UTAH

Division of Air Quality

ANNUAL REPORT

2006

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Introduction

Utah Division of Air Quality

The mission of the Utah Division of Air Quality (DAQ) is to protect public health and the environment from the harmful effects of air pollution. It is the responsibility of DAQ to attain and maintain health and visibility standards required under the Clean Air Act (CAA). To fulfill this responsibility DAQ is required by the federal government to ensure compliance with the U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS) statewide and visibility standards at National Parks. DAQ enacts rules pertaining to air quality improvements, issues preconstruction and operating permits to stationary sources, and ensures compliance with Utah air quality rules.

Utah's mountain and valley topography, diverse economy, and a vastly growing population create air quality challenges for the state. Despite these challenges, Utah's air is significantly cleaner than it was 25 years ago. More stringent federal regulations for motor vehicles and industry, as well as other emission reduction programs, have helped reduce smog and improve visibility. In the early 1980s, the health standards for four of the six major ambient air pollutants identified by the EPA were violated in one or more Utah counties. As of December18, 2006, all Utah counties attained current federal air quality standards. Remarkably, the improvement comes after significant population growth, an achievement equaled by only a few other states.

DAQ allocates a large portion of its resources to administrating the federal Clean Air Act (CAA). The Utah Air Conservation Act empowers the Utah Air Quality Board (UAQB) to enact rules pertaining to air quality issues. The DAQ staff supports the Board in its policymaking role. Board membership provides representation from industry, local government, environmental groups, and the public. The eleven board members have diverse interests, are knowledgeable in air pollution matters and are appointed by the Governor with consent of the Senate. The Director of DAQ is the Board's Executive Secretary.

The Utah Air Quality Rules describe and define the Utah air quality program. Implementation of the rules requires DAQ interaction with industry, other government agencies and the public. The State air program is responsible for the implementation of both the federal standards under the CAA as well as State pollution rules for sources not regulated by the federal rules.

2006 Synopsis

The year 2006 saw the continuation of an ongoing trend of progress toward compliance with all federal health standards for criteria air pollutants. Despite ever-increasing population, Utah remained in compliance with the 8-hour ozone standards. However, during hot summer months ozone concentrations approach the EPA health standard.

The same can be said of DAQ's efforts to curb the levels of particulate matter. The state during 2006 remained within the federal health standards for PM_{10}. Nevertheless, Utah experienced high concentrations of particulate matter during wintertime episodes of air stagnation and temperature inversion. During winter temperature inversions, ambient concentrations have traditionally approached both the PM_{10} and $PM_{2.5}$ standards. EPA revised the National Ambient Air Quality Standards for $PM_{2.5}$ pollution on September 21, 2006. EPA strengthened the 24-hour $PM_{2.5}$ standard from the 1997 level of 65 $\mu g/m^3$ to 35 $\mu g/m^3$, and retained the current annual $PM_{2.5}$ standard at 15 $\mu g/m^3$. The 24-hour $PM_{2.5}$ standard is based on a three-year average of the 98^{th} percentile monitored values. The State of Utah has always been in compliance with the 1997 standard and 24-hour $PM_{2.5}$ has decreased along the Wasatch front from 2000 through 2006. The new 2006 24-hour standard is approximately half the value of the original standard and went into effect in late December 2006. Under the new standard most Wasatch front counties and Cache County will be out of compliance with the new 2006 24-hour $PM_{2.5}$ standard.

The formation of $PM_{2.5}$ is influenced by the unique geography, weather patterns and air emissions in an area. DAQ in cooperation with Utah State University (USU) and the State of Idaho are conducting studies to determine the causes of elevated levels of PM in the Cache Valley, as well as identify potential control measures to reduce particulate concentrations. The Cache Valley studies began in 2004 and will continue through 2007.

The Department of Environmental Quality is concerned about elevated levels of mercury in Utah, and has begun a program to control airborne mercury emissions. In May of 2005 EPA issued a final mercury rule, the Clean Air Mercury Rule (CAMR), to address mercury emissions from coal-fired electric generating units larger than 25 megawatts. Utah proposed (on November 1^{st} 2006) a "Designated Facilities Plan" as well as a number of other state rules to comply with EPA's mercury rule. Utah has proposed restrictions on mercury emissions from coal-fired power plants as required by the CAMR to ensure a decrease of mercury emissions in the state.

DAQ also sits on the Statewide Mercury Work Group; a 15 member task force representing industry, government and advocacy groups that was organized to assess the extent of mercury contamination in Utah and set priorities for protecting the public.

In December 2002, EPA issued a final New Source Review (NSR) reform rule; a major revision to the federal permitting program for modifications at major stationary sources. DAQ submitted the NSR rule to the UAQB on November 2, 2005. The Board recommended a 45-day comment period and asked DAQ to develop a technical analysis of the impact of the NSR rule on sources in Utah. The DAQ presented a technical analysis at the fifth NSR Reform Rule stakeholder meeting on November 29, 2005 and at the UAQB meeting in December of 2005. The comment period commenced on December 1, 2005 and closed on January 17, 2006. The NSR reform rule for attainment areas was finalized by the UAQB June of 2006.

Division Organization

The DAQ is divided into three separate branches: Permitting, Planning, and Air Standards. The *Permitting Branch* is responsible for issuing construction and operating permits to stationary sources that emit air pollutants. Construction permits are issued to

new or modified stationary sources of air pollution through the New Source Review program. Operating permits are issued on an ongoing basis through Title V of the CAA to "major" stationary sources. The Permitting branch is comprised of three sections: Minor Source NSR, Major Source NSR and Operating Permits.

The *Planning Branch* is responsible for developing comprehensive plans to reduce air pollution. Emissions inventories are routinely compiled in order to understand the origins of the various contaminants detected in the air. Computer models are used to evaluate the impacts of new and existing sources of air pollution, and to understand the relationship between the emissions, meteorology, and pollutant concentrations measured in the air. The branch is also involved in identifying the air quality impacts of transportation issues which include vehicle inspection and maintenance, clean fuels, and highway construction. This information must be considered in the development of State Implementation Plans (SIPs) in order to ensure that Utah's ambient air remains in compliance with the federal health standards, even as our population and our economy continue to grow. The planning branch is comprised of three sections: Mobile Sources, SIP/Rules and Technical Analysis.

The *Air Standards Branch* has responsibility for both insuring that industries and residents comply with Utah's air quality regulations and also that the State of Utah monitors comply with Federal air quality standards. The Branch is comprised of four sections: The Air Monitoring Center (AMC), Major Source Compliance, Minor Source Compliance and Hazardous Air Pollutants (HAPS). The AMC gathers and analyzes data on concentrations of ambient air pollutants. The Source Compliance Sections are responsible for ensuring that all Utah air quality regulatory requirements are met. This is done through inspections and enforcement. The HAPS Section is responsible for the regulation, under EPA air quality programs, of toxic air pollutants, also known as Hazardous Air Pollutants. HAPS are those pollutants listed in the CAA that are known or suspected to cause cancer and other serious health problems. The compliance and HAPS sections are also responsible for the enforcement of federal and state regulations for preconstruction asbestos removal and a number of outreach and enforcement programs designed to reduce exposure to lead paint.

The Division of Air Quality assists small businesses in complying with state and federal regulations including: New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), NSR and Utah Air Quality Rules. The Small Business Assistance Program can advise small businesses on permitting requirements, emission calculations, technical issues, and pollution prevention techniques.

Ambient Air Quality in Utah

Air Quality Standards

The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits

to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA has established health-based National Ambient Air Quality Standards (NAAQS) for six pollutants known as "criteria pollutants." These are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Each of these pollutants is addressed in greater detail later in this chapter, but Table 1 provides a brief description of each. The primary health standards are established by considering both the concentration level and the duration of exposure that can cause adverse health effects. Pollutant concentrations that exceed NAAQS are considered unhealthy. The DAQ monitors each of these criteria pollutants, as well as several non-criteria pollutants for special studies.

Table 1 - Criteria Pollutants

Name	Sources	Health Effects	Environmental Effects
Carbon Monoxide (CO); a clear, colorless, odorless gas	Burning of gasoline, wood, natural gas, coal, oil, etc.	Reduces the ability of blood to transport oxygen to body cells and tissues; cells and tissues need oxygen to work. Carbon monoxide may be particularly hazardous to people who have heart or circulatory (blood vessel) problems and people who have damaged lungs or breathing passages.	
Lead (Pb)	Paint (houses, cars), smelters (metal refineries); manufacture of lead storage batteries; note: burning leaded gasoline was the primary source of lead pollution in the US until unleaded gasoline was mandated by the federal government.	Lead damages nervous systems, including brains, and causes digestive system damage. Children are at special risk. Some lead-containing chemicals cause cancer in animals.	Lead can harm wildlife
Nitrogen Dioxide (NO_2) (one component of NO_x); smog-forming chemical	Burning of gasoline, natural gas, coal, oil, and other fuels; Cars are also an important source of NO_2	Nitrogen dioxide can cause lung damage, illnesses of breathing passages and lungs (respiratory system).	Nitrogen dioxide is an ingredient of acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility
Ozone (O_3) (ground-level ozone is the principal component of smog)	Chemical reaction of pollutants; VOCs and NO_x	Ozone can cause breathing problems, reduced lung function, asthma, irritated eyes, stuffy noses, and reduced resistance to colds and other infections. It may also speed up aging of lung tissue.	Ozone can damage plants and trees; smog can cause reduced visibility
Particulate Matter (PM_{10}, $PM_{2.5}$); dust, smoke, soot	Burning of gasoline, natural gas, coal, oil and other fuels; industrial plants; agriculture (plowing or burning fields); unpaved roads, mining, construction activities. Particles are also formed from the reaction of VOCs, NO_x, SO_x and other pollutants in the air.	Particulate matter can cause nose and throat irritation, lung damage, bronchitis, and early death.	Particulate Matter is the main source of haze that reduces visibility
Sulfur Dioxide (SO_2)	Burning of coal and oil (including diesel and gasoline); industrial processes.	Sulfur dioxide can cause breathing problems and may cause permanent damage to lungs.	SO_2 is an ingredient in acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility

Utah's Air Monitoring Network

The Air Monitoring Center operates a network of monitoring stations across the state. The monitors are situated to measure air quality in neighborhoods, industrial areas, and along heavily traveled roadways. Figure 1 shows the general location of currently active monitoring sites in Utah, and Table 2 presents the location, meteorology and pollutants monitored for each site. In addition, meteorological data are collected at many locations to provide localized data for air quality modeling that is used to evaluate the impacts of new sources and to assess the effectiveness of regional mitigation strategies.

Figure 2 Utah Air Monitoring Network

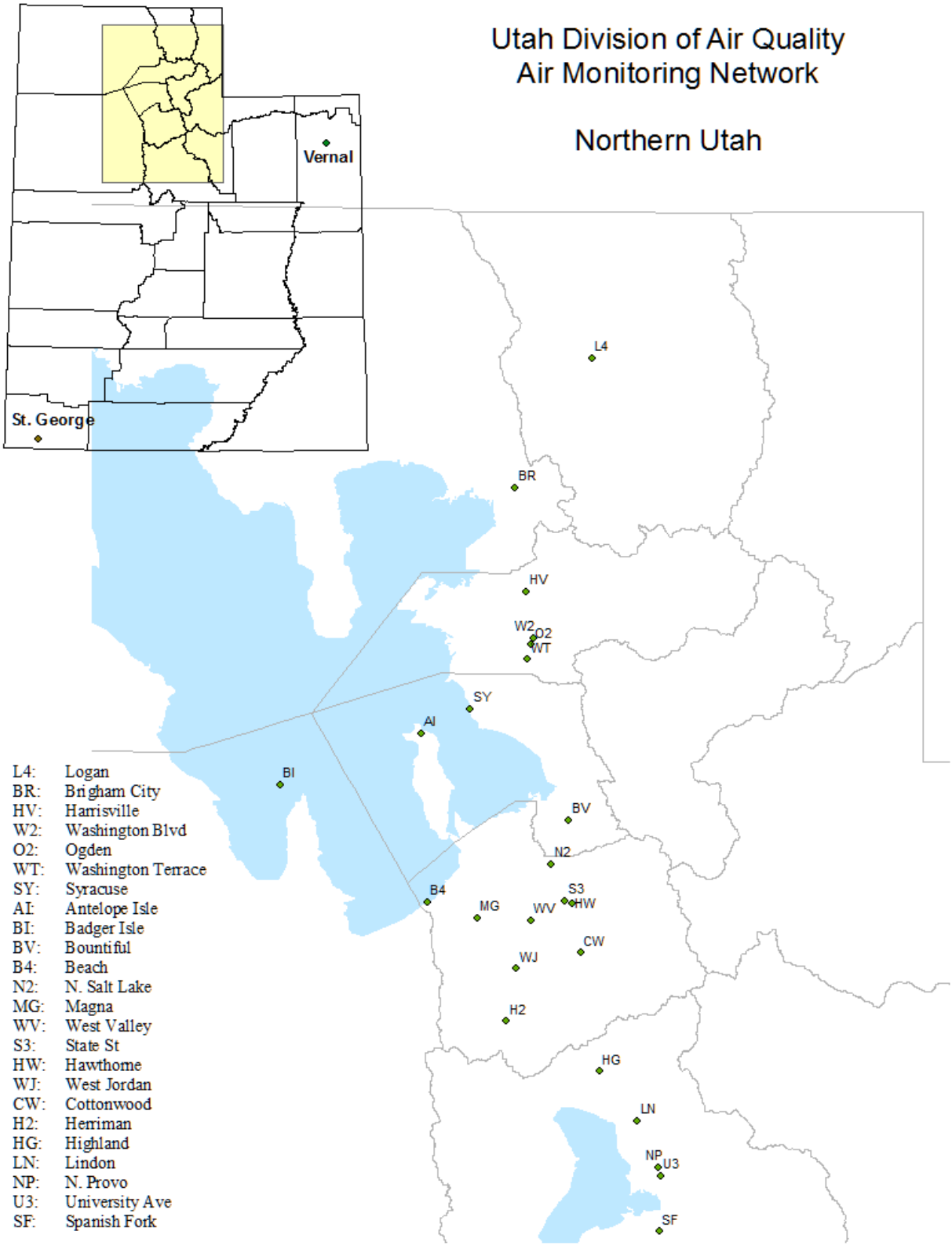


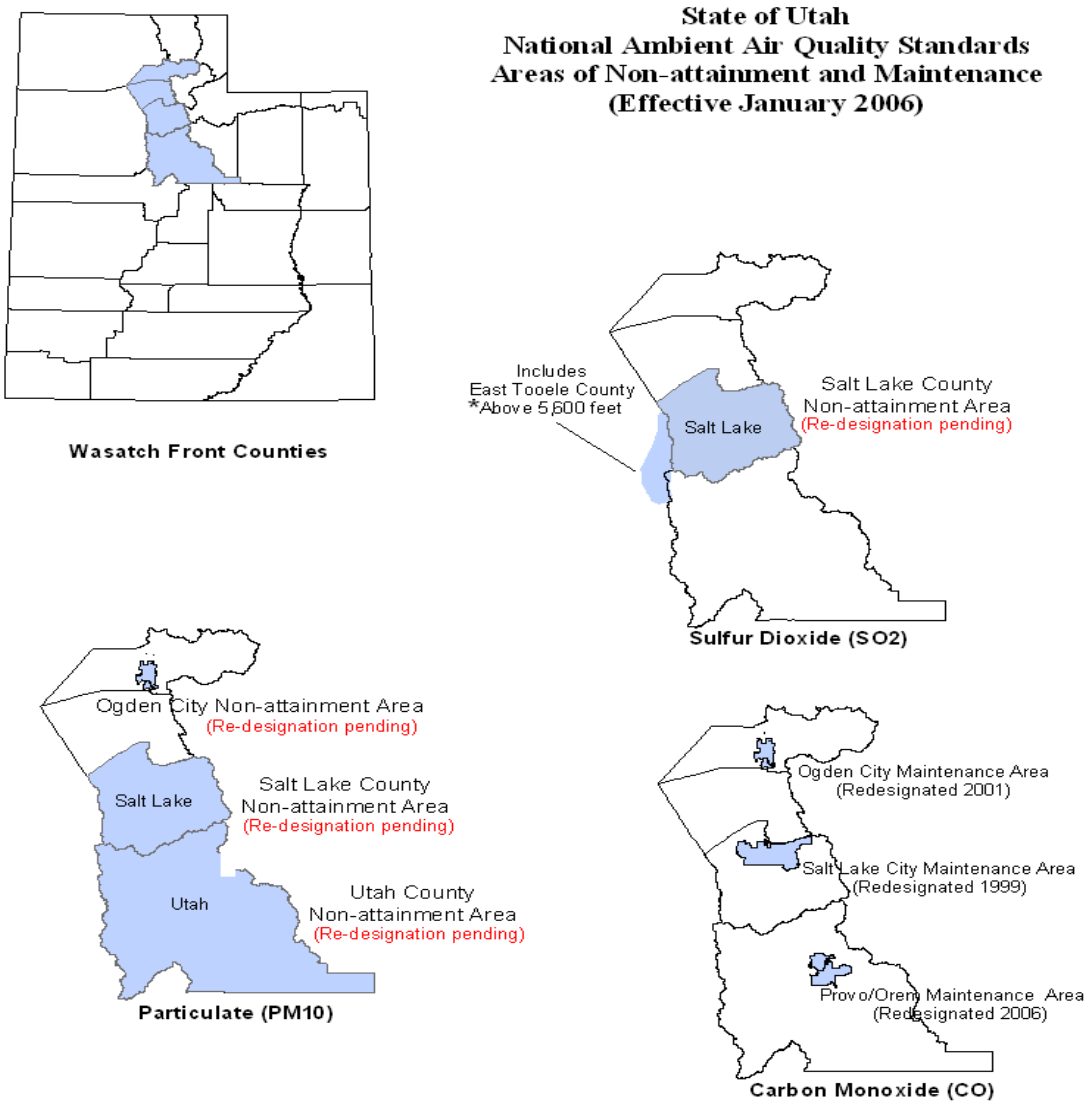
Table 2 Utah Monitoring Stations

Station	City	Address	CO	Lead	NO_2	Ozone	PM_{10}	$PM_{2.5}$	SO_2	Met.
Antelope Island	None	North end of island								X
Badger Island	none	On Island								X
Beach	Lakepoint	12100 W. 1200 S.				X			X	X
Bountiful	Bountiful	171 W. 1370 N.			X	X		X	X	X
Brigham City	Brigham City	140 W. Fishburn Dr.				X		X		X
Cottonwood	SLC	5715 S. 1400 E.	X		X	X	X	X		X
Hyrum	Hyrum	100 North 480 West						X		X
Harrisville	Harrisville	425 W. 2250 N.				X		X		X
Hawthorne	SLC	1675 S. 600 E.	X		X	X	X	X		X
Herriman	Herriman	12950 S. 5600 W.				X		X		X
Highland	Highland	10865 N. 6000 W.				X		X		X
Lindon	Lindon	30 N. Main St.					X	X		X
Logan	Logan	125 W. Center St.	X			X	X	X		X
Magna	Magna	2935 S. 8560 W.		X			X	X	X	X
North Provo	Provo	1355 N. 200 W.	X		X	X	X	X		X
North Salt Lake	SLC	1795 N. Warm Springs Rd.					X	X	X	
Ogden #2	Ogden	228 32nd St.			X		X	X		
Spanish Fork	Spanish Fork	312 W. 2050 N.				X		X		X
State Street	SLC	1401 S. State St.	X							
St. George	St. George	281 East 200 South			X	X		X		X
Syracuse	Syracuse	5100 West 1700 South								X
University Ave.	Provo	363N. University Ave.	X							
Washington Blvd.	Ogden	2540 S. Washington Blvd.	X							
West Jordan	West Jordan									X
Washington Terrace	Washington Terrace	4601 S. 300 W.						X		
West Valley	West Valley City	3275 W. 3100 S.	X			X		X		X
Vernal	Vernal	200 South 1000 East			X	X		X		X

NAAQS Non-attainment & Maintenance Areas

Areas that are not in compliance with the NAAQS are referred to as non-attainment areas (NAA). Figure 14 is a map of the current non-attainment and maintenance areas within the state. A maintenance area is an area that was once designated as non-attainment, and which subsequently demonstrated that it will attain and maintain the particular standard for a period of 10 years. EPA must approve the demonstration.

Figure 14.



Note: The entire state is in attainment for $PM_{2.5}$ and 8-hour Ozone

Criteria Air Pollutants

Carbon Monoxide

Carbon monoxide (CO) is a colorless and odorless gas, formed by the incomplete combustion of carbon fuel. CO is primarily produced from on-road motor vehicle emissions. Other significant sources of CO emissions are wood burning stoves and fireplaces. The remaining emissions come from industrial facilities, construction equipment, miscellaneous mobile sources and other types of space heating.

Because motor vehicle emissions are the major source of CO, the highest concentrations occur during morning and evening rush hours near high traffic areas. The worst problems occur when there are large numbers of slow-moving vehicles in large parking lots, busy intersections, and traffic jams. Carbon Monoxide problems are greater in winter due to several factors: cold weather makes motor vehicles run less efficiently, wood burning and other space heating takes place in the winter, and cold weather temperature inversions trap CO near the ground.

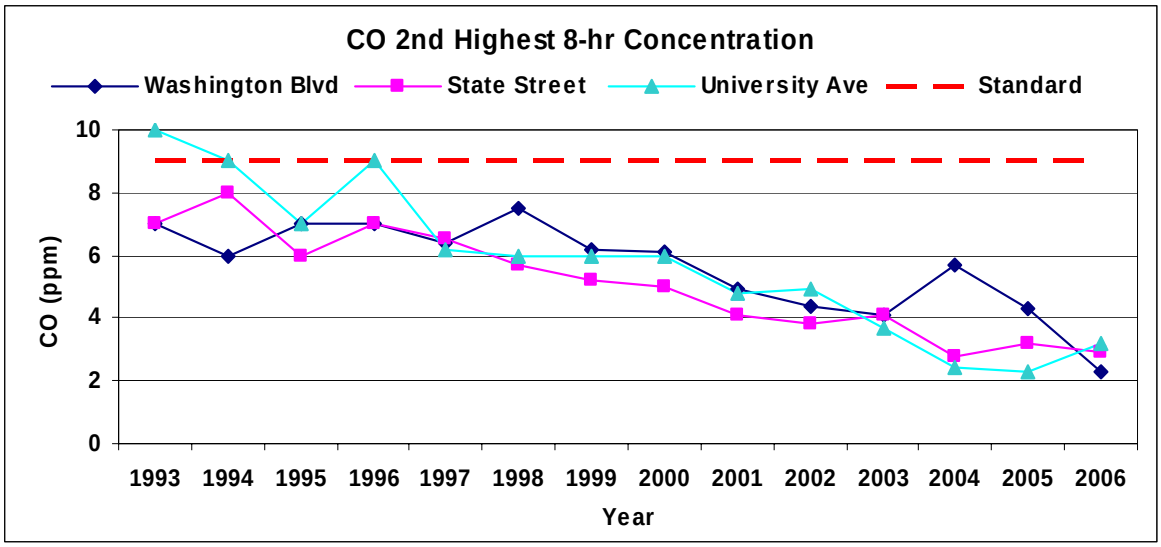
Standards

The EPA has developed two national standards (NAAQS) for CO. They are 35 ppm (parts per million) of CO averaged over a 1 hour period and 9 ppm of CO averaged over an 8-hr period. A violation of the NAAQS occurs with the second exceedance of either standard at a single location in a calendar year. Once a location measures a second exceedance of either standard, it is considered to be in violation and becomes designated as a “non-attainment area.” Three cities in Utah (Salt Lake City, Ogden, and Provo) were, at one time, designated non-attainment areas for CO. Due primarily to improvements in motor vehicle technology, both Salt Lake City and Ogden were successfully re-designated to “attainment” status in 1999 and 2001 respectively. DAQ submitted a re-designation request and associated maintenance plan for EPA’s approval in March 2004 for Provo. This request was approved by EPA and Provo was re-designated as an “attainment” area effective January 3, 2006.

