

CHAPTER 4:

Air Quality Division

The objectives of the Air Quality Division are to achieve and maintain the ambient air quality standards, to protect the quality of the air in the state, including areas that have air cleaner than the standards, and to implement federal and state air quality rules and regulations. Each year, thousands of tons of air pollutants are emitted into the air from industrial and other man-made activities. Many of these air pollutants affect human health, reduce visibility, cause property damage and harm the environment. The air pollutants of most concern are particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, ozone, lead, and 187 listed hazardous air pollutants.

The primary air quality programs which help assure healthy air quality are: the construction permit program, operating permit program, emission inventory program, ambient air quality monitoring program, inspection and compliance program, the air toxics program, and planning and development program.

Three local agencies -- Lincoln/Lancaster County Health Department, Omaha Air Quality Control, and Douglas County Health Department -- have accepted through contract with NDEQ and direct delegation from the U.S. Environmental Protection Agency, responsibility for various facets of the air quality program. These responsibilities include air quality monitoring, permitting and enforcement within their areas of jurisdiction.

Permitting Section

During FY13, the NDEQ continued to implement the greenhouse gas rules adopted into Title 129 last fiscal year. This resulted in an increase in major source (Title V) permit applications under the operating permit program, but has had little effect to the construction permit program. Other regulatory actions last year by EPA provided a three year deferral for greenhouse gas emissions (specifically carbon dioxide, CO₂) from bioenergy and other biogenic sources under both permitting programs. During the deferral period, biogenic CO₂ emissions will not count toward permit applicability. The deferral of biogenic CO₂ emissions from permit applicability allowed some sources (particularly smaller ethanol plants) to avoid triggering the major source operating permit program for greenhouse gases since a significant fraction of their total greenhouse gas emissions (CO₂ emissions from fermentation) are now temporarily excluded from permit applicability.

Construction Permit Program

NDEQ has maintained a construction permit program for air contaminant sources since the 1970s. Facilities are required to obtain a construction permit before they construct, reconstruct or modify any air contaminant source or emission unit where there is a net

increase in the potential to emit above specified thresholds. The table below provides information relating to construction permit applications received, processed and pending:

Pending July 1, 2012	Applications Received	Applications Processed	Pending June 30, 2013
52	54	54	52

Nebraska also implements the federal construction permit program, Prevention of Significant Deterioration (PSD). The purpose of the PSD program is to protect areas of the state which are cleaner than the ambient air quality standards, while still allowing industrial and economic growth. The PSD program applies to sources that emit significant levels of certain types of emissions. If a source is regulated under PSD, the NDEQ conducts additional, more rigorous reviews of their construction permit application to ensure that best available control technology will be used. Best available controls are employed to minimize impacts on the environment. Before issuing a permit, the NDEQ must also assure that the source will not cause or contribute significantly to any deterioration of air quality, making the area potentially vulnerable to violations of the ambient air quality standards. The PSD program also ensures that visibility in nearby national parks and wilderness areas is protected. The NDEQ notifies federal land managers of pending PSD decisions. Lastly, the PSD program requires that permitting authorities advise nearby States and Tribes of pending PSD decisions so they may express any concerns they have with potential downwind impacts in their areas.

As a part of its state program, the NDEQ requires significant sources of hazardous air pollutants to control emissions with the best control technology available (Toxics BACT).

During FY06-08, NDEQ received an increasing number of applications from business and industry for air quality construction permits to build new or expand current business ventures across the state, including ethanol plants, power plants, and grain processing facilities. From FY09 through FY12, a slower economy delayed or cancelled many capital projects at sources. In FY13, the number of applications increased by more than 10% over FY12.

	FY09	FY10	FY11	FY12	FY13
Number of Construction Permit Applications Received	53	55	52	54	61

Operating Permit Program

The operating permit program is the result of the Federal Clean Air Act Amendments of 1990 and the passage of LB1257 (1992) by the Nebraska Legislature. The operating permits are reviewed and renewed every five years. Operating permits are issued for both large and small sources of air pollution.

