

PM₁₀ airshed and emissions frequently asked questions

February 2012

1. Why do some people incorrectly claim that Kennecott is responsible for 30% of pollution?

Though we don't know how the 30% was calculated, we can guess that they may have calculated Kennecott's emissions as 30% because PM₁₀ and precursor emissions were incorrectly added together. For example, in Salt Lake County PM₁₀ + NO_x + SO₂ = 55,066.21 tons per year. Kennecott's emission of PM₁₀ + NO_x + SO₂ = 14,884.01 tons per year, or approximately 30% of the total above. This methodology is incorrect because it does not include VOCs, defined as precursor to PM₁₀.

2. What is an airshed?

An airshed is a part of the atmosphere that behaves in a consistent way with respect to the scattering of pollutants. The geographic extent of airsheds are pollutant specific because pollutants, such as PM₁₀, do not behave the same, even in the same general area. Thus, the airshed for each pollutant is based on the pollutant's ability to scatter, which is also affected by topography, meteorology, and climate.

3. What is the PM₁₀ airshed?

The Environmental Protection Agency (EPA) has designated our PM₁₀ airshed as Salt Lake County.



4. How is total PM₁₀ determined?

PM₁₀ can be emitted directly from sources as particles or can be emitted as a precursor. Precursor emissions are those that are not particles originally but can turn into particles when they react in the atmosphere. Pollutants that can react to form PM₁₀ are SO₂, NO_x, and VOCs.

$$\text{Direct PM}_{10} + \text{SO}_2 + \text{NO}_x + \text{VOC} = \text{Total PM}_{10} \text{ emissions}$$

5. What are the total PM₁₀ emissions?

The Utah Division of Air Quality (UDAQ) creates a statewide inventory of emissions every three years. The most recent statewide inventory is from 2008. The 2008 inventory can be viewed, by county, on the UDAQ [website](#).

The total PM₁₀ airshed emissions can be determined by adding together the total emissions, in the 2008 statewide inventory, for PM₁₀, SO₂, NO_x and VOC in Salt Lake County.

$$\text{Total airshed PM}_{10} \text{ emissions} = 96,926.79 \text{ tons per year}$$

	PM₁₀ (tpy)	SO_x (tpy)	NO_x (tpy)	VOC (tpy)	Total
SALT LAKE CO Total	17,750.69	6,314.71	31,000.81	41,860.55	96,926.76

6. What percentage of PM₁₀ emissions are from Kennecott?

In order to determine what percentage of PM₁₀ emissions are from Kennecott, emissions from all Kennecott facilities must be added together for PM₁₀, SO₂, NO_x and VOC.

	PM₁₀ (tpy)	SO_x (tpy)	NO_x (tpy)	VOC (tpy)	Total
Smelter and Refinery	185.06	970.08	154.25	8.66	1,318.05
Mine and Concentrator	2,914.70	2.79	4845.85	446.27	8,209.61
Power Plant, Lab, Tailings	109.30	3144.97	2555.18	14.72	5,824.17
Barney's Canyon	0.09	0.05	1.69	0.09	1.92
Total	3209.15	4,117.89	7,556.97	469.74	15,353.75

Total emissions of PM₁₀ and precursors from Kennecott = 15,353.75 tons per year.

Since the total PM₁₀ airshed emissions = 96,926.76 tons per year, Kennecott's emissions of 15,353.75 tons per year, are equal to **15.8%** of the total emissions.