

# CHAPTER 4:

## Air Quality Division

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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 areas of the state 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 can directly or indirectly 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 188 listed hazardous air pollutants.

The major 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 -- the Lincoln/Lancaster County Health Department, the Omaha Air Quality Control, and the Douglas County Health Department -- have accepted through contract with the NDEQ and direct delegation from the US 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

#### Construction Permit Program

NDEQ has had a construction permit program for air contaminant sources since the 1970's. 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 applications received, processed and pending:

<b>Pending July 2009</b>	<b>Applications Received</b>	<b>Applications Processed</b>	<b>Pending June 2010</b>
<b>35</b>	<b>55</b>	<b>53</b>	<b>37</b>

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. NDEQ also requires significant

sources of hazardous air pollutants to control emissions with the best control technology available.

The Legislature passed LB449 in 2004, which provides the Department the authority to assess construction permit application fees. Fee amounts are based upon the emissions potential of the facility. The fees generated through this program are used to pay a portion of the costs associated with processing construction permit applications.

In recent years, 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. That trend changed during FY09 and continued in FY10. While we have had fewer construction permits to process, the slowdown in applications has allowed permit writers in the construction permit program to help out with processing operating permits (see discussion below).

	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>	<b>FY10</b>
<b>Number of Construction Applications Received</b>	<b>69</b>	<b>74</b>	<b>104</b>	<b>53</b>	<b>55</b>

### **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:

<b>Pending July 2009</b>	<b>Operating Permit Applications Received</b>	<b>Operating Permit Applications Processed</b>	<b>Pending June 2010</b>
<b>79</b>	<b>20</b>	<b>38</b>	<b>61</b>

Similar to the construction permit program, the operating permit program has experienced an increase in applications in recent years. 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 significant increase in renewal applications beginning in FY07 through FY09. Renewal applications then dropped significantly in FY10. The following table summarizes the applications received from FY06 through FY10 (applications for site specific individual permits only, does not include applications for permit revisions, general permits, permit-by-rule, etc.).

	FY06	FY07	FY08	FY09	FY10
<b>Number of Operating Permit Applications Received</b>	<b>21</b>	<b>47</b>	<b>44</b>	<b>52</b>	<b>20</b>

The Department has the authority to issue operating permits for a fixed term of up to five years. To prevent a reoccurrence of this large fluctuation, the program has been seeking volunteer sources to accept shorter permit terms, i.e., three or four year permit terms. By doing this, the program will be able to stabilize the receipt of future renewal applications over a five year period.

## 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 are 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 (PM<sub>10</sub>)
  - With a diameter of 2.5 micrometers or less (PM<sub>2.5</sub>)
- Sulfur Dioxide (SO<sub>2</sub>)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Carbon Monoxide (CO)
- Ozone (O<sub>3</sub>)
- 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 two areas of the state, Lexington and Dakota City/South Sioux City. There have been significant reductions in TRS levels in those locations since 2000.

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<sub>2.5</sub>, PM<sub>10</sub>, CO, SO<sub>2</sub>, 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.

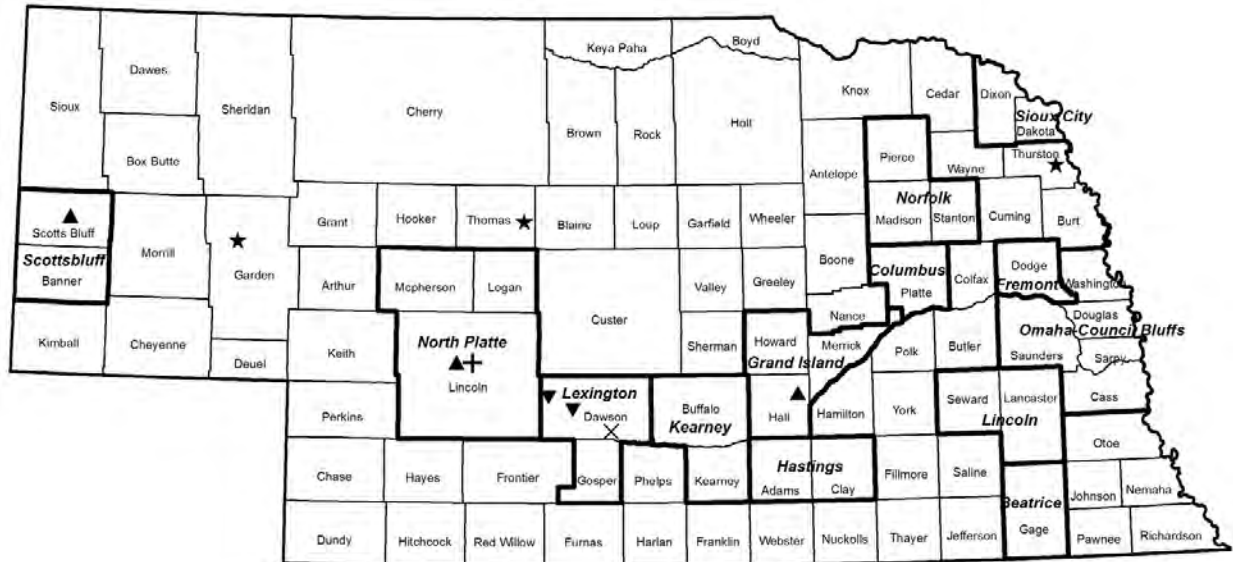
The National Trends Network (NTN) of the National Atmospheric Deposition Program (NADP) is a nationwide network of sites that monitor for deposition constituents in precipitation. The deposition constituents examined include acidity, sulfates, nitrates, ammonium chloride, and base-cations (e.g., calcium, 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. In the last three years, both sites have been upgraded to include mercury (Hg) deposition monitoring and both became part of the NADP/Mercury Deposition Network (MDN). These upgrades were made possible through cooperative efforts of the NDEQ, the University of Nebraska, and Nebraska Environmental Trust grant funding. Additional information about the NADP/NTN can be found at: <http://nadp.sws.uiuc.edu/nadpoverview.asp>. It is expected that mercury monitoring will cease at one of the sites due to the lack of sufficient funding.

### **Monitoring Information On-Line**

Ozone and continuous PM<sub>2.5</sub> 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 [www.airnow.gov](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<sub>2.5</sub>
- ▼ PM<sub>10</sub>
- × TRS
- ★ IMPROVE
- + NADP/NTN

- PM<sub>2.5</sub>  
Grand Island, 2124 North Lafayette Avenue
- North Platte, 211 West 3rd Street  
(discontinued December 2005)
- Scottsbluff, 1809 3rd Avenue
- PM<sub>10</sub>  
Cozad, 215 West 8th Street
- Gothenburg, 9th Street

- TRS  
Lexington County Roads 753 & 435
- IMPROVE  
Garden County, Crescent Lake Wildlife Refuge
- Thomas County, Nebraska National Forest
- Thurston County, Omaha Tribal Land
- NADP/NTN  
Maxwell, North Platte Agricultural Experiment Station

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

Nebraska Monitoring Sites in Metropolitan Areas

Lancaster County Monitoring Locations

- Ozone
- ▲ PM<sub>2.5</sub>
- Carbon Monoxide

**Carbon Monoxide**  
2620 O Street  
**Ozone**  
1<sup>st</sup> & Maple Street (Davey)  
**PM<sub>2.5</sub>**  
3140 N Street



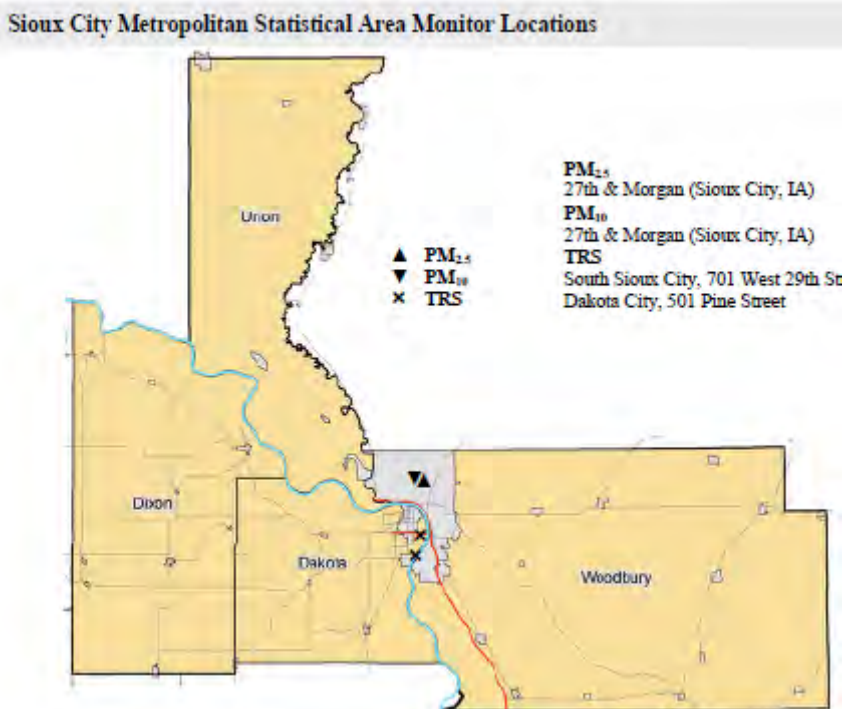
Omaha-Council Bluffs Metropolitan Statistical Area Monitor Locations

