Utah FOUNDATION RESEARCH BRIEF

Utah's Air Quality Improving But Vehicle Emissions a Growing Concern

April 20, 2004

The quality of Utah's air was in the news a great deal during the last winter. Prolonged inversions along the Wasatch Front, coupled with concerns and miscalculations of air quality in the Cache Valley raised voters' awareness of the issue. So how bad is Utah's air? The answer depends quite a bit on which measure of air quality is being used. Those measures are tied to the standards set by the Environmental Protection Agency (EPA) under the Clean Air Act.

Clean Air Act

The Clean Air Act was passed by Congress in 1970, updated in 1977, revised in 1990 and updated again in 1997. The Clean Air Act sets a national threshold for the six most common air pollutants to ensure that all areas of the country are meeting a basic level of health and environmental standards. Individual states can set higher threshold for the six pollutants, but cannot have weaker controls than those set at the national level. The six are ozone, nitrogen dioxide, carbon monoxide, particulate matter, sulfur dioxide and lead. Ozone is the chemical reaction of two families of chemicals: volatile organic compounds (VOC) and all of the nitrogen oxide compounds including nitrogen dioxide (NO2). VOCs are released from burning fuels, solvents, paints, and glues. Particulate matter under the 1990 act was limited to PM-10, which describes the size of the particles. Since 1997, PM-2.5 has been added. These smaller particulates are more readily inhaled and can cause greater damage to respiratory systems.

Under the 1990 Act, states are required to submit state implementation plans (SIPs). Utah's SIP details a set of regulations through which a state will clean up polluted areas, or areas that are in "nonattainment" of national standards. The EPA must approve each SIP. If a state submits a SIP that does not meet EPA approval, the agency can then take over enforcing the Clean Air Act in that state.

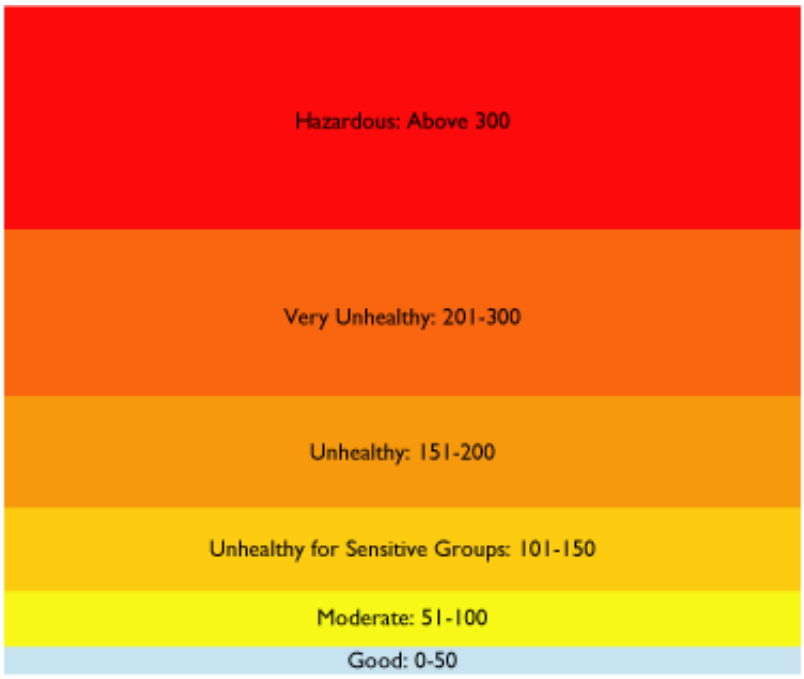
Other features of the 1990 Act include a permitting program under which larger polluters such as a power plant or refinery are required to submit information on the type and quantity of pollution being emitted and what steps are being taken to reduce emissions levels including plans on how the entity will monitor emissions. In order to receive a permit, these entities are required to pay fees and these fees fund the activities of state air quality programs. The Act also allows the EPA to use fines to penalize violators. Under the old legislation, the EPA had to file complaints with the courts for all violations, including very minor ones. Finally, the 1990 Act opened the door to market-based incentives as a way to garner greater cooperation from industry. This idea has been expanded in the current Clear Skies initiative, causing an outcry among environmentalists who assert many of the new regulations favor industry at the expense of government oversight.

Utah's Air Quality

When comparing Utah's air quality against the EPA standards under the Clean Air Act, there are three trouble spots: particulate matter, carbon monoxide and ozone. According to a report issued by the Utah Division of Air Quality (DAQ), the state was within compliance of standards for these pollutants during 2003. However, DAQ feels that the margins were too slim and that greater efforts are going to be needed for Utah to remain in compliance in the future

A look at summary data from the Air Quality Index provided by the DAQ shows that since 1998, the number of days that each of these pollutants were classified as "moderate" or above has decreased. The Air Quality Index (AQI) categorizes air quality by pollutant on a scale based on impacts to health. Figure 1 details the categories of the AQI and the ratings given for each.