The Nebraska operating permit program offers an innovative alternative for sources who have taken measures to keep their emissions very low. This program is called the low emitter program. NDEQ also has general permits and permits by rule available for certain source categories. The table below provides statistics relating to all applications received, processed and pending under the operating permit program:

Pending June 2012	Operating Permit Applications Received	Operating Permit Applications Processed	Pending June 2013
85	60	40	105

From 2002 through 2004, the operating program was successful in eliminating the majority of the permitting backlog created at the onset of the program. However, this success has caused inconsistency in the amount of permits being received over a five-year time-frame. Because these permits were issued for five year terms, the operating permit program experienced a surge in renewal applications beginning in FY08 through FY10. Renewal applications then dropped significantly in FY11 and FY12. In FY13, another upward trend occurred in operating permit applications received, as sources that had been issued operating permits in FY07 applied for renewal permits.

The following table summarizes the applications received from FY07 through FY13 (applications for all application types, including applications for permit revisions, general permits, permit-by-rule, etc.).

	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Number of Operating Permit Applications Received	58	92	75	61	32	43	60

Compliance Section

Ambient Air Quality Monitoring Program

The State of Nebraska operates an ambient air-monitoring network to determine compliance with the National Ambient Air Quality Standards (NAAQS) and State Ambient Air Quality Standards (SAAQS). In addition, the Nebraska network includes two sites for

monitoring regional haze impacts that are part of a national program to help protect visibility in our National Parks and Monuments.

Three agencies are involved in the day-to-day operation of the network: the Nebraska Department of Environmental Quality, Lincoln/Lancaster County Health Department, and Douglas County Health Department. The Omaha Air Quality Control (part of the Omaha Public Works Department) also provides technical support for network related activities.

National standards have been established by the Environmental Protection Agency for the following six pollutants, to protect both public health and welfare:

- Particulate Matter
 - With a diameter of 10 micrometers or less (PM₁₀)
 - With a diameter of 2.5 micrometers or less (PM_{2.5})
- Sulfur Dioxide (SO₂)
- Nitrogen Dioxide (NO₂)
- Carbon Monoxide (CO)
- Ozone (O₃)
- Lead (Pb)

Nebraska has an additional ambient air quality standard for Total Reduced Sulfur (TRS). The TRS standard was adopted by the Environmental Quality Council in 1997 and is a public health based standard. The Department currently monitors TRS in Dakota City.

NDEQ evaluates the adequacy of its monitoring network in accordance with federal regulations each year. Changes may be made to the network due to monitoring regulation changes, updates to the ambient standards, perceived changes in pollution trends, and/or funding issues. Loss of site access is another consideration that occasionally occurs. The Nebraska monitoring network includes sites at which air quality is monitored to evaluate attainment with the standards and other health and welfare associated priorities.

Most of the sites in the monitoring network evaluate pollutants for which standards are established (i.e., PM_{2.5}, PM₁₀, CO, SO₂, Lead, Ozone or TRS). There are two additional types of sites in the network: Interagency Monitoring of Protected Visual Environments (IMPROVE), and National Atmospheric Deposition Program/National Trends Network (NADP/NTN) sites.

IMPROVE monitors provide information for studying regional haze that may impact the visibility in listed federal Class I National Park and Wilderness Areas. There are two IMPROVE monitoring sites in Nebraska at Halsey National Forest and Crescent Lake National Wildlife Refuge. These sites provide data on pollution trends and transport. The National Trends Network (NTN) of the National Atmospheric Deposition Program (NADP) is a nationwide network of sites that monitor for deposition constituents in precipitation. The deposition constituents examined include acidity, sulfates, nitrates, ammonium chloride, and base-cations (e.g., calcium, magnesium, potassium and sodium). There are two NADP/NTN sites in Nebraska: one near Mead and one near North Platte. Both have been operational for over 20 years. These sites are operated by the University of Nebraska, with analytical and data development support from the NADP. The Mead site was upgraded to include mercury (Hg)