- Ozone
- ▲ PM<sub>2.5</sub>
- ▼ PM<sub>10</sub>
- Carbon Monoxide
- ◆ Sulfur Dioxide
- + NADP/NTN



**PM<sub>2.5</sub>**  
4102 Woolworth Avenue  
9225 Berry Street  
2912 Coffey Avenue (Bellevue, NE)  
2242 Wright Street (Blair, NE)  
3130 C Avenue (Council Bluffs, IA)  
2115 Navajo Road (Council Bluffs, IA)  
**Ozone**  
30<sup>th</sup> & Fort Streets  
11414 North 72<sup>nd</sup> Street  
2411 O Street  
1575 Highway 183 (Harrison County, IA)  
**Carbon Monoxide**  
30<sup>th</sup> & Fort Streets  
(discontinued in December of 2007)  
7747 Dodge Street, Omaha

**PM<sub>10</sub>**  
19<sup>th</sup> & Burt Streets  
7717 Dodge Street  
132<sup>nd</sup> & Q Streets  
46<sup>th</sup> & Farnam Streets  
2411 O Street  
102 P Street (Weeping Water, NE)  
112 Randolph Street (Weeping Water, NE)  
5102 Highway 2 (Weeping Water, NE)  
3130 C Avenue (Council Bluffs, IA)  
**Sulfur Dioxide**  
11300 North Post Road  
1616 Whitmore Street  
2115 Navajo Road (Council Bluffs, IA)  
**NADP/NTN**  
Mead, Saunders County



### Renewable Power Projects

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 such that it could be easily set up in any location of the state where sufficient solar and/or wind resources exist. The Scottsbluff site also allows an opportunity for NDEQ to partner with the 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	OAQC
On-site Inspections	133	111	37
Facility Stack Tests Reviewed	65	1	0
On site observations conducted	42	1	0
Continuous Emission Monitoring Audits Reviewed	31	2	0
On-site observations conducted	10	2	0
Complaints Received	67	5	91
Burn Permits Issued	120	45	54
Burn Permits Denied	0	1	0

During SFY2010, the compliance program undertook a process improvement effort. The week-long effort focused on how to improve the inspection process and what tools are needed to make the inspectors jobs run smoother. At the end of the event, concrete ideas were implemented, including the shifting of some resources and making changes to the permit structure.

### Asbestos Program

In July of 2003, the Legislature reduced funding for the Division's Asbestos Program. Complaints are referred to the Nebraska Department of Health and Human Services. Lincoln/Lancaster County and Omaha Air Quality Control continue to be responsible for National Emission Standards for Hazardous Air Pollutants for Asbestos in their respective areas of authority.

### Program Planning and Development Unit

The Air Quality Division's Program Planning and Development Unit was expanded and reorganized during FY2009 in order to provide better support to permitting and compliance staff, and to provide increased information and analyses to Department and other policy makers. The expansion involved moving the air dispersion modeling function from the Permitting section to the Planning Unit and also moving the Emissions Inventory function from the Compliance section to the Planning Unit. These organizational changes were made to better position the Air Division to address future requirements.

