

Cornerstone air emissions questions and answers

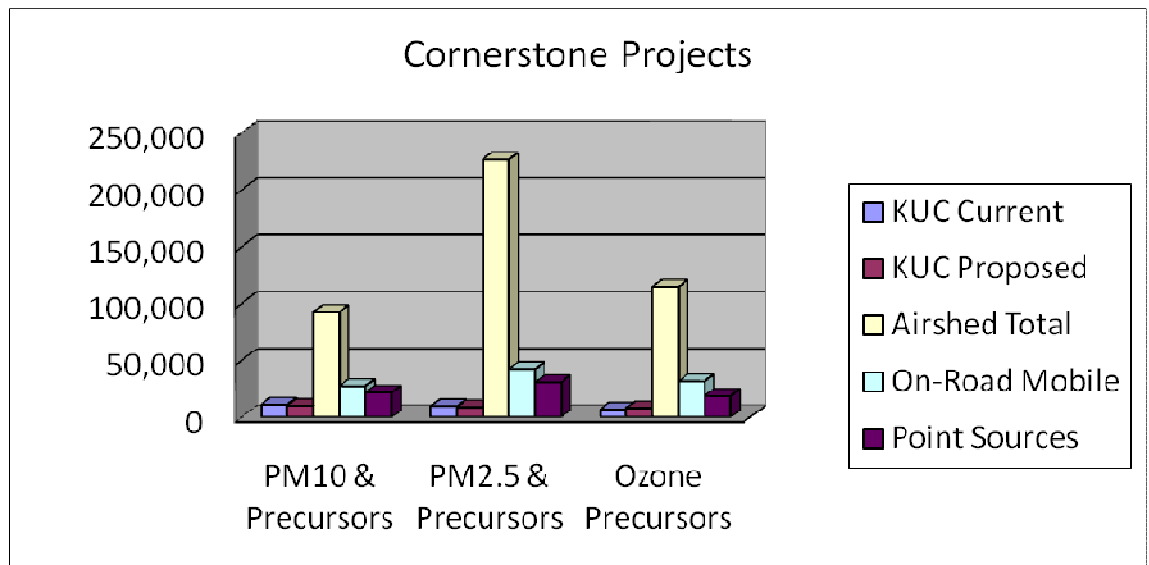
Air Emissions and Kennecott Utah Copper's Cornerstone Project

Since the Cornerstone Project was announced in August 2010, various questions have been raised regarding air quality. This document is intended to provide quick answers to some of these questions.

Q1. *What is KUC's overall contribution to air pollution along the Wasatch Front and will this change with the Cornerstone Projects?*

A1. The Wasatch Front has been designated by the Environmental Protection Agency (EPA) a non attainment area for PM₁₀ and PM_{2.5}. The Utah Division of Air Quality has also recommended to the EPA the area is nonattainment for Ozone as well. The 2008 Statewide Air Emissions Inventory, compiled by UDAQ, indicates that of each airshed total, approximately 16 % of PM₁₀ and precursors, approximately 6% of PM_{2.5} and precursors, and approximately 7% of ozone precursors are from KUC operations.

The Cornerstone projects will result in an annual decrease of emissions for PM₁₀ and Precursors and PM_{2.5} and Precursors. Ozone precursors are estimated to increase **during peak year operations**. The power plant repower alone will result in an annual decrease in emissions equivalent to removing one in 10 cars from the road in Salt Lake and Utah counties (based on the 2008 Statewide Air Emissions Inventory). While KUC is a major industry in Salt Lake County, it contributes only a fraction of the area's emissions per airshed.