CO in 2006

The State of Utah was in compliance with the CO standards in 2006. No exceedances of the CO standards were observed during 2006. Figure 3 shows a 13-year trend in CO emissions. The steady decline is primarily due to improvements in vehicle emissions control technology.

Figure 3



Lead (Pb)

Lead in the ambient air exists primarily as particulate matter in the respirable size range. In the past, the major source of lead was from gasoline. However, because leaded gasoline for automobiles was completely phased-out in the United States by the end of 1995, lead from this source is no longer a significant problem. The extraction and processing of metallic ores is currently the major source of lead in Utah, and dust from the removal of lead-based paint is another.

Standard

The current standard for lead is a calendar quarter (3-month) average concentration, not to exceed 1.5 micrograms per cubic meter of air. Utah has not exceeded the health standard for lead since the late 1970s.

Nitrogen Dioxide (NO_2)

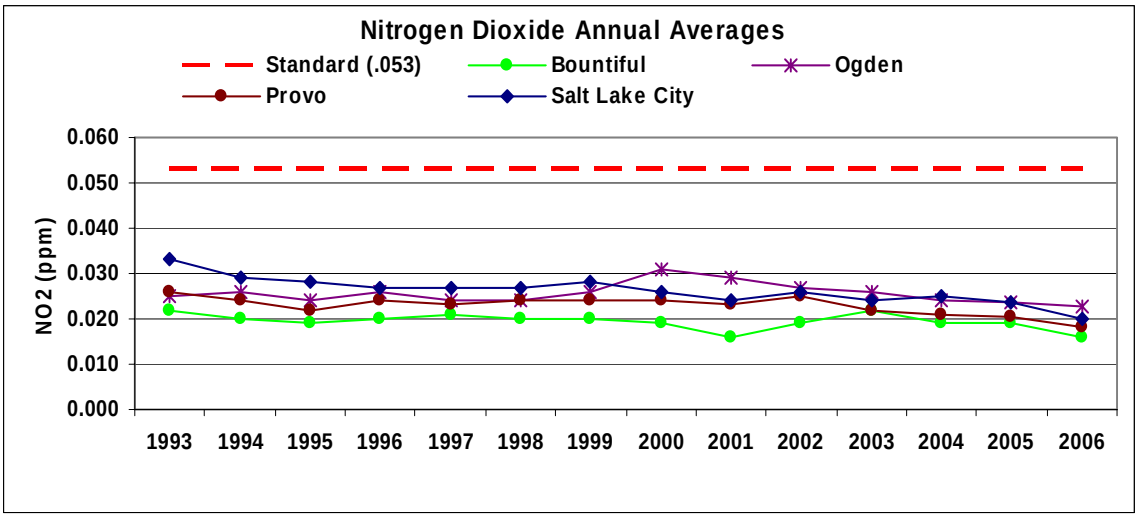
During high temperature combustion, the nitrogen in the air reacts with oxygen to produce various oxides of nitrogen, or NO_x, a reddish-brown gas. One of the oxides of nitrogen, nitrogen dioxide (NO_2), is considered a criteria pollutant.

Standard

The annual standard for nitrogen dioxide is 0.053 ppm expressed as an annual arithmetic mean (average). Los Angles is the only U.S. city that has recorded exceedances of the nitrogen dioxide annual standard in the past sixteen years. The DAQ monitors the concentrations of NO_2 at various locations throughout the state, but has never observed a violation of the annual standard. However, oxides of nitrogen react with other air contaminants to form other criteria pollutants. In the summer, photochemical reactions between NO_2 and volatile organic compounds (VOCs) lead to ground-level ozone. In the winter, NO_2 reacts with ammonia to form fine particulate matter. Both of these seasonal scenarios can result in increased pollution. Utah continues to struggle with both the ozone

and particulate matter standards, and because of this, DAQ is mindful of the trend in NO_2 emissions illustrated in Figure 4.

Figure 4



Ozone (O_3)

Ozone is a gas composed of three oxygen atoms. Ozone at ground level can be inhaled and is considered a pollutant. Ground-level ozone should not be confused with the stratospheric ozone layer that is located approximately 15 miles above the earth's atmosphere. It is this layer that shields the earth from cancer-causing ultraviolet radiation. Ground level ozone is formed by a complex chemical reaction involving Volatile Organic Compounds (VOC) and Oxides of Nitrogen (NO_x) in the presence of sunlight.

Ozone production is a year-round phenomenon. However, the highest ozone levels occur during the summer when strong sunlight, high temperatures, and stagnant meteorological conditions combine to drive chemical reactions and trap the air within a region for several days. Some of the major sources for these pollutants are vehicle and engine exhaust, emissions from industrial facilities, gasoline vapors, chemical solvents, and biogenic emissions from natural sources.

Standard

In July 1997, the EPA established a new ozone standard. The 1-hour primary standard of 0.12 ppm was replaced by an 8-hour standard at a level of 0.08 ppm. The standard is calculated based on a 3-year average of the annual 4th –highest daily 8-hour average concentrations. Following several years of litigation, the new 8-hour ozone standard took effect on June 15, 2004 and is based on health studies that indicate long-term exposures to ozone are more harmful than shorter, 1-hour exposures

In the 1970's and early 1980's Salt Lake and Davis counties violated the 0.12 ppm 1-hour ozone standard. In 1984 Utah submitted and the EPA approved an ozone State Implementation Plan (SIP) with sufficient control measures to attain and maintain the 1-hour standard. In 1990, while some counties in Utah were non-attainment, Congress amended the Clean Air Act (CAA) and, as a result, Salt Lake and Davis Counties were designated "moderate" non-attainment areas. In 1993 Utah submitted a formal re-designation request with an accompanying revision of the ozone SIP which was approved by the EPA.

In response to the requirements of the new 8-hour ozone standard, the DAQ prepared a new 8-hour ozone SIP which was adopted by the Utah Air Quality Board on January 3, 2007. This plan will soon be sent to the EPA for approval.

Ozone in 2006

Utah continues to remain in compliance with the 8-hour standard, based on a 3-year average of the 4th highest ozone concentration at each monitor.

The EPA is currently reviewing the ozone NAAQS, to verify that the current standard protects public health. There are several new ozone health impact studies that have recommended lowering the ozone standard below the current standard of 0.080 ppm. If this occurs, Utah could be re-designated to non-attainment and once again have to prepare an ozone SIP revision.

The following charts illustrate recent trends in ozone concentrations along the Wasatch Front. Figure 5 presents the NAAQS threshold which is the 3-year average of the 4th highest 8-hour ozone concentration from monitors along the Wasatch front. Due to rounding requirements the actual annual standard is exceeded at 0.085 ppm. The red dashed lines indicate the NAAS standard.

Figure 5

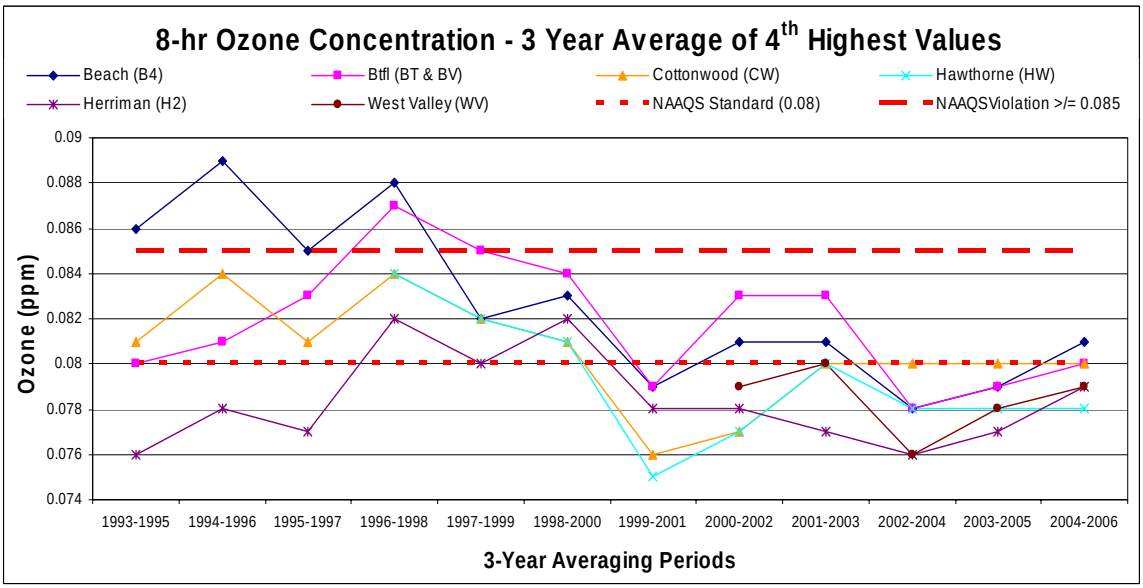
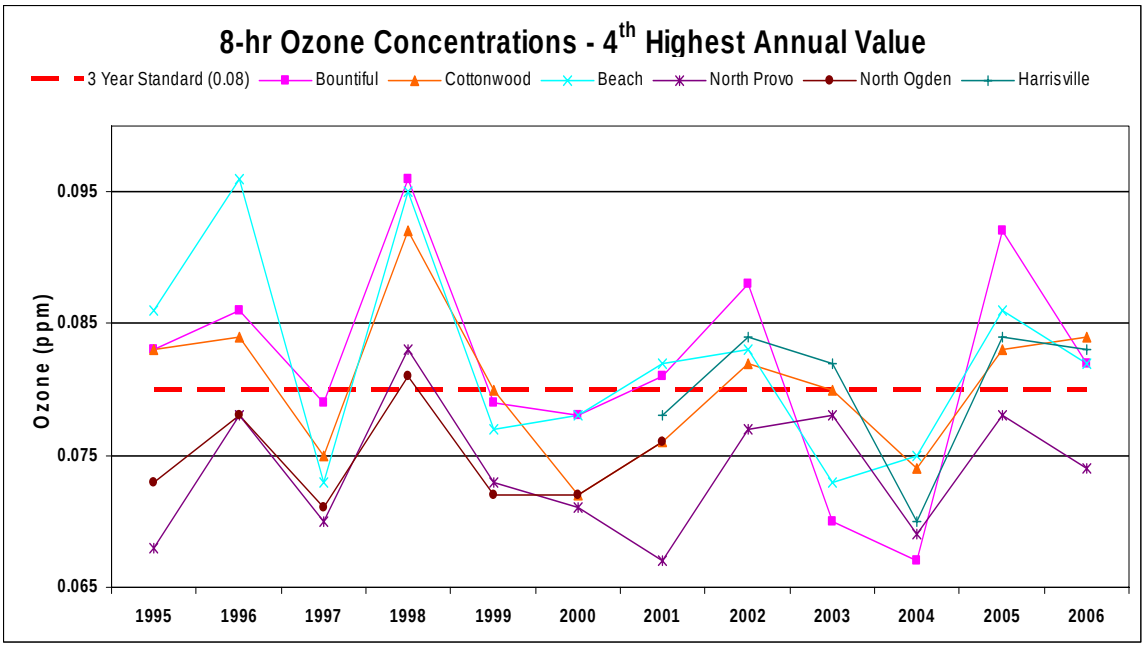


Figure 6 examines the 8-hour ozone concentrations by looking at the 4th highest annual concentration at monitors for the past twelve years. Although the State of Utah continues to comply with the 8-hour standard, which is based on a three year average, it is not uncommon to record yearly values that are greater than the NAAQS.

Figure 6



Particulate Matter: PM_{10} and $PM_{2.5}$

Particulate matter (PM) is a complex mixture of extremely tiny particles of solid or semi-solid material suspended in the atmosphere. PM pollution is divided into two categories: PM_{10} and $PM_{2.5}$. PM_{10} is particulate less than 10 micrometers in diameter, which is about one-seventh the width of a strand of human hair. PM_{10} can lodge deep in the lungs and cause respiratory problems. Particles of PM_{10} larger than 2.5 microns are typically due to "fugitive dust" (sand and dirt blown by winds from roadways, fields, and construction sites) and contain large amounts of silica (sand like) materials.