Over the last year, the unit continued to devote resources for assistance and outreach activities. It developed a comprehensive training DVD for use by both staff and regulated industry. It also developed a web-based information center on regulated hazardous air



pollutants called the Air Toxics Notebook, which can be found on the DEQ website by going to Programs/Air Toxics Program. Or, the direct URL to the page is: <http://www.deq.state.ne.us/AirDivis.nsf/Pages/AirToxics>. Staff continue to populate the notebook and to develop a similar information center for New Source Performance Standards.

The unit continued ongoing functions of developing fact sheets and guidance documents to help Nebraska businesses understand and comply with air quality regulations and also continued to sponsor annual Air Program Update Workshops in the summer 2010 for representatives from businesses, consulting firms, and industry. These half-day workshops are held across the state where general and technical information is provided on current events, regulations, permitting activities, and modeling activities pertaining to the Air Quality Program. The Program Planning and Development Unit also develops the state air quality regulations.

During SFY2009 and 2010, the Planning Unit participated in the national Clean Diesel Program, providing grants to two government entities to reduce their diesel emissions. The unit also participated in the separate Clean Diesel Program under the American Recovery and Reinvestment Act. (See Chapter 1 for more details on NDEQ ARRA funding.)

### **Emission Inventory Program**

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 emission inventory program also supports the assessment of annual emission fees. Major industrial sources of air pollution pay emission fees for each ton of pollutant emitted during the calendar year. The maximum emissions for which a fee is assessed is 4000 tons per pollutant. For electrical generating facilities with a capacity of between 75 and 115 megawatts, the maximum emissions is 400 tons per pollutant. The fees generated are used to support the major industrial source permitting programs.

The Department makes every attempt 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 Agency's website. The rate for 2009 emissions was \$70 per ton.

### **Future Air Issues for Nebraska**

In the last few years, EPA has finalized regulations that will require changes to the Nebraska program. EPA has been revising the National Ambient Air Quality Standards. With each change to the standards comes the potential for areas of the state to be in non-compliance (non-attainment) with the standards. Furthermore, EPA has been implementing additional ambient air monitoring requirements to implement the revised standards. These new monitoring requirements are a reversal of a trend we had seen 5 to 10 years ago when ambient air monitors were shut down. Some of the new NAAQS changes affecting Nebraska are listed on the next page, including new monitoring that is required, and additional monitoring that is proposed:

#### NAAQS Monitoring

January 2010 – Lead monitoring in Auburn and Fremont

January 2011 – Multi-pollutant monitoring in Omaha. Monitoring to include PM<sub>2.5</sub>, PM<sub>10</sub>, trace gases (CO, NO<sub>x</sub> & SO<sub>2</sub>), ozone and meteorological parameters

January 2011 – One lead monitoring site in Omaha

#### Proposed Monitoring

January 2011 – Lead monitoring in Norfolk

2012 – Two to three rural ozone monitoring sites: one possibly in Scottsbluff or other similarly-sized city and one in an agricultural setting. There could also be one or more additional ozone monitors required in the Omaha area.

2012 – NO<sub>x</sub> monitoring in Omaha and/or along roadsides

#### NAAQS Standards

In June 2010, EPA finalized the standard for sulfur dioxide (SO<sub>2</sub>). EPA eliminated the 24-hr standard and created a 1-hr standard of 75 ppb. Based upon the last three years of data, Douglas County appears to not attain the new standard. NDEQ will be looking for upcoming guidance from EPA on implementing the standard.

In February 2010, EPA proposed changes to the ozone standard which could impact the Omaha-Council Bluffs area. The decision on the final standard is not expected until the end of December, 2010. However, NDEQ is working with the Iowa Department of Natural Resources (IDNR), the EPA, the Omaha Air Quality, Douglas County Health Department, Nebraska Department of Roads, Iowa Department of Transportation, and the Metro Area Planning Agency on a Community Based Planning program to proactively address ozone in the area. Our intent is to garner as much voluntary action up front as possible, to minimize regulatory actions later.

EPA is required under the Clean Air Act to review the adequacy of the NAAQS every five years. The other NAAQS (particulate matter, carbon monoxide, and the secondary standards for SO<sub>2</sub> and NO<sub>2</sub>) are scheduled for review in the next year or two.

For more information about the Nebraska ambient air quality and monitoring, 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 [www.deq.state.ne.us](http://www.deq.state.ne.us).