Figure 1: Utah Air Quality Index



The days that carbon monoxide rated a moderate level in 1998 were 46. In 2001, that had declined to 12 and moderate was as high on the scale carbon monoxide levels reached for the time period in question. For ozone the number of days rated at moderate or above in 1998 was 88. In 2002, the number was 85, although during intervening years, the number dropped as low as 73. In 1998, the number of days ozone levels reached the unhealthy category was 1 and in 2002, there were none.

When looking at particulate matter, there are two indicators, one for PM-10 and one for PM-2.5. PM-10 shows some fluctuation with the number of days in the moderate category at 96 for 1998 and 103 for 2002. PM-10 did not exceed the moderate category levels during the time series. The same is not true for the smaller particulate matter. PM-2.5 levels were rated unhealthy during two days in 1998. In 2002, eight days were classified as unhealthy

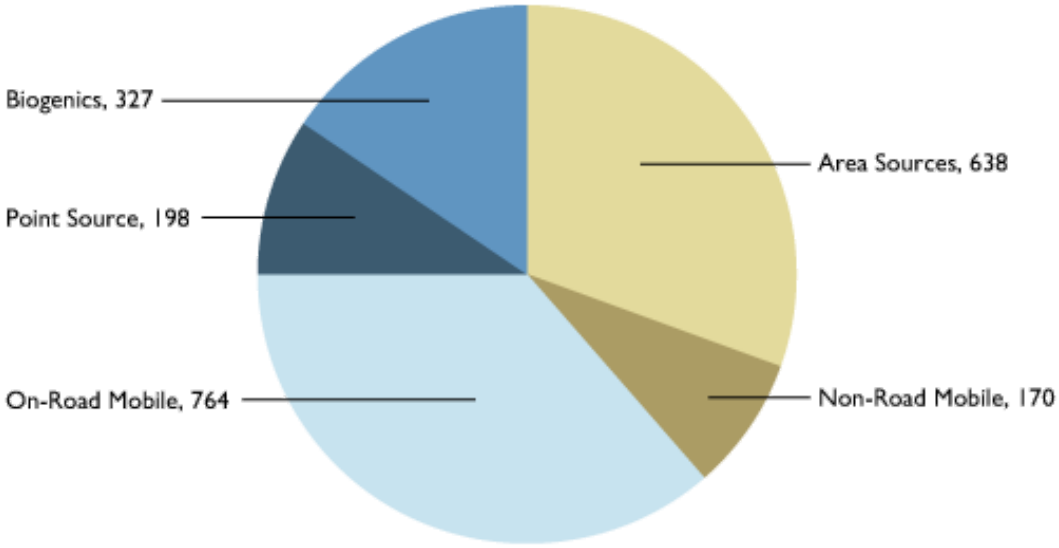
These are just brief examples of trends in Utah's air quality. For further information, the Department of Air Quality has a report available to the public on its website at http://www.airquality.utah.gov.

Utah's Emission Inventory

To further understand where these pollutants come from, it is necessary to use another data source, the Utah Emissions Inventory. The 1999 inventory should be available soon at http://www.airquality.utah.gov/PLANNING/Emisinv.htm. In the meantime, the most recent data from 1996 provide information on the common pollutants listed above by county including the amount of pollution that is emitted and from which source: mobile, area, point or biogenic. Mobile sources include highway, rail, air and other traffic. Biogenic sources are those naturally found in forests, vegetation and soils. Point sources are stationary commercial and industrial sources that emit more than 100 tons/year. Area sources are stationary or non-road mobile (such as a portable gravel operation) source that emit less than 100 tons/year. These, according to DAQ, are too small and numerous to be treated as point sources, so the totals from these operations are compiled into the area source category. Figure 2 shows the amount each source contributes to the state's overall emissions. Mobile sources are the largest component of Utah's emissions, followed by area sources.

Figure 2: 1996 Utah Emissions by Source in Thousands of Tons

Total Emissions = 2.1 million tons



When looking at individual counties, mobile sources are the largest contributor of pollutants for the following counties: Box Elder, Cache, Carbon, Davis, Iron, Salt Lake, Summit (tie with area sources), Tooele, Utah, Washington and Weber. In some cases, such as Salt Lake and Davis counties, the percentage that mobile sources contribute is extremely high-83.2% in Salt Lake and 79.9% in Davis. Mobile sources are a large factor in the levels of carbon monoxide, nitrogen oxides, particulate matter, and VOCs.

Rural counties, without large mobile populations, still contribute to the state's pollution levels. This is especially true for counties with a power plant. Figure 3 ranks the top five counties for each pollutant and rural counties hold twelve of the twenty-five slots.

Figure 3: Utah Emissions Inventory by Pollutant, Top Five Ranked Counties

Top Five	PM10	SO2	NOX	VOC	CO
1	Salt Lake	Emery	Salt Lake	Utah	Salt Lake
2	Utah	Cache	Emery	Salt Lake	Utah
3	Davis	Carbon	Millard	San Juan	Davis
4	Box Elder	Salt Lake	Utah	Summit	Juab
5	Weber	Millard	Davis	Grand	Box Elder

Source: Division of Air Quality, 1996 Emissions Inventory
