

Concrete Batch, Asphalt Batch, and Rock and Aggregate Plants

Background

Concrete batch, asphalt batch, and rock and aggregate plants can pose dust and particulate matter (PM₁₀) problems due to the type and size of the materials being used for the processes. Hot mix asphalt batch plants may also pose an odor nuisance from the heating of materials. Concrete is a common material used for construction and is manufactured at concrete batch plants, where it is made by combining several ingredients including water, cement, and aggregate (e.g., sand, rock, gravel). The main equipment used at concrete batch plants include mixers, bins/hoppers/silos (to hold or store concrete or aggregate), conveyors, and dust collectors (e.g., baghouses).¹ The ingredients for concrete are introduced into the mixer where they undergo agitation. This process is typically vented into baghouses to prevent dust emissions. Dry-concrete batch plants do not use water, which can create more dust. Wet-concrete batching usually uses aggregate material that has been washed to remove silt and clay. As a result, the material arrives in moist conditions and should not pose a dust problem.

Figure 5f-1: Concrete batch plant



Figure 5f-2: Asphalt being used for paving



A hot mix asphalt batch plant heats, mixes, and combines aggregate and asphalt to create hot mix asphalt. The hot mix asphalt is usually transported by trucks to be used for paving (e.g., roads, roofing). A typical hot mix asphalt batch plant consists of a drum dryer, a screening system, weight boxes for asphalt cement and aggregate, a mixer, and conveying equipment. The moist aggregate is typically transported into the drum dryer to be dried out. This process is typically vented to a baghouse, as dried aggregate is the largest source of dust emissions from asphalt batch plants. Finally, oil is added to the aggregate to create the hot mix asphalt. Smoke is released from the hot oil and the hot mix asphalt and can cause odor nuisances.

Rock and aggregate (gravel) plants supply sand and various-sized aggregates for construction and paving industries. Aggregates are processed by separating out various-sized pieces of gravel

Figure 5f- 3: Aggregate or rock plant



through different sized screens. Oversized aggregates can be crushed into smaller pieces. Dust is created as rocks are crushed and the dry surfaces are exposed, especially as the rocks are more finely crushed.

[Community Air Quality Priority – Fugitive Dust, Particulate Matter \(PM10\) Emissions, and Odors](#)

The community of San Bernardino, Muscoy identified fugitive dust, particulate matter, and odors from concrete batch, asphalt batch, and rock aggregate

batch plants as an air quality concern. There are two plants within the community boundary: Robertson’s Ready Mix and Vulcan Materials Company San Bernardino Portable Asphalt. Robertson’s Ready Mix is a concrete batch plant. Vulcan Materials Company San Bernardino Portable Asphalt is an asphalt batch and rock and aggregate plant.

The CSC emphasized addressing fugitive dust and particulate matter emissions from batch plants within close proximity to schools (see Figure 5f-4). For instance, Robertson’s Ready Mix borders Arroyo Valley High School and is one half of a mile from Ramona-Alessandro Elementary School. To reduce exposure to these emissions, the CSC recommended the installation of air filtration systems at schools. More information on the air filtration systems at schools can be found in Chapter 5g.

Figure 5f-4: Map of Concrete Batch and Asphalt Batch and Rock and Aggregate Plants in the San Bernardino, Muscoy Community and Nearby Schools



Ongoing Efforts

South Coast AQMD has rules to address fugitive dust and PM10 emissions from concrete batch, asphalt batch, and rock and aggregate plants.

Odor nuisances from asphalt batch plants can also be addressed through South Coast AQMD Rule 402 - Nuisance.² South Coast AQMD inspectors investigate complaints and a public nuisance violation can be issued if an inspector confirms odors with a considerable number of persons or the public.

South Coast AQMD Rule 403 – Fugitive Dust³ reduces the amount of particulate matter in the air by requiring actions to prevent, reduce or mitigate fugitive dust emissions. Fugitive dust is any solid particulate matter that becomes airborne, but is not emitted from an exhaust stack. Fugitive dust can result from man-made activities, such as mining operations, agriculture, and construction activities. Some of the requirements to minimize fugitive dust emissions can include washing down vehicle undercarriages or tires, paving surfaces, or limiting the amount of track out.