$PM_{2.5}$ is particulate less than 2.5 micrometers in diameter. $PM_{2.5}$ is generally produced from combustion sources and includes fly ash (from power plants), carbon black (from cars and trucks), and soot (from fireplaces and woodstoves). Much of Utah's $PM_{2.5}$ is called secondary aerosol. "Secondary" means that it was not emitted directly as a particle, but is produced when gasses such as sulfur dioxide (SO_2) or nitrogen oxides (NO_x) react with other gasses in the atmosphere such as ammonia (NH_3) to become tiny particles. SO_2 and NO_x are also products of combustion. Cold weather in the mountain valleys of Utah set the conditions for the formation of $PM_{2.5}$. Wintertime temperature inversions act to trap air in valleys long enough for concentrations of secondary aerosol to build up to levels that can be unhealthy. Particles smaller than $PM_{2.5}$ are major contributors to visibility impairment in both urban and rural areas. Along the Wasatch Front, the effects can be seen as the thick brownish haze that lingers in our northern valleys, particularly in the winter. These particles are so small that they can become imbedded in human lung tissue, causing or exacerbating respiratory diseases and

cardiovascular problems. Other negative effects are reduced visibility and accelerated deterioration of buildings. DAQ currently operates PM_{10} and $PM_{2.5}$ monitors throughout the state to assess the ambient air quality with respect to the standards for both PM_{10} and $PM_{2.5}$.

Standards

PM_{10}

The annual and 24 hour air quality standards for PM_{10} were established by EPA in July 1987 and revised in September of 2006. The 24-hour standard is set at 150 micrograms per cubic meter ($\mu g/m^3$) and is calculated as the three year average of the highest monitored concentrations. Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the EPA revoked the annual PM_{10} standard in 2006 (effective December 18, 2006). The annual PM_{10} standard, which was in effect during most of 2006, was set at 50 $\mu g/m^3$ and calculated as the annual mean averaged over three years.
Figure 7 presents the highest 24 hour PM_{10} concentrations from 1990 to 2006. The dashed red line indicates the compliance threshold.

Figure 7

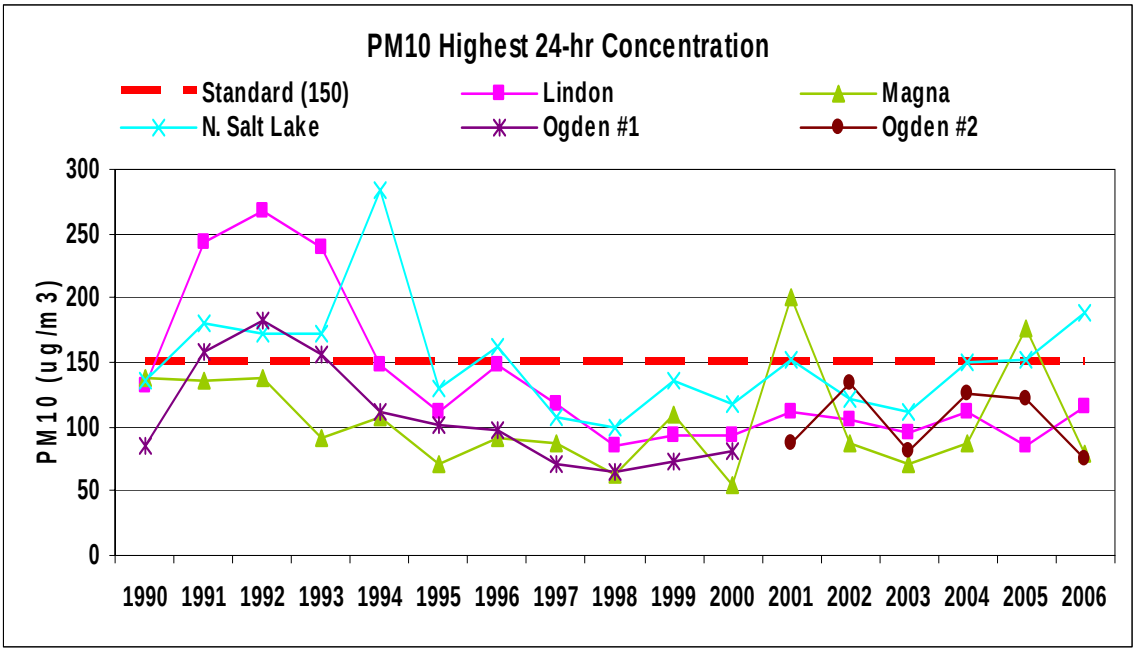
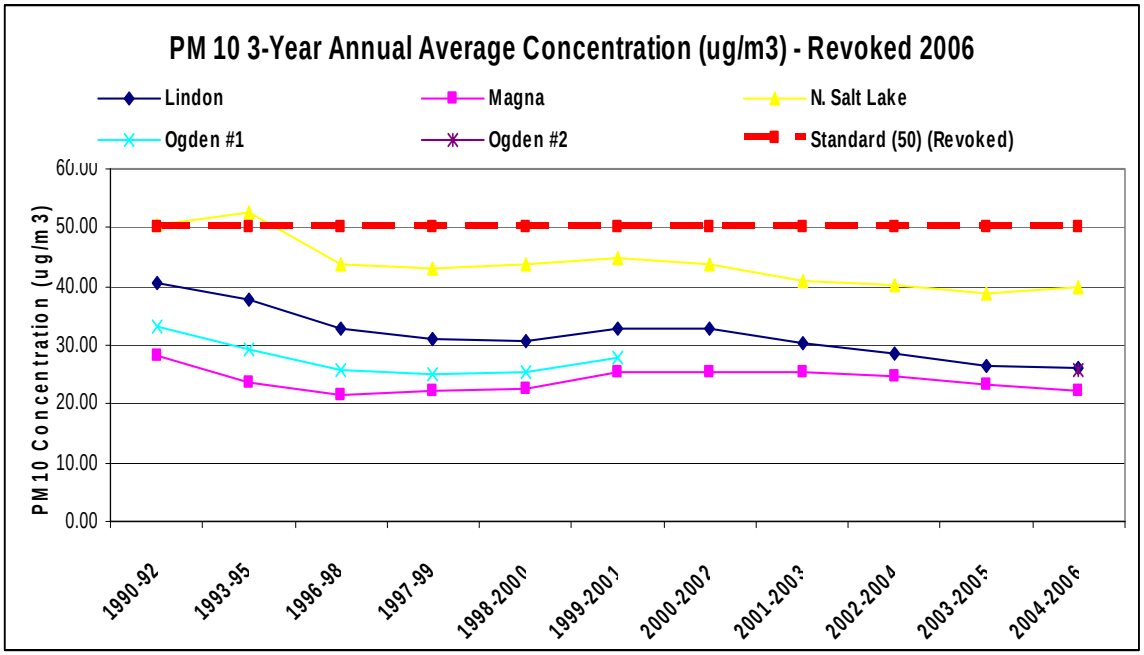


Figure 8 presents the federal health standard 3-year annual average PM_{10} concentrations for the same timeframe.

Figure 8



Standards - $PM_{2.5}$

EPA revised the National Ambient Air Quality Standards for PM pollution on September 21, 2006. EPA lowered the 24-hour $PM_{2.5}$ threshold from the 1997 level of 65 µg/m^3 to 35 µg/m^3, and retained the current annual $PM_{2.5}$ standard at 15 µg/m^3. These new standards went into effect on December 18, 2006. Both the annual and 24-hour standards are based on the most recent 3-year average so that one high or low year doesn't unduly influence the attainment status.

Figure 9 presents the three year averages of 24 hour high $PM_{2.5}$ (98th percentile) concentrations at Wasatch front monitors for 2000- 2006. The federal standard is based on the 98th percentile of 24-hour $PM_{2.5}$ concentrations averaged over three years. The graph shows that under the 1997 standard Utah was in compliance with the standard and will not be incompliance under the 2006 revision.

Figure 9

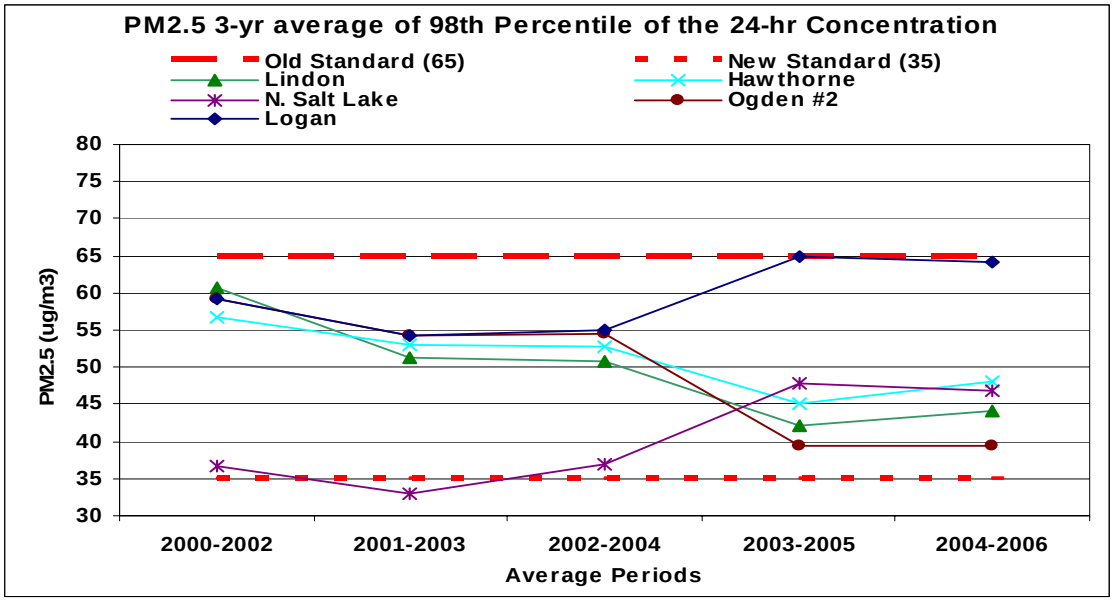
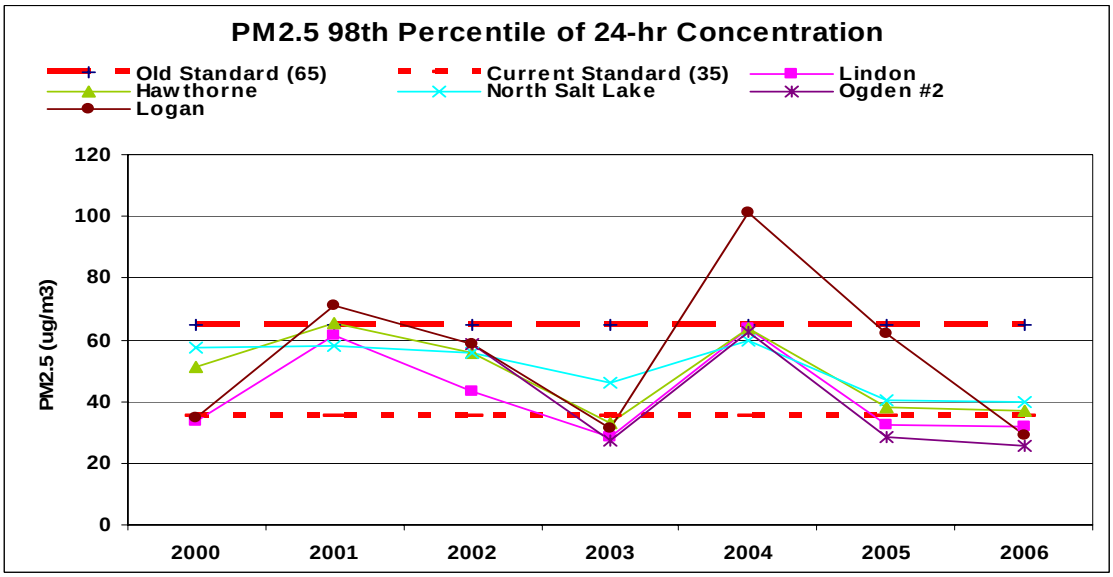


Figure 10 presents annual $PM_{2.5}$ 24 hour high (98^{th} percentile) concentrations for the period 2000-2006. The standard is based on a three year average to minimize the impact of single year with high concentrations as shown in Figure 10 where yearly averages can vary significantly.

