Air Quality in Linn County

Linn County Public Health
Air Quality Division
Air Quality Organization Chart

Jim Hodina
Air Pollution Control Officer

Amy Drahos
Sr. Air Quality Scientist

Joe Strahan
Air Permitting Engineer

Tony Daugherty
Sr. Air Quality Scientist

Dustin Hinrichs
Air Quality Scientist

Kyle Lundberg
Laboratory Supervisor

Carole Lamphier
Environmental Chemist

Jeff Lake
Environmental Chemist

David Burns
Environmental Chemist

Wanda Reiter Kintz
Environmental Chemist
Workforce Deployment

- Permitting
- Inspection & Enforcement
- Ambient Air Monitoring
- Complaint & Emergency Response
- Programming & Public Outreach
- Training
- Administration
Releases of Waste to the Environment in Linn County (Tons per Year)

- Air: 149,910, 37%
- Waste Water: 22,524, 6%
- Solid Waste: 228,994, 57%
Sources of Air Pollution in Linn County

<table>
<thead>
<tr>
<th>Source Category</th>
<th>Tons</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area Sources</td>
<td>44,302</td>
<td>30%</td>
</tr>
<tr>
<td>Vehichles (On &amp; Off Road)</td>
<td>84,210</td>
<td>56%</td>
</tr>
<tr>
<td>Facilities</td>
<td>21,399</td>
<td>14%</td>
</tr>
</tbody>
</table>

Total: 150,011 tons
Pollutants Emitted from Industrial Facilities in Linn County (Tons per Year)

- PM10: 2,593, 6%
- VOC: 4,158, 9%
- SO2: 15,405, 35%
- NOx: 11,820, 27%
- CO: 10,326, 23%
Air Quality Monitoring Sites
Air Quality - Ozone

NAAQS is 0.075 ppm, 4th High, 3 Year Average

- **2005-07**: 0.071 ppm
- **2006-08**: 0.068 ppm

<table>
<thead>
<tr>
<th>Year</th>
<th>Coggon</th>
<th>Kirkwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>0.073</td>
<td>0.072</td>
</tr>
<tr>
<td>2006</td>
<td>0.064</td>
<td>0.066</td>
</tr>
<tr>
<td>2007</td>
<td>0.075</td>
<td>0.076</td>
</tr>
<tr>
<td>2008</td>
<td>0.063</td>
<td>0.063</td>
</tr>
</tbody>
</table>

(YTD)
Air Quality – PM$_{2.5}$

Annual NAAQS is 15 ug/m$^3$, 98$^{th}$ Percentile, 3 Year Average

PM$_{2.5}$ 24-Hr Average (ug/m$^3$)

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008 (YTD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>11.78</td>
<td>9.74</td>
<td>11.13</td>
<td>10.50</td>
</tr>
</tbody>
</table>

- **Army Reserve**: Yearly average
- **Health Dept**: Year-to-Date (YTD) average
Air Quality – PM$_{2.5}$

24-hr NAAQS is 35 ug/m$^3$, 98$^{th}$ Percentile, 3 Year Average

PM$_{2.5}$ 24-Hr Average (ug/m$^3$)

- 2005: 33.3
- 2006: 29.9
- 2007: 24.4
- 2008 (YTD): 28.3

(Linn County, Iowa)
National NAAQS Status

Number of People Living in Counties with Air Quality Concentrations Above the Level of the NAAQS in 2007

- CO: 0
- Pb: 4.5
- NO2: 0
- O3 (8-hr): 144.8
- PM10: 13
- PM2.5: 79.4
- SO2: 0
- Any NAAQS: 158.5

Millions of People
Counties Exceeding New PM$_{2.5}$ NAAQS Levels, Based on 2003-2005 Monitoring Data

Legend

County with monitor exceeding:
- both annual and 24-hour PM$_{2.5}$ standards
- ONLY the 24-hour PM$_{2.5}$ standard
- ONLY the annual PM$_{2.5}$ standard

Number of Counties

- 55
- 69
- 17

Total Counties Exceeding: 141

- Data from AQS 7/10/2006
- Data completeness computed per CFR 7/10/2006
Counties With Monitors Violating Alternate 8-hour Ozone Standards
0.070 and 0.075 parts per million