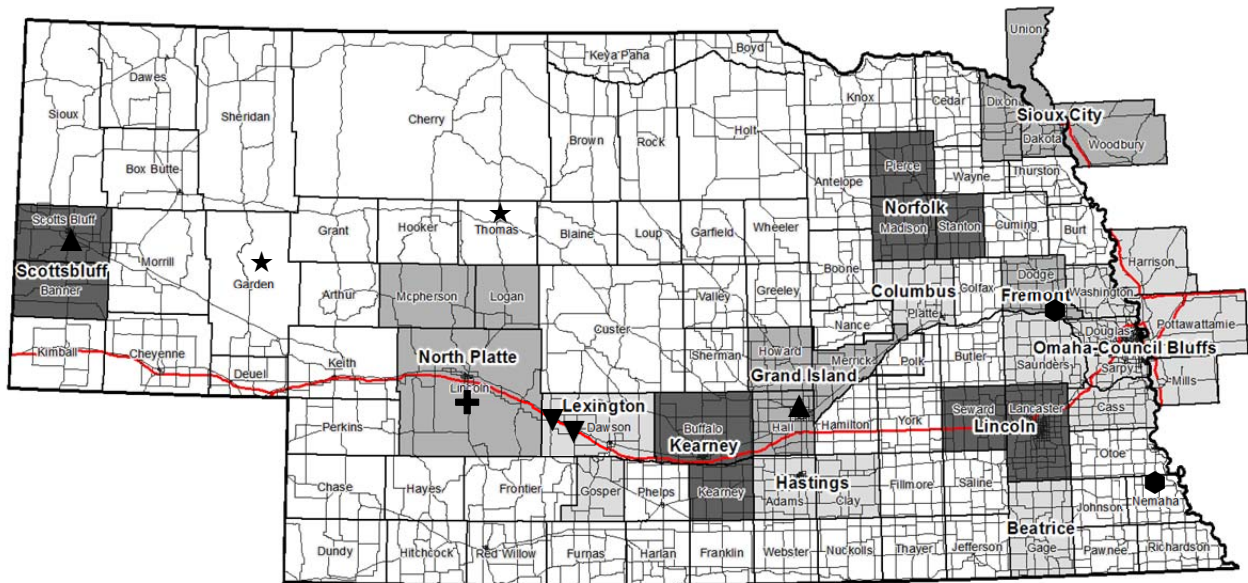
deposition monitoring and was part of the NADP/Mercury Deposition Network (MDN). Both sites maintain the NADP monitoring. The monitoring in Mead is made possible through cooperative efforts of the NDEQ and the University of Nebraska. Additional information about the NADP/NTN can be found at: <http://nadp.sws.uiuc.edu/NADP/>

Monitoring Information On-Line

Ozone and continuous PM_{2.5} data from Lincoln and Omaha is reported hourly to the EPA AirNow system, which makes contemporaneous air quality information available to the public on web at <http://www.airnow.gov/>. The Douglas County Health Department also participates in the ENVIROFLASH program that allows members of the public to sign-up to receive air quality alerts via email.

Both the Douglas County Health Department and the Lincoln/Lancaster County Health Department also report daily Air Quality Index (AQI) evaluations on the Omaha and Lincoln web sites. The AQI is a numeric rating of the current air quality in each city, and provides the public with a quick and simple means to evaluate current air quality in each metro area.

