

History of Updates to the Approved Emission Factors for Toxic Air Contaminants:

1. In August 2018, the District published the document *Approved Emission Factors for Toxics Air Contaminants* and the associated spreadsheet with emission factors, *SBCAPCD-Approved TAC Emission Factors.xlsx*.
2. Updates in May 2019:
 - a. Document updates:
 - i. Some minor formatting changes were made, including replacing the District's logo on the cover page.
 - ii. Equations throughout the document were edited so that the order in which the parameters are defined match the order in which they appear in the equation.
 - iii. Section 2.1: A discussion of the emission factors for digester gas fueled internal combustion engines was added. A discussion of the heat content of different fuels was also added.
 - iv. Section 3.1: A discussion of the emission factors for digester gas fueled boilers/heaters was added, and the default heat content of digester gas was added.
 - v. Section 4.0: The last equation (maximum hourly emission for scenario 3: hourly records are kept) incorrectly stated that the units for the maximum hourly usage of solvent were gal/day. The units were corrected to gal/hr.
 - vi. Section 5.0: The District clarified that TOG is equal to TOC.
 - vii. Sections 5.3 through 5.5: These sections were rearranged to match the order in which the emission factors appear in the *O&G Fugitives* tab of the spreadsheet.
 - viii. Section 6.1: A discussion of the emission factors for aggregate materials and haul roads was added.
 - ix. Section 6.2: This section and its subsections 6.2.1 and 6.2.2 were added to discuss emission factors from dryers, load-out, yard, silo filling and asphalt storage tank emissions at hot mix asphalt plants.
 - x. Section 7.0: The references were updated.
 - b. Spreadsheet updates:
 - i. *Engines & Turbines* tab: Emission factors for digester gas fueled internal combustion engines were added.
 - ii. *Boilers & Heaters* tab: Emission factors for digester gas fueled boilers/heaters were added.
 - iii. *Minerals* tab: The crystalline silica emission factor for aggregate transfer to bins and storage in bins/hoppers at CBPs was modified. Emission factors for haul roads at CBPs were added. Furthermore, emission factors for various processes at hot mix asphalt plants and aggregate material handling were added.
3. In April 2020, the spreadsheet was updated with the correct emission factors for hexavalent chromium and fluoranthene from landfill gas-fired flares in the *Flares & Crematories* tab.

4. In May 2020, the spreadsheet was updated with the following:
 - a. *Flares & Crematories* tab: Emission factors for propane-fired flares were added.
 - b. *Boilers & Heaters* tab: Metal emission factors were added for propane-fired boilers. In addition, the propylene emission factor was added.
5. Updates in June 2020:
 - a. Document updates:
 - i. Section 2.4:
 1. Updated to include maximum hourly emissions for diesel PM for AB 2588.
 2. Updated to include annual and maximum hourly emissions for diesel TOG for AB 2588.
 3. Updated to include policy regarding reporting speciated annual emissions for 8-hour chronic risk for diesel engines.
 - ii. Section 2.4.1:
 1. Updated annual average emissions equation to be applicable for both diesel PM and diesel TOG.
 2. Added maximum hourly emissions equation for diesel PM and diesel TOG.
 3. Added speciated annual emission equations for Scenario 1 and Scenario 2.
 4. Updated language to clarify that speciated emissions now include annual emissions, in addition to maximum hourly emissions.
 - iii. Section 2.4.2:
 1. Added annual average emissions equation and maximum hourly emissions equation for diesel PM and diesel TOG.
 2. Added speciated annual emission equations for Scenario 1 and Scenario 2.
 3. Updated language to clarify that speciated emissions now include annual emissions, in addition to maximum hourly emissions.
 - iv. Section 6: Added emission methodologies for miscellaneous fugitive dust.
 - v. Section 6.1: Removed discussion of haul road emissions (moved to Section 6.2).
 - vi. Section 6.2: Moved Section 6.2 (*Hot Mix Asphalt Plants*) to Section 6.3. Used Section 6.2 for new section to discuss emissions from haul roads, roadways and landfill dust.
 - vii. Section 6.2.1: Moved Section 6.2.1 (*Dryers at Batch Mix and Drum Mix Plants*) to Section 6.3.1.
 - viii. Section 6.2.2: Moved Section 6.2.2 (*Load-Out, Yard, Silo Filling and Asphalt Storage Tanks*) to Section 6.3.2. Added clarifying language that phenol is part of organic PM.
 - ix. Section 7: Updated references.
 - b. Spreadsheet updates:
 - i. *Engines & Turbines* tab:
 1. Emission factors for diesel turbines were added.
 2. The PAH (excluding naphthalene) emission factor was added for 4 stroke-rich burn natural gas-fired internal combustion engines.
 3. The PAH (excluding naphthalene) emission factor was added for 4 stroke-rich burn LPG, butane or propane-fired internal combustion engines.

- ii. *Misc. Fugitive Dust* tab: Created new tab with new profiles for unpaved road dust, paved road and landfill dust. In addition, profiles for roadway dust from mineral sources were copied to this tab for ease of use.