398 counties violate .075 ppm
135 additional counties violate .070 ppm
for a total of 533
Air Quality Index Results for Linn County

<table>
<thead>
<tr>
<th>Year</th>
<th>Good</th>
<th>Moderate</th>
<th>Unhealthy for Sensitive Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>259</td>
<td>104</td>
<td>3</td>
</tr>
<tr>
<td>2005</td>
<td>253</td>
<td>108</td>
<td>4</td>
</tr>
<tr>
<td>2006</td>
<td>336</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>2007</td>
<td>325</td>
<td>39</td>
<td>1</td>
</tr>
<tr>
<td>2008</td>
<td>269</td>
<td>66</td>
<td>1</td>
</tr>
</tbody>
</table>

Days per Year

- Good
- Moderate
- Unhealthy for Sensitive Groups
Air Quality Index

- "Good" The AQI value for Linn County is between 0 and 50. Air quality is considered satisfactory, and air pollution poses little or no risk.
- "Moderate" The AQI for Linn County is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- "Unhealthy for Sensitive Groups" When AQI values are between 101 and 150, members of sensitive groups may experience health effects. This means they are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is unlikely to be affected when the AQI is in this range.
Chemicals most responsible for the toxicity outside this school

Manganese compounds 93% of overall toxicity
Sulfuric acid 4% of overall toxicity
Nickel compounds 1% of overall toxicity
Acetaldehyde 1% of overall toxicity
Chromium compounds 0% of overall toxicity
Chemicals most responsible for the toxicity outside this school
- Manganese and manganese compounds 93% of overall toxicity
- Sulfuric acid 4% of overall toxicity
- Nickel and nickel compounds 1% of overall toxicity
- Acetaldehyde 1% of overall toxicity
- Chromium and chromium compounds 0% of overall toxicity

Polluters most responsible for toxics outside this school
- Cedarapids Inc., Cedar Rapids, Iowa
- Cargill, Inc Corn Milling, Cedar Rapids, Iowa
- ADM Corn Processing, Cedar Rapids, Iowa
- Evergreen Packaging, Equipment Cedar Rapids, Iowa
- Prairie Creek Generating Station, Cedar Rapids, Iowa

Sources: U.S. Environmental Protection Agency,
University of Massachusetts at Amherst Political Economy Research Institute
## 2005 Toxic Release Inventory

<table>
<thead>
<tr>
<th>Compound</th>
<th>Cargill</th>
<th>Cedarapids Inc.</th>
<th>ADM</th>
<th>Prairie Creek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese Compounds</td>
<td>0</td>
<td>776</td>
<td>400</td>
<td>362</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>41,543</td>
<td>0</td>
<td>110,000</td>
<td>8,072</td>
</tr>
<tr>
<td>Nickel Compounds</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>12,950</td>
<td>0</td>
<td>320,000</td>
<td>0</td>
</tr>
<tr>
<td>Chromium</td>
<td>0</td>
<td>0</td>
<td>130</td>
<td>0</td>
</tr>
</tbody>
</table>
Manganese and Manganese Compounds (lbs)
2005 Toxic Release Inventory

- CARGILL, INC: 362, 23%
- CEDARAPIDS, INC.: 405, 26%
- ADM CORN PROCESSING: 776, 51%
- PRAIRIE CREEK GENERATING STATION: 0, 0%
Manganese and Manganese Compounds
2005 Toxic Release Inventory (lbs)

- CEDARAPIDS INC.: 776 lbs
- HIGHWAY EQUIPMENT CO: 390 lbs
- MIDLAND FORGE DIV: 405 lbs
- PMX INDUSTRIES INC: 102 lbs
- ADM CORN PROCESSING: 72 lbs
- PRAIRIE CREEK GENERATING STATION: 15 lbs
- PRINCE AGRI PRODUCTS INC.: 1 lb
Sulfuric Acid (lbs)
2005 Toxic Release Inventory

- CARGILL, INC: 41,543 lbs (26%)
- CEDARAPIDS, INC.
- ADM CORN PROCESSING: 110,005 lbs (69%)
- PRAIRIE CREEK GENERATING STATION: 8,072 lbs (5%)
Chemicals most responsible for the toxicity outside this school