South Coast AQMD Rule 1155 – Particulate Matter (PM) Control Devices,⁴ establishes requirements for air pollution control devices that reduce particulate matter (e.g., baghouses). This rule applies to operators of air pollution control devices venting processes that have direct particulate matter emissions, such as concrete batch plants, asphalt batch plants, and rock and aggregate plants. The requirements may include monitoring, recordkeeping, or operational standards to ensure an air pollution control device is working properly.

South Coast AQMD Rule 1157 - PM10 Emission Reductions from Aggregate and Related Operations,⁵ reduces PM10 emissions from all permanent and temporary aggregate and related operations by requiring these operations to comply with certain best practices outlined in the rule (e.g., using dust suppressants).

Identifying Opportunities for Action

The CSC identified an action to reduce emissions from concrete batch, asphalt batch, and rock and aggregate plants. Details about the action is described below.

Action 1: Reduce Fugitive Dust, Particulate Matter (PM10), and Odors from Concrete Batch, Asphalt Batch, and Rock and Aggregate Plants
Course of Action:
<ul style="list-style-type: none"> • Provide public outreach information for the community on Rules 402, 403, 1155, and 1157 requirements, and South Coast AQMD’s complaint system⁶, which address odors, fugitive dust, and PM10 emissions from aggregate and related operations • Conduct focused air monitoring near the concrete batch, asphalt batch, and rock and aggregate plants to check for elevated any potential levels of emissions • If persistent elevated levels are detected at locations through air monitoring activities, conduct appropriate follow-up investigations (e.g., on site testing or other types of data review)
Strategies:
<ul style="list-style-type: none"> • Public Information and Outreach • Monitoring • Enforcement
Goals:
<ul style="list-style-type: none"> • Hold a public outreach event for the first year of the implementation period to explain the requirements of Rules 402, 403, 1155, and 1157, and the South Coast AQMD’s complaint process. If necessary, determine if additional annual outreach events are needed • Provide quarterly or biannual updates to the CSC on enforcement activities • Conduct air monitoring near these two facilities in one year
Estimated Timeline:

<ul style="list-style-type: none"> • 2020, hold a public outreach event for the first year on requirements for Rules 402, 403, 1155, and 1157, and the South Coast AQMD’s complaint process. Reevaluate annually, if additional annual outreach events are necessary • Fall 2019, begin air monitoring activities • Mid-2020, begin quarterly or biannual updates to the CSC on outreach and enforcement activities, or if new information becomes available 	
Implementing Agency, Organization, Business or Other Entity:	
Name:	Responsibilities:
South Coast AQMD	<ul style="list-style-type: none"> • Conduct community outreach on Rules 402, 403, 1155, and 1157, and South Coast AQMD’s complaint system • Conduct monitoring and follow-up with enforcement actions, as needed • Provide updates to CSC
Additional Information:	
<ul style="list-style-type: none"> • Requirements for Rule 402 (Nuisance): http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-402.pdf • Requirements for Rule 403 (Fugitive Dust): https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf • Requirements for Rule 1155 – Particulate Matter (PM) Control Devices: http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1155.pdf • Requirements for Rule 1157 - PM10 Emission Reductions from Aggregate and Related Operations: https://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1157.pdf • Smoke, Dust, and Odor Complaints: http://www.aqmd.gov/home/air-quality/complaints/smoke-dust-odor 	

References

1. Elsevier B.V., Concrete Production, <https://www.sciencedirect.com/topics/engineering/concrete-production>, Accessed May 2019.
2. South Coast AQMD, Rule 402 – Nuisance, <http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-402.pdf>, Accessed May 2019.
3. South Coast AQMD, Rule 403 – Fugitive Dust, <https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf>, Accessed May 2019.
4. South Coast AQMD, Rule 1155 – Particulate Matter (PM) Control Devices, <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1155.pdf>, Accessed May 2019.

5. South Coast AQMD, Rule 1157 – PM10 Emission Reductions from Aggregate and Related Operations, <https://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1157.pdf>, Accessed May 2019.
6. South Coast AQMD, Complaint System, <http://www.aqmd.gov/home/air-quality/complaints>, Accessed July 21, 2019.