Reporting Emissions from Sand and Gravel Plants

Emissions Inventory Help Sheet

Maricopa County Air Quality Department

December 2020
What to Report
Facilities should report all particulate matter (PM) primary, PM\(_{10}\) primary, and PM\(_{2.5}\) primary emissions from material handling and crushing and screening. Most sand and gravel plants have emissions from mining/plant feed, surge pile and pile forming, load out, crushing, screening, conveyor transfer points, stockpiles, and vehicle travel on unpaved roads.

PM primary refers to all of the particulate matter emissions (filterable and condensable) from an emissions process. PM\(_{10}\) primary refers to all PM primary that measures less than 10 microns in diameter. PM\(_{10}\) primary is a subset of PM primary. PM\(_{2.5}\) is a subset of both PM and PM\(_{10}\).

Some sand and gravel plants may also have emissions from other types of equipment that need to be reported such as solvent cleaning or fuel combustion. Refer to the applicable process specific help sheets for instructions on how to report emissions from other types of equipment.

How to Report
This help sheet shows emissions inventory preparers how to accurately report emissions from sand and gravel operations in the AQD Online Portal. First, preparers will use the “Task-Facility Inventory Change” tab to structure the emission units, processes, and control equipment. Then, preparers will use the “Task-Emissions Inventory” tab to enter the operating schedule, throughput, and emissions factors for each process.

Task – Facility Inventory Change
Step 1
Click on the Task-Facility Inventory Change tab at the top of the page.

Step 2
Emission Units
Verify that the facility inventory tree shows all of the sand and gravel emission units at the facility with the correct source classification code(s) (SCC), and control equipment.

There should be one at least one emission unit for each type that is used at the facility. Crushers and screens must be listed individually in the facility inventory tree. Conveyors may be listed individually, or the facility inventory tree can include a single conveyor emission unit if the total quantity of conveyors is specified.
To add an emission unit to the facility inventory tree, click on the Facility ID at the top of the Facility Inventory Tree on the left side of the page. Click Create Emission Unit at the bottom of the page.
Select **Crushing/Screening Handling** or **Material Handling** as the **Emission Unit Type**. Complete the required Emission Unit Information and click **Save**. Crushing/Screening/Handling should be used for crushes, screens, and conveyors. Material Handling should be used for mining/plant feed, surge pile forming, pile forming, and load out.

The **initial construction commencement date** is the date when construction or installation of the emission unit began.

The **initial operation commencement date** is the date when the facility began operating the emission unit.
### Step 3

**Emissions Processes**

Each sand and gravel emission unit will generally have one emissions process. Use the following SCC, as applicable, depending on the type of process.

<table>
<thead>
<tr>
<th>Emission Unit type</th>
<th>Process Description</th>
<th>SCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Handling (MAT)</td>
<td>Mining/plant feed, handling</td>
<td>30502505</td>
</tr>
<tr>
<td></td>
<td>Surge pile forming, handling</td>
<td>30502505</td>
</tr>
<tr>
<td></td>
<td>Pile forming, handling</td>
<td>30502505</td>
</tr>
<tr>
<td></td>
<td>Load out, handling with watering</td>
<td>30502506</td>
</tr>
<tr>
<td>Crushing/Screening/Handling (CSH)</td>
<td>Crushing with watering</td>
<td>30502003</td>
</tr>
<tr>
<td></td>
<td>Screening with watering</td>
<td>30502511</td>
</tr>
<tr>
<td></td>
<td>Fines screening with watering</td>
<td>30502021</td>
</tr>
<tr>
<td></td>
<td>Conveyor transfer point</td>
<td>30502503</td>
</tr>
<tr>
<td>Open Air Fugitive Source (FUG)</td>
<td>Stockpiles, raw material and product storage</td>
<td>30502507</td>
</tr>
</tbody>
</table>

If the sand and gravel emission unit does not have the applicable emissions process attached, click on the **Emission Unit ID (CSH001)** in the Facility Inventory Tree on the left side of the screen. Click **Create Emissions Process** at the bottom of the screen.
Enter the Process Name, Company Process Description, and the applicable SCC, and click **Save**.