- **Sulfuric acid**
  - 53% of overall toxicity
- **Acetaldehyde**
  - 19% of overall toxicity
- **Nickel compounds**
  - 8% of overall toxicity
- **Manganese compounds**
  - 6% of overall toxicity
- **Chromium compounds**
  - 6% of overall toxicity
Chemicals most responsible for the toxicity outside this school
- Sulfuric acid 53% of overall toxicity
- Acetaldehyde 19% of overall toxicity
- Nickel and nickel compounds 8% of overall toxicity
- Manganese and manganese compounds 6% of overall toxicity
- Chromium and chromium compounds 6% of overall toxicity

Polluters most responsible for toxics outside this school
- ADM Corn Processing, Cedar Rapids, Iowa
- Highway Equipment Co., Cedar Rapids, Iowa
- PMX Industries Inc., Cedar Rapids, Iowa
- Evergreen Packaging Equipment, Cedar Rapids, Iowa
- Cargill, Inc Corn Milling, Cedar Rapids, Iowa

Sources: U.S. Environmental Protection Agency, University of Massachusetts at Amherst Political Economy Research Institute
As part of the urban strategy, EPA has identified a list of the 33 air toxics that present the greatest threat to public health in the largest number of urban areas.

- acetaldehyde
- acrolein
- acrylonitrile
- arsenic compounds
- benzene
- beryllium compounds
- 1, 3-butadiene
- cadmium compounds
- carbon tetrachloride
- chloroform
- chromium compounds
- coke oven emissions
- dioxin
- ethylene dibromide
- propylene dichloride
- ethylene dichloride
- formaldehyde
- polycyclic organic matter (POM)
- formaldehyde
- hexachlorobenzene
- hydrazine
- lead compounds
- manganese compounds
- mercury compounds
- methylene chloride
- nickel compounds
- polychlorinated biphenyls (PCBs)
- polycyclic organic matter (POM)
- quinoline
- 1, 1, 2, 2-tetrachloroethane
- perchloroethylene
- trichloroethylene
- vinyl chloride
Hazardous Air Pollutant Releases to Air
(Source: 2002 National Emission Inventory)

Tons per Year

Facilities
Vehicles (On & Off Road)
Area Sources

Compounds
- Toluene
- Xylenes (Mixed Isomers)
- Acetaldehyde
- Benzene
- Methanol
- 2,4-Trimethylpentane
- HCl
- Hexane
- Ethylbenzene
- Formaldehyde
- Styrene
- Hydrogen Fluoride
- Methyl Ethyl Ketone
- Ethylene Glycol
- 1,3-Butadiene
- Methyl Isobutyl Ketone
- Methylene Chloride
- Perchloroethylene
- Glycol Ethers
- Cyanide Compounds

Linn County, Iowa

Public Health
Prevent. Promote. Protect.
Linn County Begins 2 Year Study of Acetaldehyde

Beginning in Spring of 2009, Linn County will set up monitors in four areas:

**Site A** – Residential Exposure Monitoring Site (Linn County Public Health)

**Site B** – Industrial Point Source Monitor Site (Diamond V Mills)

**Site C** – Industrial Point Source Monitoring Site (ADM Ethanol Facilities and Red Star Yeast)

**Site D** – Background Monitoring Site (City of Coggon)
Childhood Asthma Management Program

• Linn County Public Health obtained funding from EPA to perform in-home counseling for families with children who suffer from asthma.
• Directed by Dr. Stephanie Nomura
• An Indoor Air Quality inspection of the home for mold and other asthma triggers.
• Respiratory Therapist or Nurse will provide asthma education during 2nd home visit.
Stakeholder Workgroups

• Three active workgroups with representation from various local interested parties.
  – Permitting and LCCO Update (1/16/09)
    • OWB, Odor, Open Burning @ 9:00 am
    • Business & Industry @ 10:30 am
  – Public Outreach (1/20/09 @ 10am)
  – NAAQS (1/30/09 @ 10 am)
EPA Tools for Schools

Download or order online at: www.epa.gov/iaq/schools

• Goal: To show schools how to carry out a practical plan of action to improve indoor air problems at little to no cost using straightforward activities and in-house staff.
www.linnclenaear.com
Air Quality Contact Information

Linn County Public Health Department
501 13th Street NW
Cedar Rapids, IA 52405
319-892-6000
www.linncleanair.org

Jim Hodina 892-6010
james.hodina@linncounty.org