Figure 10



Sulfur Dioxide (SO_2)

Sulfur dioxide is a colorless gas with a pungent odor. In the atmosphere, sulfur dioxide is easily converted into sulfates, which are detected as particulates. It is also converted into sulfuric acid, the major acidic component of acid rain. It is emitted primarily from stationary sources that burn fossil fuels (mainly coal and oil) such as power plants and

refineries, and is also a byproduct of copper smelting and steel production. Diesel fuel and, to a lesser extent, gasoline contain sulfur and are considered contributors to sulfur dioxide in the atmosphere.

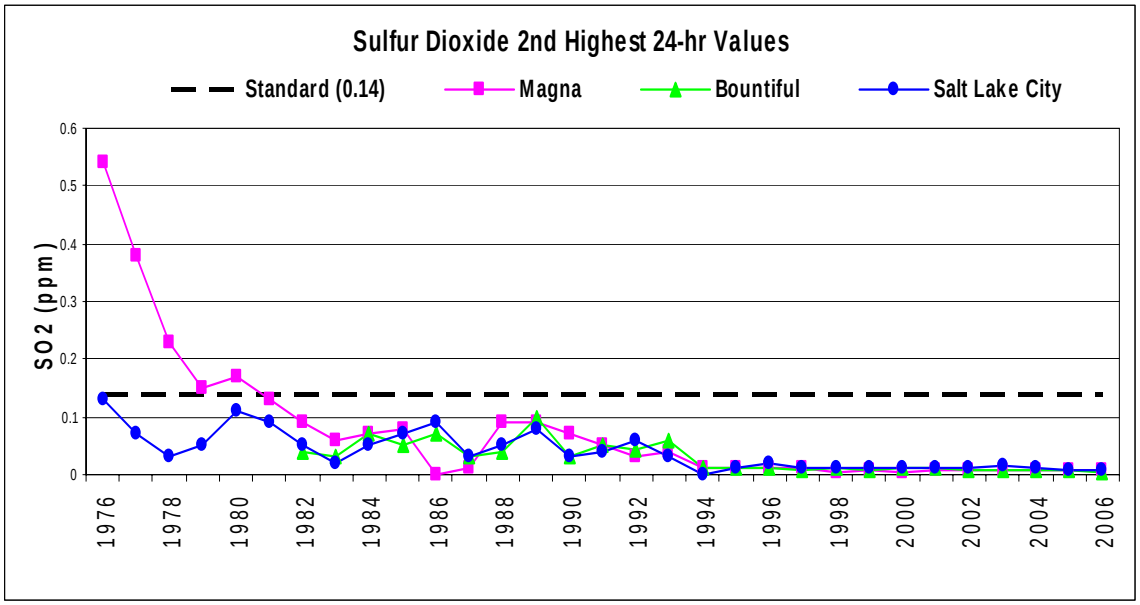
Standards

There are two primary health based NAAQS for SO_2: a 1-year average of 0.03 ppm, and a 24-hour average of 0.14 ppm. In addition there is a secondary welfare related standard of 0.5 ppm averaged over a 3-hour period.

The DAQ has situated its monitors near the largest sources of SO_2 (Kennecott Utah Copper and the five refineries along the Wasatch Front). Throughout the 1970s the Magna monitor routinely measured violations of the 24-hour standard. Consequently, all of Salt Lake County and those parts of Tooele County above 5600 feet were designated as non-attainment for SO_2. Two significant technological upgrades at the Kennecott smelter have resulted in continued compliance with the SO_2 standard since 1981.

In the mid 1990s, Kennecott, Geneva Steel, the five refineries, and several other large sources of SO_2 made dramatic reductions in emissions as part of an effort to curb concentrations of secondary particulate (sulfates) that were contributing to PM_{10} violations. Utah submitted a maintenance plan and re-designation request for Salt Lake and Tooele Counties to EPA in April of 2005. Recent measurements of SO_2 indicate that Utah's ambient air is well within the federal health standards. Figure 11 shows the trend in SO_2 concentrations over the past 30 years.

Figure 11



Emissions Inventories

Every three years, DAQ collects information about the quantity and characteristics of the various air pollutants released by all emission sources in the state. In between the

triennial inventory years, emissions information is also collected annually for the larger industrial sources. Finally, more detailed inventories are prepared, as needed, for special projects to quantify emissions during specific seasonal air pollution episodes.

Figure 12 presents the 2005 triennial emissions inventory, by source category, in six pie charts for the criteria pollutants, VOCs and biogenic emissions. The triennial inventory covers 355 individual point sources, 37 area source categories, and 12 non- and on-road source categories. Biogenic emissions are produced from non-anthropogenic, non-human natural activity, sources including wildfires and vegetation.

Once collected, the inventory information is reviewed, quality assured, analyzed, and stored in the DAQ data system. This emissions information is used by DAQ to look at trends over time, and to create air quality models. The emissions information is also tallied according to source type to provide billing information for the Title V operating permits program. A copy of the emissions inventory data is uploaded to the EPA's National Emissions Inventory data system. In recent years, Utah has made significant strides toward automating the collection of emissions information from the major industrial sources resulting in more timely and higher quality inventories.

Sources of Air Contaminants

Emission inventories are typically organized into three categories of sources: Point, Area and Mobile.

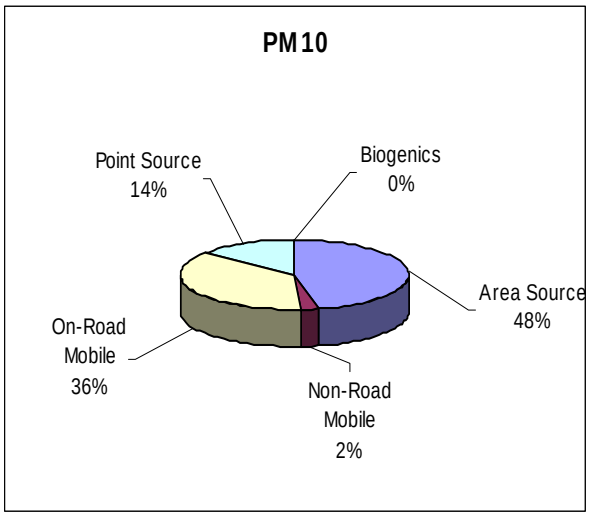
Point sources are larger, stationary industrial or commercial facilities such as power plants, steel mills, and manufacturing facilities. Air pollutants released from stationary sources are accounted for on a facility-by-facility basis.

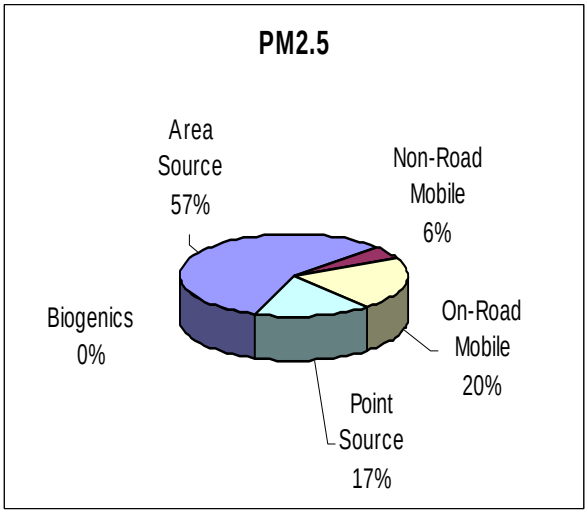
Area sources are smaller stationary sources that, because of their greater number, are accounted for by classes of sources. Home heating, agricultural burning and harvesting, construction, residential and commercial energy generation, wildfires, and biogenics (emissions from vegetation) are examples of area sources.

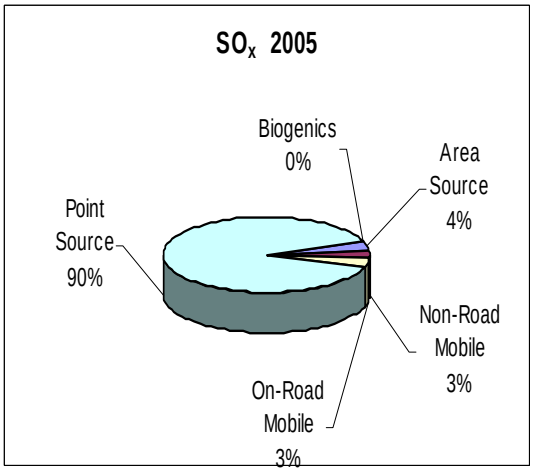
Mobile sources make up the third category and consist of emissions from non-stationary sources such cars, trains, and aircraft. Mobile emissions are often further broken down into on-road mobile and off-Road mobile categories. On-road mobile sources primarily consist of cars and trucks, and contribute by far the largest part of the mobile source emissions. Off-Road Mobile sources consist of a diverse group of heavy construction equipment, small engines (lawnmowers and snow blowers), trains, and aircraft. Estimating emissions from mobile sources requires an understanding of the various emission characteristics of the many types of vehicles and model years that make up the fleet, as well as an understanding of how they are driven and the distance they travel.

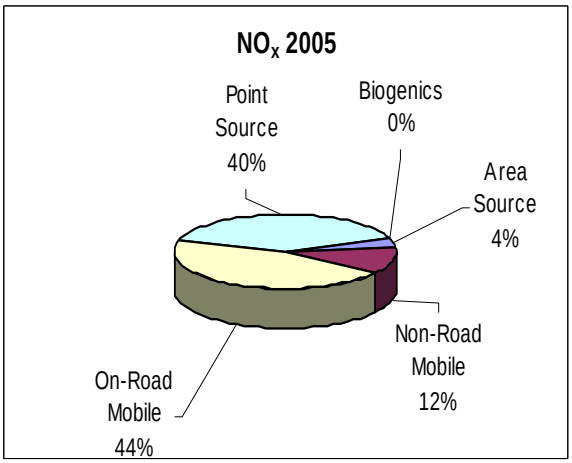
The 2005 triennial inventory is the most recent state-wide inventory available. Table 3 shows, by county, the criteria pollutants and volatile organic compounds (VOCs) for the most recent triennial statewide emissions inventory compiled by DAQ. Figure 12 shows the 2005 emissions inventory by source category for the criteria pollutants and VOC's.

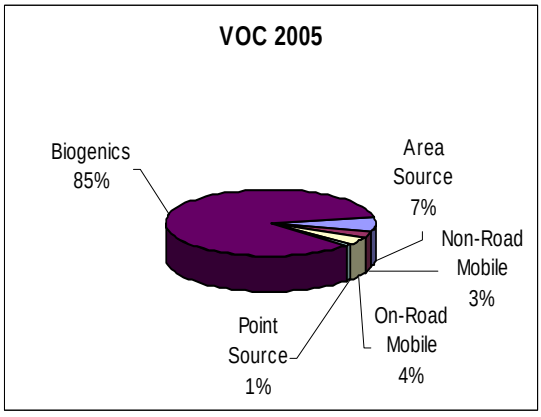
Figure 12. - 2005 Triennial Emissions Inventory by Source Catergory











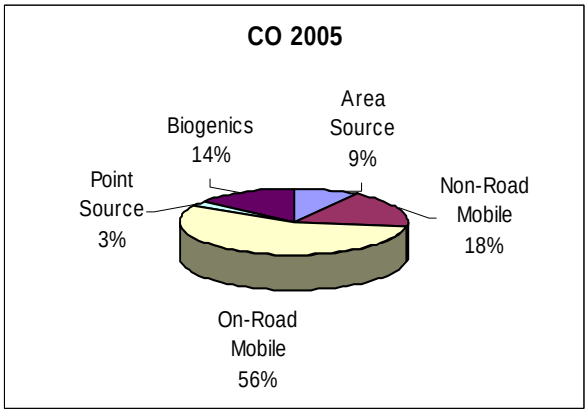


Table 3.