**Step 4**

**Control Equipment**

It generally is not necessary to add control equipment for crushing and screening emission units because the emissions factors that will be used to estimate emissions already take into account the fugitive dust suppression required by Rule 316 (Nonmetallic Mineral Processing). If the facility has additional controls, such as enclosing and venting equipment to a baghouse, the additional controls should be listed as control equipment. Control equipment (fugitive dust suppression) is also needed if water is used to control dust from stockpiles and material storage areas.

If the additional control equipment is not in the facility inventory tree, click on the **Facility ID** at the top of the Facility Inventory Tree on the left side of the page. Click **Create Control Equipment** at the bottom of the page.
Select the **Control Equipment Type** and complete the Control Equipment Information. Click **Add Pollutant** three times. Select PM primary, PM$_{10}$ primary, and PM$_{2.5}$ primary in the Pollutant drop down list. Specify the design control efficiency, operating control efficiency, and capture efficiency for PM primary, PM$_{10}$ primary, and PM$_{2.5}$ primary, and click **Save**.

For fugitive dust suppression (water) on stockpiles and material storage areas, the operating and design control efficiency is 90% for PM primary, PM$_{10}$ primary, and PM$_{2.5}$ primary. Refer to the manufacturer’s specification sheet to determine design and operational control efficiency for control equipment. Capture efficiency is 100%.
To associate the control equipment, click on the emissions process it controls (PRC001), and click **Associate Existing Control Equipment**.

Select the **Control Equipment ID** and click **Save**.

**Step 5**  
**Validate Facility Inventory Changes**  
Once you have finished adding emissions units, processes and control devices, you must validate the “Task – Facility Inventory Change.” Click on the **Facility ID** at the top of the Facility Inventory Tree. At the bottom of the Facility Information screen, click **Validate**.
If there are errors that need to be corrected, a pop-up window will appear. Click on the error message to be directed to the screen that contains the error that must be corrected. Correct all errors and repeat Step 5 to validate the facility inventory changes.

**Task – Emissions Inventory for Reporting Year**

**Step 1**
Click on the **Task-Emissions Inventory** tab at the top of the page.

**Step 2**
Emissions from similar types of equipment can be reported as a single process. To report emissions from similar pieces of equipment on a single process, click **Exclude/Include Emission Units** at the bottom of the page. Review the list of emission units, select one emission unit of each type (e.g., 1 crusher, 1 screen, 1 conveyor, 1 hopper, 1 stacker, etc.), and mark the selected emission unit as **Detailed Emissions Reporting**. Mark other emission units of the same type as **Reported Under Another Emission Unit**. Select the emission unit where emissions will be reported. Click **Save**.

The following example below shows a facility that has two screens (CSH001 and CSH010). Screening emissions will be reported under CSH001, so it is marked as **Detailed Emissions Reporting** and CSH010 is marked as **Reported Under CSH001**.

The facility also has five crushers (CSH002, CSH003, CSH007, CSH008, and CSH009). Crushing emissions will be reported under CSH003, so it is marked as **Detailed Emissions Reporting**. The other crusher emission units are marked as **Reported Under CSH003**.

The facility also has three sets of conveyors (CSH004, CSH005, and CSH006). Conveyor emissions will be reported under CSH004, so it is marked as **Detailed Emissions Reporting**. The other conveyor emission units are marked as **Reported Under CSH004**.
Step 3
Click on the process attached to the CSH emission unit (PRC001) in the Emissions Inventory Tree on the left side of the screen. Click **Edit Material/Schedule/Seasons** in the middle of the screen.

1. Click the triangle next to the Process ID at the top of the page to see the SCC and the Company Process Description.

2. Enter the **maximum number of hours per day**, **maximum number of days per week**, and the **maximum number of weeks per year** the emissions process operated.
3. Enter the annual **actual hours** of operation for the emissions process.

4. Enter the tons of material **throughput**.

   Crushing throughput = amount of material crushed $\times$ the number of crushers

   Screening throughput = amount of material screened $\times$ the number of screens

   Conveyor throughput = amount of material processed $\times$ the number of transfer points

5. Click **Save**.
Step 4
Click **Edit Emissions** at the bottom of the screen.

### Reporting Criteria Air Pollutant Emissions

1. Enter the **Hours Uncontrolled** for each pollutant. If emissions of a pollutant are not controlled, then hours uncontrolled should be equal to actual hours. If emissions of a pollutant where controlled continuously throughout the reporting year, enter zero (0) for hours uncontrolled.