Nebraska Monitoring Sites not in a Metropolitan Statistical Area



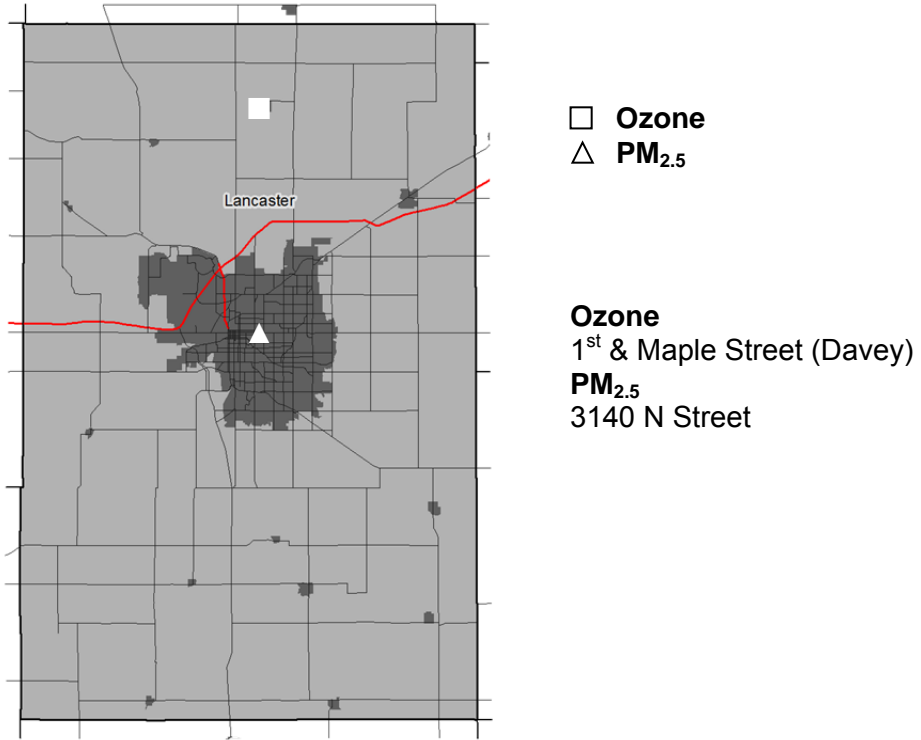
- ▲ **PM_{2.5}**
- ▼ **PM₁₀**
- **Lead**
- ★ **IMPROVE**
- ✚ **NADP/NTN**

- PM_{2.5}**
Grand Island, 2124 North Lafayette Avenue
- PM₁₀**
Scottsbluff, Highway 26 & 5th Avenue
- PM₁₀**
Cozad, 215 West 8th Street
- PM₁₀**
Gothenburg, 9th Street
- NADP/NTN**
Maxwell, North Platte Agricultural Experiment Station