2005 Triennial Inventory (tons/year)

County Summary	PM10	PM2.5	SOx	NOx	VOC	CO
Beaver	1,264	288	113	1,555	29,851	14,143
Box Elder	6,239	2,462	235	5,619	40,968	58,488
Cache	3,226	978	212	4,094	17,728	30,943
Carbon	1,333	407	6,497	6,000	17,029	13,476
Daggett	356	169	6	917	14,384	4,981
Davis	3,864	1,230	3,484	10,742	18,082	65,138
Duchesne	1,482	432	71	1,865	24,048	13,353
Emery	3,515	1,144	23,795	30,023	32,521	19,773
Garfield	1,545	458	59	635	45,336	14,930
Grand	851	200	27	1,611	36,803	18,107
Iron	2,095	547	332	3,283	40,336	28,233
Juab	2,227	768	141	4,760	29,899	30,785
Kane	687	153	57	640	49,083	15,182
Millard	3,105	832	3,781	27,020	51,372	29,465
Morgan	663	168	247	3,170	10,057	6,858
Piute	240	58	21	139	11,703	2,935
Rich	762	251	28	245	9,431	4,531
Salt Lake	15,885	4,933	6,088	38,109	48,463	227,990
San Juan	1,603	395	370	1,626	65,138	21,925
Sanpete	1,233	273	218	1,124	18,874	12,440
Sevier	1,506	438	275	3,429	19,369	17,048
Summit	1,907	463	265	4,163	20,880	24,339
Tooele	5,024	1,927	276	5,497	44,533	43,678
Uintah	1,509	480	81	1,831	31,027	18,480
Utah	7,538	2,330	727	13,594	36,856	79,519
Wasatch	838	196	45	1,228	18,297	10,917
Washington	5,963	3,577	279	6,290	62,592	69,700
Wayne	474	88	85	227	24,592	6,558
Weber	3,012	949	242	6,881	15,592	48,943
Total	**79,948.20**	**26,595.50**	**48,056.21**	**186,315.77**	**884,843.04**	**952,857.43**

Planning for the Future

The Planning Branch is responsible for developing State Implementation Plans (SIPs) in order to ensure that Utah's ambient air meets the federal health standards, even as our population and our economy continue to grow. These plans address a variety of air quality issues, but most often focus on areas of the state where the monitoring found air quality to be unhealthy for one or more of the criteria pollutants

In addition, the Clean Air Act now requires transportation planning organizations to prepare information detailing the air quality impacts associated with improvements in the transportation infrastructure. These plans must conform to the SIPs prepared by the DAQ. Therefore, many of the recent SIP revisions were undertaken with the goal of helping transportation planners adapt to an ever-growing population base and updated air quality health stantards.

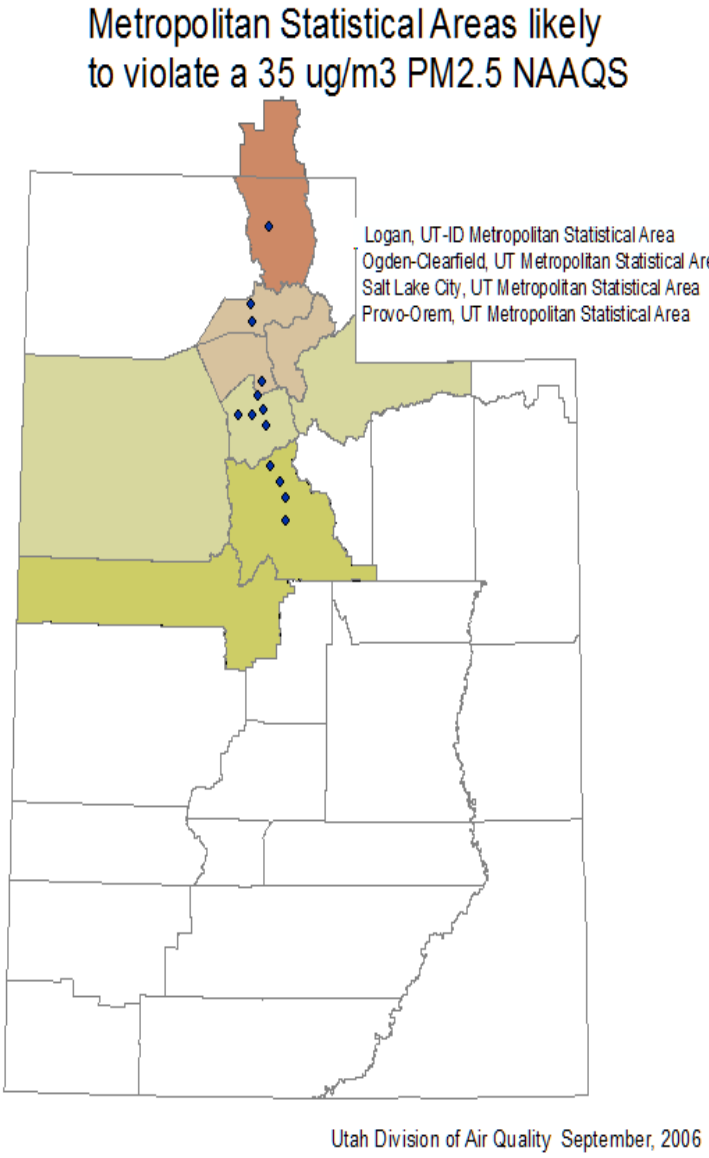
Status of Utah Projects and Initiatives

$PM_{2.5}$

One of the six "criteria" pollutants identified for regulation in the original Clean Air Act of 1970 was total suspended particulate (TSP). In 1987, EPA defined an "indicator" of the suspended particles that were of concern to public health. These were particles with an aerodynamic diameter of ten microns or less, and this regulated subset of TSP was called PM_{10}. It includes a complex mixture of extremely small particles and liquid droplets that can be emitted directly, as in smoke from a fire, or it can form in the atmosphere from reactions of "precursor" gases such as sulfur dioxide and ammonia.

Further study of PM_{10} has revealed a bi-modal size distribution. There are typically two distinct groups of PM_{10} particles – those between 2.5 and 10 microns in diameter, and those smaller than 2.5 microns. A growing body of health studies has led to the conclusion that it is the smaller of these particle groups that most severely impacts public health. In response, EPA in 1997 added a new indicator to the regulatory framework for particulate matter. "$PM_{2.5}$" is defined as particles with an aerodynamic diameter of 2.5 hr standard.

Figure 13.



DAQ has monitored for the $PM_{2.5}$ since 2000, and found that all areas within the state have been in compliance with the 1997 standards. In September of 2006, EPA revised the standards for $PM_{2.5}$. While the annual standard remained unchanged at 15 micrograms per cubic meter (µg/m3), the 24-hr standard was lowered from 65 µg/m3 to 35 µg/m3. The monitoring data DAQ has been collecting since 2000 suggests that meeting this new standard will be one of our greatest challenges. At this new $PM_{2.5}$ level it is likely that the following Metropolitan Statistical Areas (MSAs) Logan, Ogden-Clearfeild, Salt Lake, and Provo-Orem would be in noncompliance (see Figure 13). To address non-compliance the state would have to prepare comprehensive plans to meet the revised standards in these areas by the year 2015. These MSA's include nine counties along the Wasatch front including: Salt Lake, Davis, Utah, Weber, Cache, Tooele, Juab, Morgan, and Summit. By December of 2007, DAQ must make recommendations concerning which areas of the state are to be designated attainment (meeting the standards) and non-attainment. EPA will finalize these area designations by 2009. Currently, DAQ is conducting computer

modeling studies to identify the pollutants that control the formation of $PM_{2.5}$. A specialized air monitoring field project to be conducted in 2007 will help determine what role volatile organic compounds (VOC) play in the formation of $PM_{2.5}$ in the Cache Valley. This information will be important in developing a computer model that can accurately predict the effects of possible control strategies.

Cache Valley PM

DAQ actively participated in the Cache Valley $PM_{2.5}$ Air Quality Task Force to investigate particulate formation and deposition for Logan and the greater Cache Valley area. DAQ conducted computer modeling that will help to determine what control measures can be implemented to reduce high wintertime particulate concentrations. Since the Cache Valley includes a portion of Idaho, the Idaho Department of Environmental Quality (IDEQ) has installed particulate monitors in Preston and Franklin, Idaho. A cooperative air measurement campaign between DAQ and Utah State University is planned for January 2007. VOCs and nitric acid will be measured during several pollution episodes to further the development of a $PM_{2.5}$ chemistry model for the Cache Valley.

Community and Neighborhood Health

The Division of Air Quality, in conjunction with local health departments and local governments participated in air quality assessments, public meetings and health assessments in communities and neighborhoods throughout the state. These types of activities are usually in response to concerns raised by neighbors to industrial areas our other sources of air pollution. Community scale investigations include a review of the compliance status of the sources of air pollution including any emission testing and reporting required by applicable permits. In some cases further assessments include additional targeted air monitoring correlated with observations logged by neighboring residents and evaluation of health statistics by the Utah Department of Health. Findings are presented at public meetings and in cases where there is general interest, informational web pages are developed to provide a repository for information.

Community investigations included work in the following areas:

- Cottonwood Heights City (Gravel, Asphalt and Concrete operations at the mouth of Big Cottonwood Canyon)
- West Bountiful City (Trinity Highway Safety Products)
- North Salt Lake (Stericycle Medical Waste Incinerator and Refineries)
- Salt Lake City (Beck Street Sand and Gravel operations)
- Salt Lake City (Intermountain Vermiculite)
- Provo City (Action Target)
- Mapleton - Spanish Fork (Ensign Bickford Company)
- Millford City (Basin Pearlite)
- Washington County (Sand, Gravel and Construction activities and support for the Southern Utah Air Quality Task Force)

Utah Asthma Task Force

The Utah Asthma Task Force is a State of Utah initiative to develop a multi-agency task force to address the problem of asthma in Utah. The Task force convened in March of 2002 and released a State of Utah Asthma Plan in September of 2003. The Task Force meets quarterly and has a number of projects currently underway in addition to the programs initiated under the State Plan. The Task Force will issue an updated Asthma Plan in the spring of 2007. The Task force is comprised of air quality experts, school officials and health care experts. As part of the Task Force project, an Air Quality guidance document was developed for Utah school districts. The guidelines outlines ways schools can reduce potential health effects for children that may be sensitive to lower levels of pollution and for all children at higher levels of pollution. It is anticipated that this guidance document will help reduce confusion for students, parents, and schools on the appropriate action to take during high pollution events. The guidelines are specifically related to the Air Quality Index so that teachers and parents in conjunction with DAQ real time Air Quality Index values will be able to assess the air quality risk at any given time of the day for all students.

Beginning January 2007, DAQ will team up with the Utah Asthma Task Force, Utah Department of Health, the University of Utah, Utah State University, Cache Valley School District and Bear River Health Department to study the air quality and its effects on children's respiratory health. The study will test students' lung function and monitor the air quality both inside and outside North Logan's Greenville Elementary. The results will provide scientific support for air quality guidelines released in 2004 for school administrators and should improve decision-making for parents of children with asthma. It will also help indicate the degree of protection offered to compromised individuals in the general population on high pollution days.

Ozone

All areas of the state were officially designated as attainment areas for the new 8-hour ozone standard in 2006. To complete the transition to the new 8-hour ozone standard, the DAQ developed an ozone maintenance plan that demonstrates that emissions of precursors to ozone in Salt Lake/Davis County will continue to remain below 2002 levels through 2014. The plan was formally adopted by the Utah Air Quality Board on January 3, 2007. It will be submitted to the EPA for approval in the spring of 2007.

Mercury

Although mercury is a naturally occurring metal, it is a neurotoxin that easily penetrates the brain and central nervous system. It can also become toxic when biochemical processes transform it into methylmercury. Methylmercury builds up in the food chain, accumulating in muscle tissue and putting people and wildlife at risk. The most common pathway to human exposure is consumption of contaminated food; most typically this contamination occurs in ocean fish.

In 2006, the State issued consumption advisories for fish caught in two streams in eastern Utah and one reservoir in the southwestern corner of the state. The State also declared that three species of ducks should not be eaten because of high mercury.

