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DAQ

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Fact Sheet

Ozone

What is Ozone?

Ozone is formed when hydrocarbons and nitrogen oxides react chemically in the presence of sunlight and heat. Hydrocarbons are emitted from automobiles, gasoline stations, paint, degreasers, cleaning fluids, and many other sources. Plants also give off some reactive hydrocarbons, such as terpenes from pine trees. Nitrogen oxides are emitted by automobiles, power plants, and other combustion processes. The highest ozone levels occur during the summer when strong sunlight, high temperatures, and stagnant meteorological conditions combine to drive the chemical reactions and trap the air in the region for several days. Ozone may also be formed during the winter in areas that experience strong temperature inversions.

Why is Ozone important?

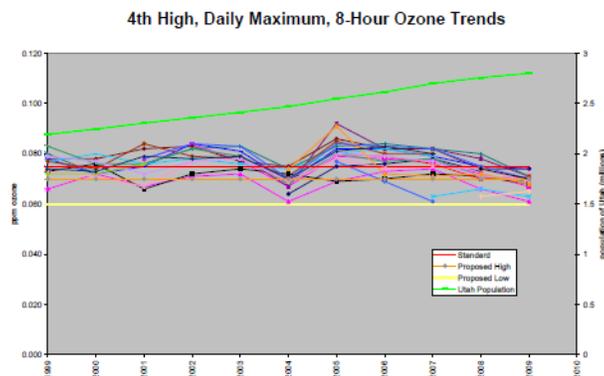
Ozone can irritate the respiratory system, causing coughing, throat irritation, or an uncomfortable sensation in the chest. It can lower your resistance to diseases such as colds and pneumonia. Those who are most sensitive to its impacts are the very young, the elderly, and those with pre-existing breathing problems. People with respiratory diseases whose lungs are more vulnerable to ozone may experience health effects earlier and at lower ozone levels than the general population. Ozone also makes people more sensitive to allergens, the most common triggers of asthma attacks. Even healthy adults doing heavy exercise or manual labor outdoors may experience unhealthy effects during high ozone periods. This is because during physical activity, ozone penetrates deeper into the parts of the lungs that are more vulnerable to injury.

Studies have shown that ozone can inflame and damage the lining of the lungs. Within a few days, the damaged cells are shed and replaced - much like the skin peels after a sunburn. However, if this type of inflammation happens repeatedly over a long time period, lung tissue may become permanently scarred, resulting in less lung elasticity, permanent loss of lung function, and a lower quality of life.

Ozone in Utah?

Ozone is an on-going problem along the Wasatch Front during the hot summer months. A series of state plans beginning in the early 1980's have reduced ozone levels to meet increasingly stringent health standards.

Ozone levels in the urban area are close to the current 8-hour ozone standard of 0.075 parts of ozone per million parts of air (ppm), and occasionally exceed that standard on hot summer days. As shown on the following graph, ozone levels have not been increasing, despite steady population growth in Utah.



How is the Ozone Standard Changing?

On January 6, 2010, the EPA proposed to strengthen the national ambient air quality standards for ground-level ozone. The proposed revisions are based on scientific evidence about ozone and its effects on people and sensitive trees and plants. EPA is planning to finalize the standard at the end of August 2010.

How Do Ozone Values in Utah Compare to the Proposed Standard?

In the following table, numbers in red indicate that the 3-year-average would violate the current primary and secondary ozone standard of 0.075 ppm. Numbers in orange would exceed the upper boundary of the proposed ozone standard (0.070 ppm for the primary standard or 15 ppm-hr for the secondary standard). Numbers in yellow would exceed the lower boundary of the proposed ozone standard (0.060 ppm for the primary standard or 7 ppm-hr for the secondary standard).

Monitor Location	4th High 24-hr. Max 8-hr. Averages	W126
	2007-2009	2007-2009
Grand Canyon, AZ	0.068	13
Mesa Verde, CO	0.069	13
Craters of the Moon, ID	0.064	8
Great Basin, NV	0.072	13
Yellowstone, WY	0.063	7
Canyonlands, UT	0.071	13
Zion, UT	0.072	15
BR Brigham City	0.072	15
L4 Logan 4	0.068	12
BV Bountiful 2	0.077	16
CW Cottonwood	0.076	18
B4 Beach	0.076	16
HW Hawthorne	0.076	15
T3 Tooele	0.073	13
NP North Provo	0.073	14
HG Highland	0.073	14
SF Spanish Fork	0.073	17
O2 Ogden 2	0.075	13
HV Harrisville	0.076	17
SC Santa Clara ¹	0.065	9
Current Standard	0.075	NA
Proposed Upper Boundary	0.070	15
Proposed Lower Boundary	0.060	7

¹ Based on 2 years of data.

What are the costs to Utah?

During the summer when ozone levels are high, people with respiratory disease, the elderly, and children are at most risk for impacts from ozone. Utah has not quantified the health costs of ozone exposure, but it is an important issue for the State.

Utah will need to develop a state plan to reduce emissions that are contributing to the ozone levels throughout the state that do not meet the new ozone health standard. There may be significant costs to industry, especially in the urban area along the Wasatch Front to upgrade equipment to meet the goals of the state plan. If an area is designated nonattainment for ozone there are other, mandatory measures that must be implemented.

The State will be required to establish an emission budget for vehicle emissions, and all future transportation plans in the area must conform to that budget. Other measures, such as vehicle inspection and maintenance programs may also be required. The permitting program in the area would also be affected. New sources in nonattainment areas are required to obtain an offset from existing sources to ensure that overall emissions do not increase in the area. New sources in nonattainment areas must also meet the highest standard of control. These restrictions could affect economic development in the area.