2. Enter emissions factors from the table below in the **Uncontrolled Emissions Factor** column. These emissions factors take into account the fugitive dust suppression required by Rule 316 (Nonmetallic Mineral Processing). If the facility has additional controls, such as enclosing and venting equipment to a baghouse, refer to the permit technical support document for emissions factors. For pollutants not emitted from the processes listed below (carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds, and ammonia), enter zero (0) as the emissions factor.

<table>
<thead>
<tr>
<th>Process Description</th>
<th>Emissions Factors</th>
<th>Emissions Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM</td>
<td>PM_{10}</td>
</tr>
<tr>
<td>Mining/plant feed, handling(^1)</td>
<td>0.00111</td>
<td>0.00055</td>
</tr>
<tr>
<td>Surge pile forming, handling(^1)</td>
<td>0.00111</td>
<td>0.00055</td>
</tr>
<tr>
<td>Pile forming, handling(^1)</td>
<td>0.00111</td>
<td>0.00055</td>
</tr>
<tr>
<td>Load out, handling with watering(^1)</td>
<td>0.00111</td>
<td>0.00055</td>
</tr>
<tr>
<td>Crushing with watering(^2)</td>
<td>0.00022</td>
<td>0.0001</td>
</tr>
<tr>
<td>Screening with watering(^2)</td>
<td>0.00103</td>
<td>0.00035</td>
</tr>
</tbody>
</table>


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<table>
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<tr>
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<th>Emissions Factors</th>
<th>Emissions Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM</td>
<td>PM&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Fines screening with watering&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.0123</td>
<td>0.00295</td>
</tr>
<tr>
<td>Conveyor transfer point&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.000123</td>
<td>0.000045</td>
</tr>
<tr>
<td>Stockpiles, raw material and product storage</td>
<td>630</td>
<td>630</td>
</tr>
</tbody>
</table>

Step 5
Click **Save** at the bottom of the screen. The AQD Online Portal will calculate emissions based on the throughput, the emissions factors provided, and the control efficiency specified for control equipment associated with the emissions process.

Step 6
Verify that the results match emission records from the facility. Repeat steps 3 through 5 to report emissions from other sand and gravel emissions processes at the facility.

Step 7
Refer to other process specific help sheets or the Emissions Inventory Instructions to report emissions from other types of processes at the facility. When emissions have been reported for each process, refer to Task 5 on page 26 of the Emissions Inventory Instructions to validate and submit the emissions inventory. The process specific help sheets and the Emissions Inventory Instructions are available at [maricopa.gov/5628](http://maricopa.gov/5628).
Example

The following example shows emissions from a facility that processed 5,000 tons of material. The material is crushed five times and it is screened twice. The material crosses 12 transfer points from the beginning to the end of the process. The facility has three acres of stockpiles and material storage areas.

### Emissions from screening with watering

Throughput = 5,000 tons x 2 screens = 10,000 tons

### Emissions from crushing with watering

Throughput = 5,000 tons x 5 crushers = 25,000 tons
Emissions from conveyor transfer points with watering
Throughput = 5,000 tons x 12 transfer points = 60,000 tons

Emissions from mining/plant feed with watering
Throughput = 5,000 tons
Emissions from loadout
Throughput = 5,000 tons

Emissions from stockpiles and material storage areas
Throughput = 3 acre-years
Questions
If you have questions or are experiencing issues with the AQD Online Portal, please contact 602-506-6790 or EmissionsInventory@maricopa.gov. Please provide a brief explanation of the question or problem you are encountering and include a screenshot if contacting us via email. If you are encountering errors or malfunctions in the portal, include the following information in your message: the date and time when the error occurred, the browser you were using when the error occurred, and the type of device you were using when the error occurred (i.e., computer, tablet, phone, etc.).

Additional Resources
How to create a Shared CROMERR Services (SCS) electronic signature to access the AQD Online Portal: maricopa.gov/DocumentCenter/View/56270

Emissions inventory instructions and other process specific help sheets: maricopa.gov/5628

Instructions for permit applications, compliance reports, asbestos notifications, performance test protocols, and other documents that can be submitted through the AQD Online portal: maricopa.gov/1820