Mercury emissions are a global problem. The US presently accounts for only 3% of global mercury emissions and of the total deposition in the US in 2001, 84% was due to sources outside of the US and Canada. Much of the global contamination ends up in the oceans, where it finds its way into the food chain.

Coal fired power plants are the largest remaining source of mercury emissions in the US. Other sources include gold mines, hazardous waste incinerators, medical waste incinerators, and salvage operations that dispose of mercury switches in cars.

In order to address mercury emissions from coal-fired power plants, EPA issued the Clean Air Mercury Rule (CAMR) on May 18, 2005.

- It targets coal-fired electrical generating units (EGUs) that are larger that 25 MW.
- It sets nation-wide caps of 38 tons/yr in 2010 and 15 tons/yr in 2018 and beyond.
- Each state has been allocated a cap total for each phase of the program
- The rule allows states to adopt plans appropriate to their circumstances

To comply with the CAMR, on November 1, 2006 Utah proposed a "Designated Facilities Plan" as well as a number of other rules. Utah, like several other states, has proposed restrictions on mercury emissions from coal-fired EGUs that go beyond what is required by the CAMR. In the coming year, DAQ will continue working with affected stakeholders to finalize the State's plan to address mercury at coal-fired utilities.

DAQ also sits on the Statewide Mercury Work Group; a 15-member task force representing industry, government and advocacy groups, that was organized to assess the extent of mercury contamination in Utah and set priorities for protecting the public.

Regional Haze SIP

When the Clean Air Act was reauthorized by Congress in 1990 it included provisions to improve visibility in large national parks and wilderness areas and established the Grand Canyon Visibility Transport Commission (GCVTC) to determine the causes of poor visibility at the Grand Canyon. The Commission determined that many kinds of sources contribute to visibility impairment and recommended strategies for improvement. These strategies were included in EPA's 1999 regulations as an option that western states could use in writing the visibility plans (SIPs) required of all states. Utah is one of five states that submitted plans in 2003 under this option. Key elements of the plan include using a regional cap (emission milestones) on SO_2 emissions and a backstop market trading program to be triggered if emissions exceed the emissions cap. Other components identify reduced emissions from prescribed fires and require tracking emissions and visibility conditions every five years through 2018. The most current 2005 Milestone Report prepared by the five states shows that actual SO_2 emissions in 2005 were 27 percent below the emissions cap for that year.

Utah is currently developing an update to the 2003 Regional Haze SIP. The update is due for submittal to EPA by December 17, 2007. The 2003 SIP is available on the DAQ website; the update will make revisions in the 2003 backstop trading program for sulfur dioxide from large industrial sources as required by litigation completed in 2005. In

addition, the update will assess the impact of Utah sources of emissions on protected areas (federal Class I areas) in adjacent states, and the impact of emission sources in adjacent states on Utah's protected areas, and will set forth appropriate control measures as needed. Finally, the SIP update will address the effects of NO_x and PM emissions from Utah's large industrial sources on protected areas in Utah and adjacent states. Technical work is ongoing with other western states and tribes that are members of the Western Regional Air Partnership to prepare the plan for the 2007 update.

The 2003 Regional Haze SIP addressed emissions from a wide variety of sources, including vehicles and anthropogenic fire. Smoke emissions under the Regional Haze SIP are controlled with an Enhanced Smoke Management Plan which was updated January 16 2006. The purpose of the plan is to facilitate coordination between federal land managers and DAQ to mitigate the impact on public health, and visibility from prescribed and wild-land fires.

Greenhouse Gas Emissions and Climate Change

In 2006, Governor Huntsman appointed a Blue Ribbon Advisory Council (BRAC) on Climate Change to make recommendations on policies that could reduce the State's emissions of greenhouse gases and possible exposure to the effects of climate change. The Utah Division of Air Quality (DAQ) and a team of researchers from Brigham Young University received a grant from the Hewlett Foundation to organize and facilitate a stakeholder workgroup (SWG) to support the BRAC in the development of recommendations for the Governor. The SWG is made up of representatives from the business community, environmental interests, clean energy advocates, consumer groups, government agencies, and other interests. Organizational efforts for the SWG were initiated in late-2006 in anticipation of a series of twice-monthly meetings beginning in January 2007. The goal of this effort is to delivery a report to Governor by the summer of 2007 that includes recommendations on policies to address greenhouse gas emissions and climate change in Utah.

In support of this effort, DAQ will utilize a greenhouse gas emissions inventory that is being prepared by the Center for Climate Strategies under contract with the Western Regional Air Partnership (WRAP). This inventory will cover a 30-year period, back-casting to 1990 and forecasting to 2020, in order to estimate levels as well as trends in greenhouse gas emissions. The inventory will cover all potential sources of emissions in Utah for carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The inventory is expected to be completed by the first quarter of 2007.

Provo CO Redesignation

The CO re-designation request and associated maintenance plan for Provo City was approved by EPA in 2005 and became effective on January 3, 2006. The plan demonstrated that there is no longer a need for oxygenated fuels, and revised the transportation conformity budget. Revisions to both the Salt Lake City and Ogden City maintenance plans for CO were previously approved by the EPA. In each case, the transportation conformity budget was updated to reflect the use of EPA's current mobile emissions model MOBILE6.

New Source Review & Prevention of Significant Deterioration

On December 31, 2002 EPA published a major revision to the federal permitting program for modifications at major sources; the revisions are commonly referred to as the New Source Review (NSR) Reform Rule. On March 8, 2006, the Air Quality Board adopted the NSR Reform Rule for major sources in attainment areas (most of the state). Similar changes to the permitting requirements for sources in non-attainment areas are still under development and will be submitted to the Air Quality Board as part of a larger package to establish the permitting requirements for future non-attainment areas for $PM_{2.5}$. EPA tightened the $PM_{2.5}$ health standard in December, 2006 and many areas in northern Utah are exceeding the new standard during winter temperature inversions. UDAQ hopes to complete this NSR reform rulemaking during 2007, but the schedule is dependent on EPA issuing guidance that establishes the permitting requirements for $PM_{2.5}$.

Oil and Gas Development

The Utah Division of Air Quality has established an Oil and Gas Air Quality Partnership to evaluate air quality impacts of recent increases in oil and gas development. The Partnership has the following goals.

- Ensure the health and welfare of the citizens of Utah.
- Facilitate economic and resources development.
- Improve technical understanding of the current air quality in oil and gas producing areas of the state, how air quality will be affected by oil and gas development, and the impact of growth on regional air quality goals.
- Work with others to coordinate and collaborate on oil and gas studies in the region.
- Address future air quality issues before they become a problem.

The Partnership is currently focusing on the Uintah Basin because this region is experiencing the greatest growth in oil and gas production in the state. Data will also be collected for other regions, with the goal of creating a comprehensive plan for the State of Utah. The Partnership began meeting in 2006 to gather data to better characterize the current air quality in the Uintah Basin. Current and historic air monitoring data were compiled and the oil and gas industry representatives developed an improved inventory of areas source emissions from oil and gas in the Basin. The Air Monitoring Center installed a new monitoring station in Vernal that began operation in January, 2007.

In January 2007, the Partnership was expanded to include a broad mix of stakeholders. The Partnership is currently working on the best way to estimate growth in oil and gas development and how that growth will affect air quality. Pollution control technology will also be evaluated to better understand what measures would be effective to prevent future air quality problems in the Uintah Basin.

2006 TEMPO

In 2004, DAQ secured contract services for a Business Process Analysis and Database Development project called TEMPO. The project aims to provide a streamlined,

accurate, and logical business data system through which customers and division employees can produce expedient business transactions. The system design is flexible and capable of supporting new functionality as DAQ business requirements and goals evolve. During this year system development and testing were completed and TEMPO went into production in November.

New Source and Operating permits are currently being entered into TEMPO with the capability to generate Compliance Inspection Checklists for these permits from TEMPO. Finance personnel are using TEMPO to enter function codes into the Timesheet database and to enter NOI payments. Emissions Inventory data has recently been migrated to TEMPO with the upload of 2005 Emissions Inventory data to NEI via the NODE using TEMPO data is scheduled for April 1, 2007.

Greater coordination and better information sharing is anticipated, not only among division sections, but also in interactions with business and the public.

Transportation Conformity

The Metropolitan Planning Organizations, Mountainland Association of Governments (MAG) and the Wasatch Front Regional Council (WFRC,) are responsible for developing, producing and adopting the Long Range Plan (LRP), and Transportation Improvement Program (TIP) for the state of Utah. MAG and WFRC have the responsibility to ensure that the current LRP and TIP conform to the air quality State of Utah Implementation Plans (SIP). The Federal Highway Administration and Federal Transit Administration review the conformity determinations along with the LRP and TIP in consultation with EPA to ensure that the relevant planning regulations have been adequately addressed.

MAG established conformity for the 2030 Utah Valley LRP and 2006-2010 TIP in February 2005 for: Provo City Carbon Monoxide non-attainment area and for the Utah County PM_{10} non-attainment area.

WFRC established conformity for the 2030 LRP and 2007-2012 TIP in August 2006 for: Salt Lake City Carbon Monoxide maintenance area, Ogden City Carbon Monoxide maintenance area and PM_{10} non-attainment area, and Salt Lake County PM_{10} non-attainment area.

MAG and WFRC plan to release separate conformity determinations for their new 2007-2030 LRP and 2008-2013 TIP in the Spring\Summer of 2007. Both MPOs anticipate demonstrating conformity to the SIP.

Ancillary Programs

Air quality programs and information outreach programs which have their roots in the air quality plans developed at DAQ include the following:

Utah Air Quality Index

In response to the changes in $PM_{2.5}$ air quality standards and to improve the presentation of air quality information to the public DAQ has updated its air quality forecasting webpage and the Utah air quality index. The Air Monitoring Center (AMC) provides air pollution information based on daily air quality status. The AMC data is used to determine the relationship of existing pollutant concentrations to the National Ambient Air Quality Standards. The index is also, a metric that relates current air quality data to potential health effects. The Index has a three tiered air quality alert system: Green, Yellow and Red (Actions Days). The index has five health advisory categories: good, moderate, unhealthy advisories A and B, and very unhealthy. The AMC advisory is calculated for 5 major pollutants including ground-level ozone, particulate pollution (particulate matter), carbon monoxide, sulfur dioxide and nitrogen dioxide. The new index now also incorporates recommendations for actions to take on days when concentrations are in the red zone, to mitigate the effects of pollution for affected groups and recommendations for industry and citizens that help reduce pollution levels. The outreach program information consolidated in the Air Index include: the Woodburning Program, No Drive Days and Choose Clean Air.

Woodburning Program (red-burn / green-burn) – This program originated with the PM_{10} SIP. Although the program originally met with some skepticism, the measurable success has been outstanding, owing much to the voluntary cooperation of Wasatch Front residents. The program runs from November through early March of each year. In addition, to the burning restrictions, residents are encouraged to drive less and industry is encouraged to optimize operating conditions.

No Drive Days – These are announced whenever the probability of exceeding the ozone standard is forecast to be high. High temperature and stagnant air masses contribute to this probability. Residents are also encouraged to minimize driving when we approach the PM standards.

Choose Clean Air – An interactive source of information about ways individuals can help improve air quality by making smart choices in their personal lives. The Utah Department of Environmental Quality is also sponsoring an electronic mail server (Listserv). Subscribers will be automatically notified by e-mail when unhealthy air pollution levels are forecast for the Wasatch Front.

Vehicle Inspection/Maintenance Programs – Although not run directly by DAQ, the emissions portions of these programs were instituted because of past problems in attaining the federal health standards for several pollutants; most notably CO and ozone. Implementation of these programs was critical to attaining these standards, and their continued operation is necessary for the Wasatch Front to remain in attainment of these standards. These programs are administered by the county health departments.

Smoking Vehicles - Vehicles emitting excessive smoke contribute to poor air quality. To promote clean air, several local health departments operate smoking vehicle education and notification programs. People who spot a vehicle producing excessive smoke can report it through their respective county health department:

Cache County	435-792-6611
Davis County	801-546-8860
Salt Lake County	801-944-SMOG
Utah County	801-851-SMOG
Weber County	801-399-7140

Permitting

The DAQ Permitting Branch is responsible for issuing permits to any new or modified stationary sources that emits air contaminants to insure that air quality is not significantly degraded. Permits are legally enforceable documents that specify what construction is allowed, what emission limits must be met, and often how the emissions source must be operated. Permit limits can be actual emissions or surrogate limits such as production rates, hours of operation, fuel consumption or a combination of limits. Opacity, the transparency of emission plumes, is also a common metric used to both limit and measure source emissions.