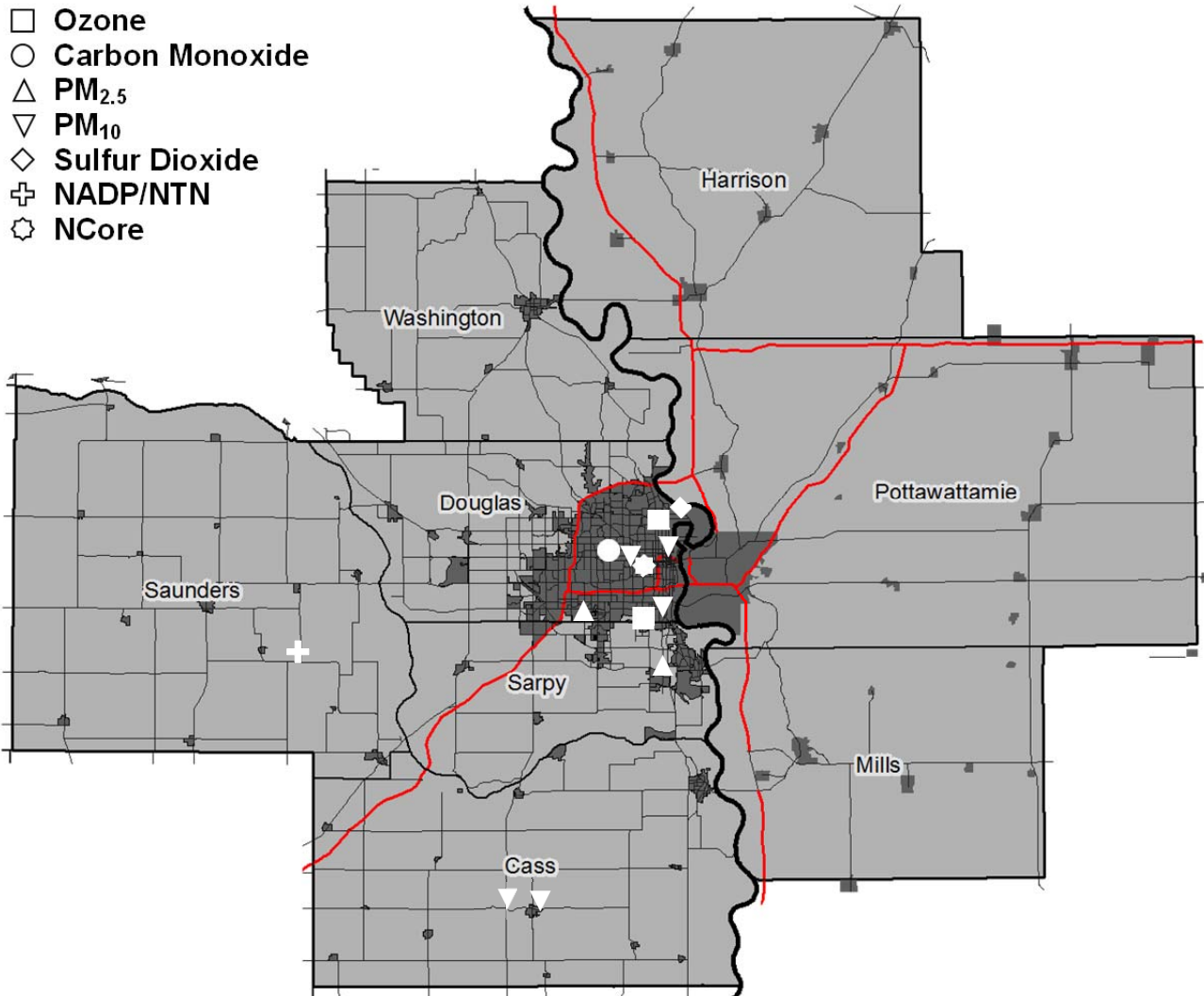
- IMPROVE**
Garden County, Crescent Lake Wildlife Refuge
- Lead**
Thomas County, Nebraska National Forest
- Lead**
Fremont
- Lead**
Auburn

The map above shows monitoring sites that are in non-metropolitan areas. Maps on the next three pages show monitoring sites in the metropolitan areas of Lancaster County, Omaha-Council Bluffs, and South Sioux City (the Omaha and South Sioux City maps also include adjoining counties in Iowa that are part of the region).