Based on 2008 UDAQ Statewide Inventory

PM₁₀ Nonattainment Airshed, designated by EPA, includes Salt Lake County

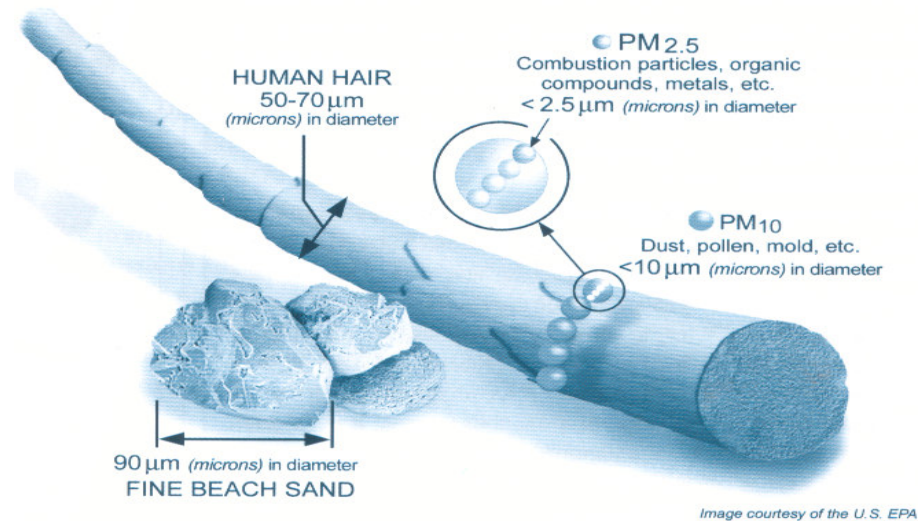
PM_{2.5} Nonattainment Airshed, designated by EPA, includes Salt Lake, Box Elder, Tooele, Weber and Davis counties

Ozone Nonattainment Airshed, recommended by UDAQ, includes Salt Lake, Weber and Davis counties

Q2. What is the difference between PM_{10} and $PM_{2.5}$?

A2. PM_{10} is particulate matter that is 10 micrometers in diameter or less (about one-seventh the width of a strand of human hair). PM_{10} most often comes from motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; and, windblown dust from open lands.

$PM_{2.5}$ is particulate matter that is less than 2.5 micrometers in diameter, called "fine" particles. These particles are so small they can be detected only with an electron microscope. Sources of $PM_{2.5}$ include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes.



Q3. Will the Cornerstone projects add emissions to the airsheds?

A3. The Cornerstone projects will result in an increase in ozone precursor emissions by 1,000 **during a peak year**, an annual decrease in PM_{10} and precursors by 1,000 tons per year, and a decrease in $PM_{2.5}$ and precursors by 900 tons per year.

While it seems strange that an operation can expand and still decrease its overall annual emissions, it is possible. KUC has demonstrated for decades, their commitment to control air emissions from operations. This is demonstrated by the smelter modernization back in 1995. That modernization project reduced SO_2 emissions by 99.9% and continues to be one of the cleanest smelters in the world. Kennecott will continue to undertake many mitigation measures directed at decreasing our impact on the air shed in the valley. For example, we have initiated an anti-idling campaign at all of our facilities. Not only has this anti-idling campaign decreased our emissions, it has saved us money.

Some of the techniques we will be using to mitigate our impacts from Cornerstone projects include upgrading our haul truck fleet engines, continuing to use ultra low sulfur diesel fuel, and optimizing the mine plan to reduce haul distances. We will also be improving our fugitive dust control measures including the use of commercial dust suppressants on select haul roads

Q4. *How are KUC's emissions calculated?*

A4. In Notice of Intent applications, the source (Kennecott) submits estimated emissions to UDAQ on a "PTE" or potential to emit basis. This refers to the highest estimate of the amount of certain pollutants that your business could release during a peak year (even if you have never actually emit the highest amount). Potential to emit emissions calculations assume the full design capacity of equipment, instead of how the equipment will actually operate. In other words, Kennecott's PTE's are the maximum we could emit and are compared to emissions from actual operations for this analysis (this paper).

We calculate our emissions, and how we mitigate them, by using some of the best engineering companies in the world. We also invest in research conducted by universities, such as the University of Utah's meteorology and engineering departments. We are currently having the University of Utah's Meteorology Department conduct a study on inversions in the valley as well as meteorology at the mine.