

Michigan's Experience with Air Toxics in Schools [the good, the bad, and the ugly]

*2010 National Air Quality Conference
Raleigh, North Carolina*



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THREE QUOTES

- **Harmony seldom makes a headline.**
- Silas Bent (1882-1945)
- **So near is falsehood to truth that a wise man would do well not to trust himself on the narrow edge.**
- Cicero (106 BC - 43 BC)
- **The perfect is the enemy of the good.**
- Voltaire (1694-1778)



THE GOOD



Aligning Our Clean Air Efforts

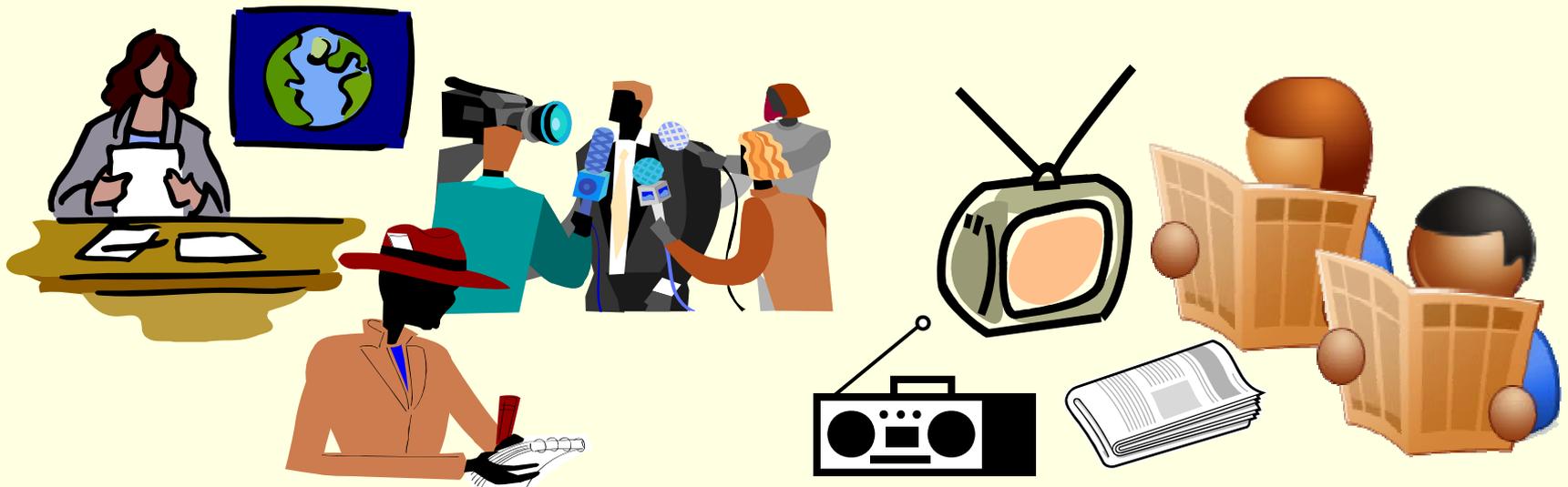
- Sharing air toxics information with public is vital. *The media must take care not to portray complex issues in a way that confuses/misleads the general public.*
- Air toxics concerns can be Environmental Justice (EJ) issues. *Note improvements have occurred.*
- EPA management currently driven by focus on policy. *Good policy is not necessarily the same as good science.*
- Michigan communicates quality assured air toxics data to residents. *Our air agency works to improve public communication efforts despite huge reductions in staff and funding.*

Media's Mission:



The media's job is to interest the public in the public interest.

– John Dewey



EPA's Mission:



The mission of EPA is to protect human health and to safeguard the natural environment -- air, water and land -- upon which life depends.

Seven Priorities

1. Climate change action
2. **Improve Air Quality**
3. Assure the Safety of Chemicals
4. Clean up Communities
5. Protect America's Waters
6. Environmentalism and EJ
7. Build strong State and Tribal Partnerships



DNRE Air Division's Mission:

Work with business and the public to identify and reduce outdoor air pollution problems.

- 1. Meet & maintain air standards**
- 2. Limit emissions of hazardous and toxic air pollutants**
- 3. Keep the public informed about air quality conditions**

www.michigan.gov/deqair



Environmental Justice:



Michigan definition of Environmental Justice:

“The fair, non-discriminatory treatment and meaningful involvement of Michigan residents regarding the development, implementation, and enforcement of environmental laws, regulations, and policies by the state.”

EPA definition of Environmental Justice: “The fair treatment of people of all races and incomes with respect to development, implementation, and enforcement of environmental laws, regulations, and policies.”

definitions are essentially the same

Keep in mind ...



- Air agencies must follow federal laws, guidelines, protocol & accepted scientific procedures for air monitoring.
- Air agency staff are experienced.
- The monitoring process is transparent, QA-QC'd, and open to scientific review.
- EPA, Environmental Groups and the Media place unrealistic expectations on air agencies considering limited budgets and overwhelming workload.

Detroit is well studied ...

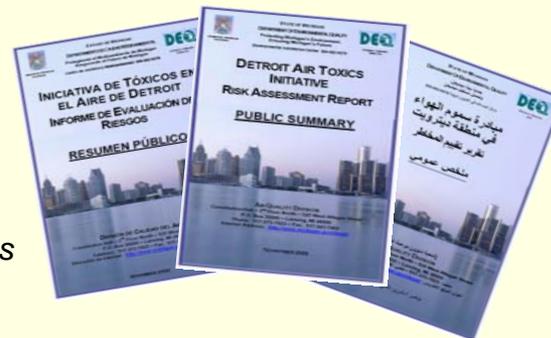


- SE Michigan is extensively studied. