



Minnesota
Pollution
Control
Agency

Environmental
Outcomes
Division

Citizens' Guide to Air Pollutant Emission Inventories

Air Quality/#1.22/February 2003

MPCA Offices

- ◆ Brainerd,
(218) 828-2492
- ◆ Detroit Lakes,
(218) 847-1519
- ◆ Duluth,
(218) 723-4660
- ◆ Mankato,
(507) 389-5235
- ◆ Marshall,
(507) 537-7146
- ◆ Rochester,
(507) 285-7343
- ◆ St. Paul,
(651) 296-6300,
Toll-free/TTY
(800) 657-3864
- ◆ Willmar,
(320) 214-3791

This fact sheet describes air pollutant emission inventories compiled by the Pollution Control Agency (MPCA).

What is an emission inventory?

An emission inventory is a compilation of pollutant emission estimates from sources such as electric utilities, automobiles, industrial processes and dry cleaners.

Sources of emissions are categorized as point, area or mobile.

- Point sources are typically large stationary sources with relatively high emissions, for example, power plants and refineries.
- Area sources are also stationary, but generally smaller sources of emissions. Examples of area sources are dry cleaners, gasoline service stations and residential wood combustion.
- Mobile sources are divided into on-road and non-road sources. On-road mobile sources are vehicles operated on highways, streets and roads. Non-road mobile sources include lawn and garden equipment, construction equipment, aircraft and locomotives, etc.

Why are air pollutant emission inventories needed?

Air pollutant emission inventories are fundamental to the identification, evaluation and control of hazards associated with air pollutants. A crucial first step toward reducing air pollutant emissions is to identify the sources and source categories that contribute the most to the emissions. Preparing an emission inventory makes this step achievable.

The information provided in emission inventories can also be used to:

- assess health risks due to exposure to air pollutants
- determine where air pollutants end up in the environment
- support air deposition modeling
- evaluate possible locations for air pollutant monitoring sites

Moreover, emission inventories can serve as an indicator of air quality changes. Periodic emission inventories can also measure the effectiveness of regulatory programs designed to reduce pollutant emissions.

Two distinct emission inventories are compiled by the MPCA: the criteria air pollutant inventory and the air toxics emission inventory.





What is the Criteria Air Pollutant Emission Inventory?

All facilities in Minnesota with air emissions permits are required to submit an annual emission inventory report to the MPCA. Each of these facilities must report emissions for the following pollutants.

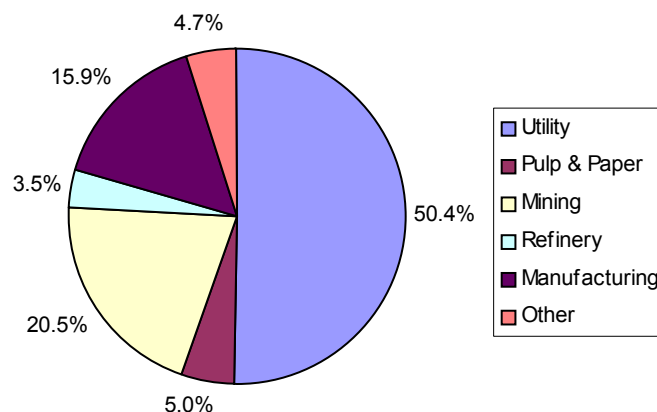
- carbon monoxide (CO)
- nitrogen oxides (NO_x)
- lead (Pb)
- particulate matter (PM)
- particulate matter less than 10 microns in diameter (PM₁₀)
- sulfur dioxide (SO₂)
- volatile organic compounds (VOCs)

Carbon monoxide, lead, sulfur dioxide and particulate matter are defined under the Clean Air Act as “criteria” pollutants. Nitrogen oxides and volatile organic compounds are precursors for ozone, a criteria pollutant that is not directly emitted.

Point source emissions estimates from permitted facilities are then compiled by MPCA staff into the Criteria Air Pollutant Emission Inventory. The emission inventory is used to track the actual pollutant emissions of each facility and to determine the type and quantity of pollutants emitted into the atmosphere. Emissions data can also be used to determine the distribution of emissions by industry sector, as is illustrated in the pie chart using year 2000 data. The data is also used to calculate an annual emission fee for each facility.

Please note that the overall quality of the air in Minnesota is affected by combined emissions from point, area and mobile sources. The chart does not take into account emissions from area or mobile sources. To date, Minnesota’s Criteria Pollutant Inventory has focused on point sources and the MPCA has not calculated emissions estimates for all area and mobile sources. However, planning is underway to expand the program to include area and mobile source emission estimates.

2000 Minnesota Criteria Pollutant Point Source
Air Emissions by Industry Sector



Air permit fees for generated facilities

Since 1986, the MPCA has been collecting fees from facilities that hold air quality permits. The fees covered the cost of issuing and enforcing permits. In the 1990 Clean Air Act Amendments (CAAA), Congress directed the states to implement air emission fee systems to fund Clean Air Act activities. The Minnesota Legislature authorized the MPCA in 1991 to collect the fees necessary to cover costs associated with the CAAA and other air programs.

A facility’s air fee is based on an amount per ton of regulated emissions. Some large companies pay millions of dollars per year for their privilege to release emissions.

For more information on the criteria pollutant emission inventory, see <http://pca.state.mn.us/air/emissions.html/>



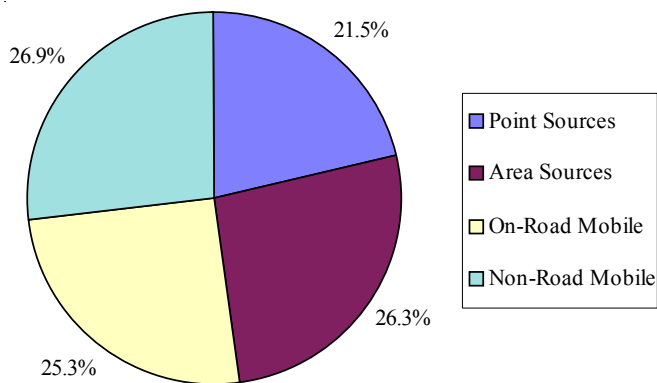
What is the Air Toxics Emission Inventory?

MPCA's Air Toxics Emission Inventory covers more than 500 toxic air pollutants released from point, area and mobile sources. Unlike the criteria pollutant emission inventory, Minnesota does not have an emission inventory rule for the air toxic pollutant emission inventory. Facilities submit air toxic pollutant emissions figures voluntarily. MPCA staff estimate emissions for those facilities that do not submit emission data.

Air toxics emission inventories are generally compiled every three years. The most recent year for which a toxics inventory has been compiled is 1999.

The following pie chart summarizes air toxics pollutant emissions in Minnesota from 1999. Each principal source category is responsible for approximately a quarter of total emissions with slightly more from non-road mobile sources (26.9%) and slightly less from point sources (21.5%).

Contribution of Principal Source Categories to 1999 Air Toxics Emissions in Minnesota

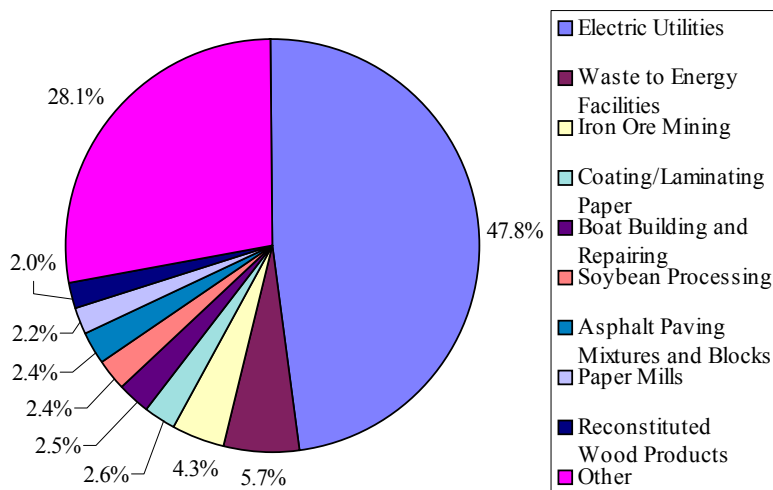


Total air toxics emissions in 1999: 212,872,544 pounds

A more detailed breakdown of emissions for each principal source category is shown in the following three pie charts.

For point sources, there are nine categories that collectively account for about 72% of the total point source emissions. The largest source category is Electric Utilities, which accounts for 47.8% of point source emissions.

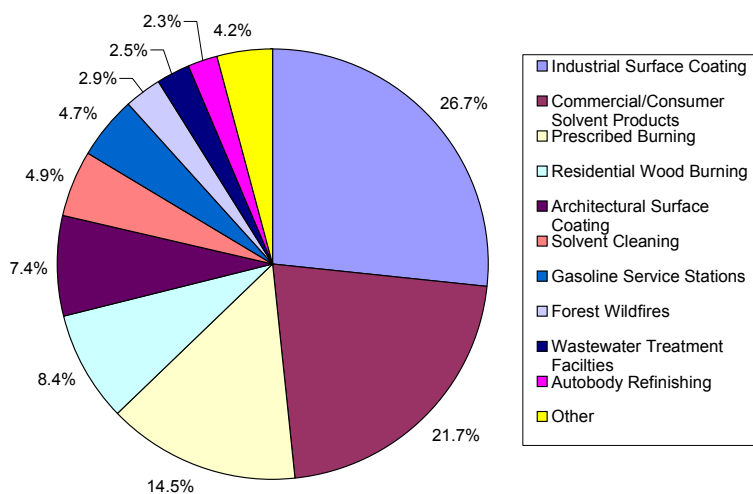
Contribution of Major Categories to 1999 Point Source Air Toxic Emissions in Minnesota



Total air toxics point source emissions: 45,774,769 pounds

For area sources, the major contributors of emissions are Industrial Surface Coating and Commercial/Consumer Solvent Products. About half of the area source emissions are attributed to these two source categories.

Contribution of Major Source Categories to 1999 Area Source Emissions of Air Toxics in Minnesota



Total air toxics area source emissions: 55,991,116 pounds

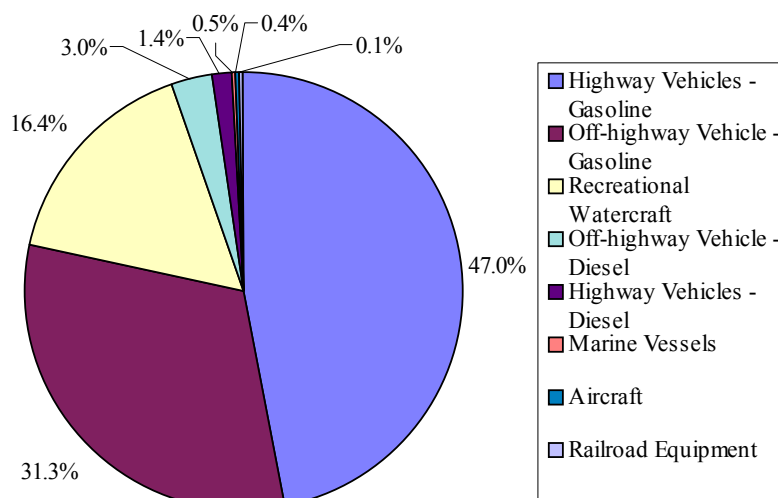


For mobile sources, the largest emission contributor is Highway Vehicles – Gasoline, which accounted for 47% of total mobile source emissions in 1999. The second largest contributor of mobile source emissions is Off-highway Vehicle – Gasoline, mainly Recreational

Equipment. Snowmobiles contribute a significant fraction (70%) of emissions from Recreational Equipment.

For more information on air toxic pollutant emission inventory, see <http://www.pca.state.mn.us/air/toxics.html/>

Contribution of Major Source Categories to 1999
Mobile Source Emissions of Air Toxics in Minnesota



Total emissions from mobile sources of air toxics in 1999: 111,106,673 pounds

For More Information

For more information about air pollutant emission inventories, contact Todd Biewen at 651-296-8156 or by e-mail at Todd.Biewen@pca.state.mn.us