunity to be located farther away
  - Crushing/grinding/screening
  - Loading of materials into or out of large storage piles

- Activities would only be prohibited under certain conditions
  - Very close proximity to nearby areas of public exposure
    - Distances to be determined
  - Staff exploring potential for very limited circumstances of operational infeasibility and necessity to avoid prohibition (e.g., emergency repairs)
    - Proposed rule would describe process an applicant must follow to determine infeasibility
Potential Additional Dust Control Requirements

- Potential general approach includes using existing requirements from other programs such as Rule 403 [Large Operations] and CalTrans Construction Manual
- Minimum control requirements based on project size, activity/equipment type, and distance to areas of public exposure
- During the course of construction, ensure that dust suppressant/water/covering applied to:
  - Temporary haul roads
  - Staging, material storage, and layout areas
  - Compacted soil, aggregate base roads, or driveways; paved surfaces; rough-graded soils; completed slopes; and stockpiles
Recordkeeping Objectives

- Expanded recordkeeping on all applicable “large road” projects
  - Focus on activities with highest potential for air quality impact when in proximity to nearby areas of public exposure
- List of project construction equipment, control measure and frequency (e.g., crushing and grinding, sprinkler dust suppression, every 30 minutes)
- Reporting format will be built from existing reporting for Rule 403
Previously Recommended Thresholds and Definitions

- Distance – from activity(s) to receptor(s)
- “Large Road” metric
- Stockpile/pile size
- Other Proposed Key Rule Definitions
Potential Receptor Distances Used for PR 403.2 Applicability (cont’d)

1,000 FEET:
403.2 ONLY APPLICABLE IF SENSITIVE RECEPTORS IN ZONE

500 FEET:
403.2 ONLY APPLICABLE IF AREAS OF PUBLIC EXPOSURE ARE IN ZONE

Sensitive Receptors

- Homes
- Schools, Daycares, Hospitals
- Parks and recreational facilities
- Open Space Areas
- Office, Commercial and Industrial Buildings

Areas of Public Exposure

Specific Activities from Large Roadway Construction

1,000 feet

500 feet
**Potential “Large Road” and “Distance” Metrics – CARB Studies**

- **Large Roadway**
  - Technical Advisory Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways - April 2017
    - High-volume roadways are defined as roadways that, on an average day, have traffic in excess of **50,000 vehicles** in a **rural area** and **100,000 vehicles** in an **urban area**

- **Distances**
  - Air Quality and Land Use Handbook - April 2005
    - Recommended siting and building new developments to be protective of public health, including siting schools, day care centers, playgrounds and housing **500 feet or more** from freeways, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day
Proposed Stockpile/Pile Size

- Only covers construction piles associated with large roadway construction projects
- Staff is proposing that the following pile sizes be **exempt** from PR 403.2 requirements:
  - Less than 3 foot maximum height, AND
  - Less than 150 feet total surface area
- Consistent with Rule 403 and Rule 1157 “Open Storage Piles” and Rule 1466 “Stockpiles”
Other Proposed Potential Key Rule Definitions

- **Large Roadway Construction Site/Operation** could cover any site where construction/demolition materials associated with large roadway projects involving aggregate material storage, crushing or grinding.

- **Large Demolition Piles** could include large piles containing aggregate materials (typically recycled asphalt and concrete).

- **Sensitive Receptor** could include residences, hospitals, and schools (e.g., see definitions in Rules 1157, 1420.1, 1469, 1470, 1480).

- **Occupied Buildings** could include structures such as dwellings, offices, and commercial and industrial buildings which are routinely occupied.

- **Areas of Public Exposure** could include areas within PR 403.2 receptor distances such as occupied buildings, parks, and recreational areas.
Revised Tentative Rule Development Schedule

- 1\textsuperscript{st} Working Group Meeting Held - July 15, 2021 ✔
- 2\textsuperscript{nd} Working Group Meeting – October 22, 2021 ✔
- 3\textsuperscript{rd} Working Group Meeting – December 14, 2021 ✭
- Public Workshop – February 2022
- Governing Board Hearing – May 6, 2022
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