Lancaster County Monitor Locations



Omaha-Council Bluffs Metropolitan Area Monitor Locations



Carbon Monoxide

4102 Woolworth Avenue (NCore Trace Monitor)
7747 Dodge Street, Omaha

Sulfur Dioxide

4102 Woolworth Avenue (NCore Trace Monitor)
1616 Whitmore Street

NADP/NTN

Mead, Saunders County

PM_{2.5}

4102 Woolworth Avenue (NCore)
9225 Berry Street
2912 Coffey Avenue (Bellevue, NE)
2242 Wright Street (Blair, NE)

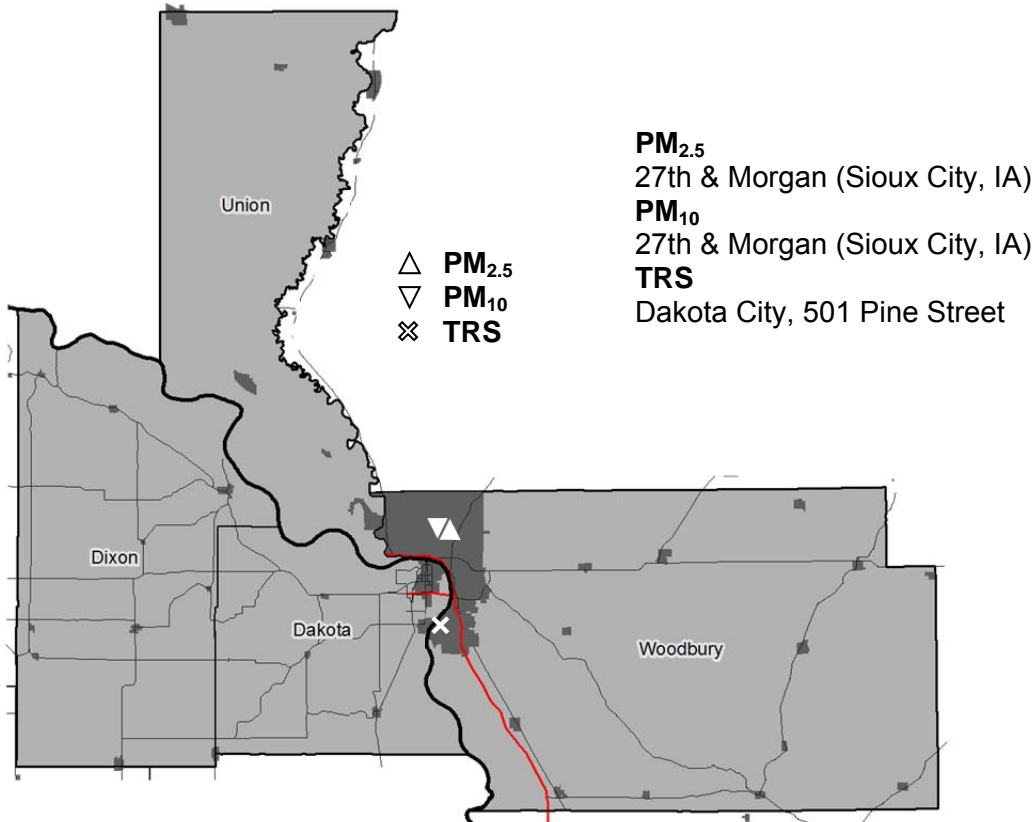
Ozone

4102 Woolworth Avenue (NCore)
30th & Fort Streets
2411 O Street

PM₁₀

4102 Woolworth Avenue (NCore)
19th & Burt Streets
46th & Farnam Streets
2411 O Street
102 P Street (Weeping Water, NE)
5102 Highway 2 (Weeping Water, NE)

Sioux City Metropolitan Statistical Area Monitor Locations



Renewable Powered Monitoring Sites

The NDEQ operates two sites that are powered totally through renewable energy sources: a solar-powered site near Weeping Water, and a solar/wind turbine-powered site at the Scottsbluff High School. Both sites have successfully operated on renewable energy and are examples of energy conservation. The Scottsbluff site was designed to be portable so that it could be easily set up in any location within the state where sufficient solar and/or wind resources exist. The Scottsbluff site also allows an opportunity for NDEQ to partner with the local high school to educate the students about air quality and renewable energy.

Inspections and Facility Compliance

The Compliance Program is responsible for conducting compliance inspections of air pollution sources, responding to citizen complaints, observing and evaluating emission tests, and the acid rain program.

Consistent with the Nebraska Environmental Protection Act, the Air Division attempts to obtain compliance with environmental regulations first through voluntary efforts. Voluntary compliance has helped bring about a better working relationship with the regulated community without sacrificing environmental quality. However, enforcement actions are pursued by the Agency when compliance issues are serious, chronic, or cannot otherwise be resolved. To further the Department's goals to protect and enhance public health and the environment, in certain instances, environmentally beneficial projects, or Supplemental Environmental Projects, may be part of an enforcement settlement.

