



Butte-Silver Bow Health Department

2012 Environmental Health Studies

Fact Sheet No. 5

Subject: Air Quality Monitoring at Greeley School

Discussion: Butte-Silver Bow County (BSB) has had air pollution challenges for many years. The first administrative requirements for BSB were prompted by the Environmental Protection Agency (EPA) and state public health agencies in the late 1970s. Over time, as EPA's National Ambient Air Quality Standards (NAAQS) have become increasingly protective, BSB has continued to struggle with keeping air pollution below the standards for public health protection. This is particularly true in regard to the standard for fine airborne particulate matter (PM_{2.5}).

Over the years, the DEQ air pollution monitor located at the Greeley School site has measured many days when the concentration of fine particulate matter in the air was worse than the standard. The following graph shows average PM_{2.5} values measured at Greeley School from 2008 through 2011 and compares those averages to the EPA standard. The measured values exceeded the standard in 2002, 2005, 2010, and 2011 (See Figure 1).

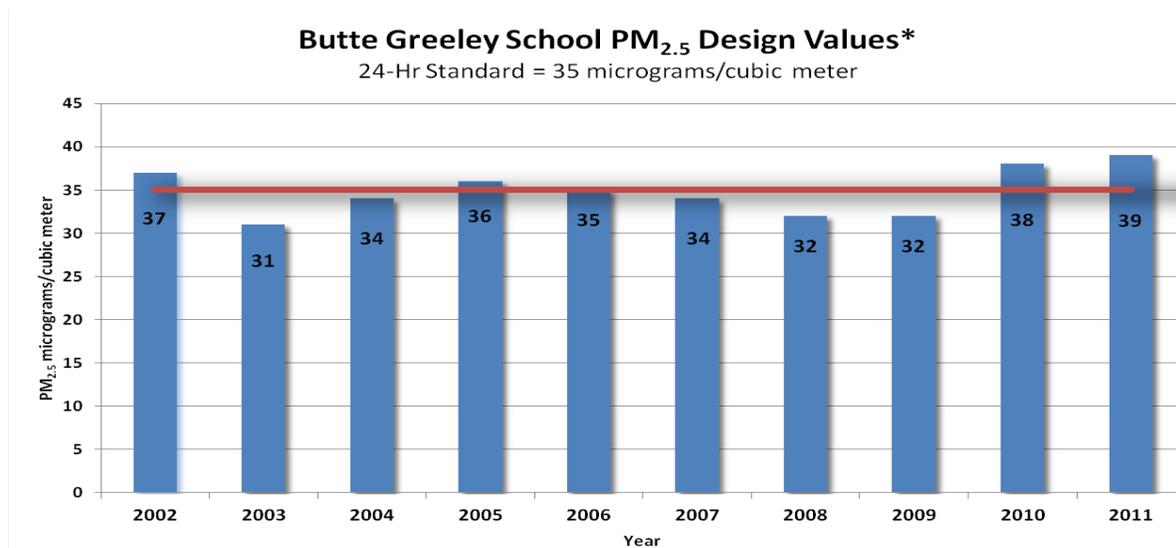


Figure 1. Greeley School PM_{2.5} Average Measurements.

*Design Values are the three year average of the 98th Percentile values for each year. Compliance with the 24-Hr Standard is determined by comparing the design values with the Federal Standard, which is currently 35µg/m³ in a 24-hour day.

What is PM_{2.5}? PM_{2.5} is microscopic-sized particulate matter that can stay suspended in the air. Its name indicates that the particles have a relative diameter of 2.5 microns or less - approximately 30 times smaller than the diameter of a human hair. PM_{2.5} is important because it may lodge deeply within the lungs when inhaled and harm people's health as a result. PM_{2.5} can be made up of a variety of chemical compounds, most of which are by-products from the combustion of various fuels such as wood, diesel fuel, and gasoline. It is important to

understand what those compounds are in the air around Butte so that their local sources may be addressed.

To help understand what these different compounds are, the Montana Department of Environmental Quality (DEQ) contracted with the University of Montana (UM) to conduct studies to identify the chemical makeup of PM_{2.5} in several western Montana communities during the winter months. This study was conducted in Butte from November 8, 2007 through March 1, 2008. The results of the study showed that wood smoke (likely from residential wood burning) was the major chemical component of the fine particulate throughout the winter months, contributing an average of 77.0% of the total measured PM_{2.5}. Figure 2 below shows a summary of the study results.

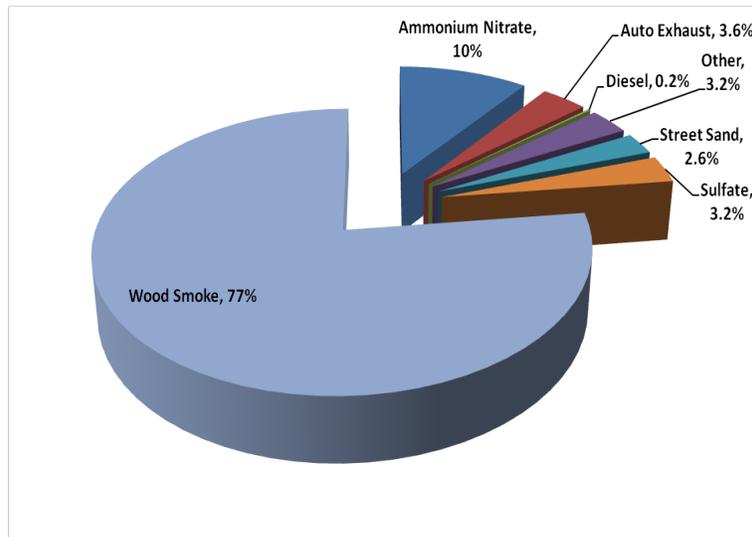


Figure 2. Chemical Makeup of PM_{2.5} in Butte

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