The branch issues two types of permits. New Source Review (NSR) permits, known as Approval Orders, are pre-construction permits for new and modified sources of air emissions. These are issued by the New Source Review Sections and have been required since 1969. The Operating Permits Section issues the Title V Operating Permits to the larger “major” stationary sources in the state; there are approximately 100 of these sources. Operating permits consolidate all air quality related requirements, from numerous federal air quality programs into a single regulatory document. The purpose of an operating permit is to clarify for the permit holder as well as DAQ compliance inspectors the wide range of requirements for any regulated source in one consolidated document.

In addition, the branch processes a number of smaller actions such as de minimus determinations for NSR, name changes, tax exemption certificates for pollution control equipment purchases, and soil aeration approvals.

New Source Review

Any new or modified source of air pollution in Utah is required to obtain an approval order (AO) before it is allowed to begin construction. For non-attainment areas that are not in compliance with NAAQS standards, NSR insures that air quality is not further degraded from the existing levels by new emission sources. While, in areas that are in compliance with NAAQS, NSR insures that new emissions do not significantly worsen air quality.

The application for an AO, called a notice of intent (NOI), is reviewed to make sure that the source will install state-of-the art emissions controls. For non-attainment areas state of the art technology is known as lowest achievable emissions rate (LAER). For areas in

attainment of the NAAQS, state of the art controls are known as the best available control technology (BACT). Both LAER and BACT are case-by-case determinations of control technology for a specific source. BACT takes into account both the cost and environmental benefits of the control equipment while LAER technology takes into account only environmental benefits.

The general public and EPA are given an opportunity to review the proposed approval order before it is issued. The criteria indicating which sources must obtain an approval order are specified in the Utah Air Quality Rules. Potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork. In fiscal year 2006 (7/1/05 to 6/30/06) the NSR section completed or was working on 455 different projects. This included the completion of 172 AO's and 283 other projects.

Operating Permits

Congress created Title V of the Clean Air Act in 1990. This Title requires States to issue an operating permit to the larger or "major" sources of air pollution within the state. Utah developed and submitted a program in 1994 and received approval from the EPA in 1995. Operating permits are legally enforceable documents issued to air pollution sources after the source has begun to operate. As stated above, a primary purpose of the permit is to consolidate the applicable requirements from the many and varied air quality programs such as NSR, federal New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Maximum Available Control Technology (MACT). Like the approval orders, the general public is given an opportunity to review the draft operating permits before they are issued; in addition, the EPA has up to 45 days to review the proposed operating permit. The criteria indicating which sources must obtain an operating permit are specified in R307-415 of the Utah Administrative Code (UAC). As with the NSR permit or AOs, potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork.

Another significant objective of the Title V program is to shift the compliance liability from the regulating agency to the permitted source. Each year the source must certify that it is in compliance with all permit terms and conditions, or indicate non-compliance issues. False reports have criminal implications, beyond the civil liabilities of other violations. In addition, sources must report the results of monitoring at least every six months. Permit provisions for monitoring, record keeping and reporting are added or enhanced to assure compliance with the permit conditions and limits.

During 2006, the Operating Permits section issued permit modifications, coordinating extensively with the NSR Section. The Operating Permit has a life of only five years (as opposed to the AO that does not expire), and in 2006 the section issued several permit renewals. These renewal permits are complex, and care must be taken to ensure that new federal requirements for the Compliance Assurance Monitoring Rule (CAM) and any other new requirements (such as new MACT Standards) are included.

Compliance Activities 2006

The Compliance and the Hazardous Air Pollutants Sections are responsible for ensuring that all regulatory requirements are met. This is done through inspections, emission testing, and review of periodic reports from industry, and enforcement.

Inspection and Enforcement

DAQ regulates more than 2,000 facilities within the state through approval orders, state rules and federal emission standards. Annual inspections encourage these facilities to maintain continuous compliance with the rules and permit conditions. Possible enforcement actions, which may lead to financial penalties or additional regulatory requirements, provide incentive for source operators to see that these conditions are taken seriously. Inspectors in the Compliance Section average roughly 1,500 inspections per year. They also respond to about 250 complaints each year, and frequently conduct drive-by observations of visible emissions.

Should enforcement actions become necessary, the DAQ may issue written warnings called Source Compliance Action Notices (SCANs), Compliance Advisory Notices (CANs), or Notices of Violation (NOVs) with compliance orders. SCAN warnings are usually reserved for first-time offenders with minor infractions. CANs are less formal than NOVs. If the source is issued a CANs and responds with prompt compliance, a reduced penalty may be offered for expedient cooperation. NOVs are used whenever there are significant violations of the rules or permit conditions, and the violator may be fined as much as $10,000 per day per violation. Most of the violations are resolved with a settlement agreement between the Executive Secretary and the operator, saving time and court costs. Early settlement compliance advisories provide incentive for source operators to address these issues in a timely manner. Settlements may also include supplemental environmental projects. These are environmentally beneficial projects that a violator agrees to undertake as a way to offset some or all of a civil penalty.

Stack Test Audits

Regulated sources are required to conduct periodic stack tests in order to verify that their facilities are operating properly. Some of the largest sources maintain continuous emissions monitors that record real-time emission rates and concentrations around the clock. In either case, DAQ personnel will audit the records and reports to ensure that the testing was done in accordance with EPA reference methods.

2006 Compliance Summary

The following is a summary of 2006 compliance activities:

Annual Inspections completed	350
Stack Test and Continuous Emission Monitor Audits	236
Complaint Responses	270

Miscellaneous Inspections (Includes VOC degreasers, transport inspections, paint booths and surveillance)	478
Total Inspections Conducted	1488
Penalty Assessments for 2006 Air Quality violations:	
Number of violations resolved	59
Penalties collected in cash	$191,856
Penalties credited for environmental enhancement	$ 54,216
Total penalties collected	$246,072

Hazardous Air Pollutants (HAPS)

The Hazardous Air Pollutants Section (HAPS) determines compliance with specific regulations involving the emission of hazardous air pollutants. The following programs are the responsibility of the HAPS section:

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61 (R307-214-1). HAPS presently oversees 12 sources operating under these regulations due to emissions of asbestos, beryllium, benzene waste, or radon from uranium mill tailings.

National Emission Standards for Source Categories - Maximum Achievable Control Technology (MACT), 40 CFR Part 63 (R307-214-2). These regulations cover the emission of 187 additional hazardous air pollutants, and sources of these pollutants are required to apply controls that are equivalent to what is in service for the "best controlled 12%" of all such operations in the nation. Utah presently oversees about 225 sources that must comply with these regulations.

Lead-Based Paint - Toxic Substances Control Act (TSCA) Title IV, 40 CFR Part 745 (R307-840). Under this program, HAPS deals with the accreditation of training programs, certification of individuals and firms, and work practices for lead-based paint activities, and lead-based paint outreach activities.

Asbestos in Schools – TSCA Title II Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763 (R307-801). Under this program, HAPS deals with the approval of training providers, certification of individuals and companies, inspections of school buildings, and inspections of asbestos abatement in schools.

Asbestos NESHAP and State asbestos work practices - 40 CFR Part 61, subpart M, R307-801. Under this program, HAPS deals with the certification of individuals and companies, review of asbestos project notifications, review of demolition notifications for structures, review of alternate work practices, inspection of asbestos abatement projects and demolition of structures, and asbestos outreach activities.

2006 HAPS Summary

The following is a summary of 2006 HAPS activities:

Inspections completed	370
Asbestos Notifications processed	1,310
Asbestos Certifications Company/Individual	103/857
Asbestos phone calls	4,552
Lead-Based Paint Notifications processed	33
Lead-Based Paint Certifications Company/Individual	26/102
Lead-Based Paint phone calls	1,305
Penalty Assessments for 2006 HAPS violations:	
Number of violations resolved	14
Total penalties collected	$56,729

Small Business Environmental Assistance Program

The Small Business Environmental Assistance Program (SBEAP) helps small businesses understand and comply with state air quality rules. The SBEAP provides "plain language" educational information to help small sources learn about the many air quality requirements, and also provides on-site assistance with process evaluation, compliance assistance, and pollution prevention (P2) techniques.

Another function of the SBEAP is to incorporate the advice of a Small Business Ombudsman and a Small Business Advisory Panel that is appointed by the Legislature. These additional services are designed to provide education to small businesses outside of the regulatory environment, and also to provide feedback to the SBEAP regarding program effectiveness. All of these services are free of charge. A toll-free telephone hotline (1-800-270-4440) provides access to SBEAP services 24 hours a day / seven days a week.

Outreach

The DAQ provides access to all plans, rules, and permits currently open for public comment, lists training workshops available to assist industry understand permitting and compliance issues, provides Air Quality Board minutes and information, and also provides access to all Air Quality Permitting and Compliance forms.

Appendix 1 – Acronyms

AO – Approval Order
AQI – Air Quality Index
AHERA – Asbestos Hazard Emergency Response Act
BACT – Best Available Control Technology
BEIS – Biogenic Emissions Inventory System
CAA – Clean Air Act
CAM – Compliance Assurance Monitoring
CAN – Compliance Advance Notice
CAST – Center for Automotive Science and Technology
CFR – Code of Federal Regulations
CO – Carbon Monoxide
Criteria Pollutants - Pollutants for which EPA sets standards to protect public health
DAQ – Division of Air Quality
DEQ – Department of Environmental Quality
EPA – Environmental Protection Agency
FDMS – Filter Dynamics Monitor System
GCVTC – Grand Canyon Visibility Transport Commission
HAPs – Hazardous Air Pollutants
IDEQ – Idaho Department of Environmental Quality
KUCC – Kennecott Utah Copper Corporation
MACT – Maximum Available Control Technology
MPO – Metropolitan Planning Organization
$\mu g/m^3$ – Micrograms per cubic meter
Micron – One millionth of a meter
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NH_3 – Ammonia
NOI – Notice of Intent
NO_2 – Nitrogen Dioxide
NOV – Notice of Violation
NOx – Nitrogen Oxides
NSPS – New Source Performance Standard
NSR – New Source Review
O_3 - Ozone
PM – Particulate Matter
PM_{10} – Particulate matter smaller than 10 microns in diameter
$PM_{2.5}$ – Particulate matter smaller than 2.5 microns in diameter
ppm – Parts per million
SBEAP – Small Business Environmental Assistance Program
SCAN – Source Compliance Action Notice
SIPs – State Implementation Plan
SO_2 – Sulfur Dioxide
SOx – Sulfur Oxides
TSCA – Toxic Substances Control Act
VOC – Volatile Organic Compounds
UAC – Utah Administrative Code
USU – Utah State University

Appendix 2 – Web-page Links

Air Monitoring Center: http://www.airmonitoring.utah.gov/

Air Quality Board: http://www.airquality.utah.gov/Air-Quality-Board/Air-Quality-Board-Members.htm

Air Quality Home Page: http://www.airquality.utah.gov/

Air Quality Rules: http://www.airquality.utah.gov/Planning/Rules/index.htm

Cache Valley $PM_{2.5}$: http://www.airquality.utah.gov/Public-Interest/Current-Issues/cache-valley-PM/index.htm

Climate Change: http://www.deq.utah.gov/Issues/Climate_Change/index.htm

Compliance Section: http://www.airquality.utah.gov/Compliance/index.htm

Mercury: http://www.airquality.utah.gov/Public-Interest/Current-Issues/mercury/index-mercury.htm

Permitting Section: http://www.airquality.utah.gov/Permits/index.htm

Planning Section: http://www.airquality.utah.gov/Planning/index.htm

Small Business Assistance: http://www.airquality.utah.gov/Permits/Small_Business_Assistance_Program.htm

Regional Haze: http://www.airquality.utah.gov/Public-Interest/Current-Issues/Regionalhazesip/index.htm