Compliance Activity Summary

Compliance Activity	NDEQ	LLCHD	OACC
On-site Inspections	90	33	41
Facility Stack Tests Reviewed	102	2	0
On site observations conducted	61	1	0
Continuous Emission Monitoring Audits Reviewed	32	0	0
On-site observations conducted	15	0	0
Complaints Received	142	2	81
Burn Permits Issued	138	20	56
Burn Permits Denied	0	0	0

LLCHD – Lincoln Lancaster County Health Department; OACC – Omaha Air Quality Control

Grants, Planning, and Outreach Unit

The Air Quality Division's Grants, Planning, and Outreach Unit provides support and training to permitting and compliance staff, provides outreach and training to the regulated and general public, and provides information and analyses to the Department and other policy makers. The Unit includes the air dispersion modeling and emissions inventory functions for the Air Division. It is also responsible for maintaining state air quality regulations, updating the state implementation plan, providing expert information on National Emissions Standards for Hazardous Air Pollutants (NESHAPS, also known as air toxics), New Source Performance Standards and National Ambient Air Quality Standards. The Unit coordinates local agency activities, as well as negotiates work plans with the EPA. The Unit also administers the Nebraska Clean Diesel Grant Program.

The Air Toxics Notebook and the New Source Performance Standards Notebook continue to be maintained as valuable online resources for staff and regulated sources. The Grants, Planning, and Outreach Unit has also maintained the AirNews Page (<http://deq.ne.gov/AirDates.nsf/AirNewsMain.xsp>), which is designed to provide easy access to information about the NDEQ Air Division, including important dates and deadlines, access to the AirNews Listserv archive, and links to other important forms and documents on the NDEQ website.

Emission Inventory and Emission Fees

Each year, the Department conducts an inventory of emissions from major industrial sources and a representative sample of lower-emitting, minor industrial sources. Every three years, the Department assists the EPA to prepare a comprehensive national inventory of emissions. The emissions inventory is used to support the planning efforts for national rulemaking and to assess trends in emissions. Emission inventories are due on March 31st each year. The NDEQ also uses emission inventory to support the assessment of annual emission fees. Major sources of air pollution are required to pay emission fees for each ton of pollutant actually emitted during the calendar year. The maximum emission for which a fee is assessed is 4,000 tons per pollutant. For electrical generating facilities with a capacity of between 75 and 115 megawatts, the maximum emission is 400 tons per pollutant. The fees generated are used to support the administration of the permitting program.

The Department attempts to set the fee rate at the minimal level needed to pay reasonable direct and indirect costs of developing and administering the air quality permit program. An analysis detailing how the Department arrived at the fee rate is made available to fee payers and is on the NDEQ's website. The rate for 2012 emissions was \$65 per ton; the 2011 emissions fee was \$64 per ton.

Future Air Issues for Nebraska

Under the federal Clean Air Act, the EPA issues National Ambient Air Quality Standards (NAAQS) for "criteria pollutants." These standards are intended to protect public health and the environment. States must determine whether they are in attainment of these standards and take corrective action if needed. The standards are reviewed and revised periodically, based on the most recent scientific information available.

Nebraska is currently in attainment of all the National Ambient Air Quality Standards. In December, 2012, the EPA lowered the fine particulate matter (PM_{2.5}) primary standard from 15 µg/m³ to 12 µg/m³. At this time all of Nebraska is in attainment with the new standard, but some metropolitan areas are approaching the standard. The sulfur dioxide (SO₂) standard was changed from a 24-hour and annual primary standard to a 1-hour standard in 2010. To determine attainment with the new standard, the EPA is developing an attainment demonstration that is expected to include monitoring and modeling exercises around large SO₂ emitters. This may require modeling or monitoring around several sources in Nebraska. Guidance is expected for the attainment demonstration in early 2014. Finally, the EPA is currently reviewing the ozone standard and is expected to issue a proposed revision to the standard in early 2014. It is expected that the EPA may lower the standard from the current level of 75 parts per billion to a level between 60-70 parts per billion. Depending upon the standard and the 3-year ozone design value, portions of Nebraska may exceed the standard.

For more information about the Nebraska air quality program, please refer to the annual Air Quality Reports and the Ambient Air Monitoring Network Plan, both of which are available on the agency's website at <http://deq.ne.gov/> under "Focus on Air."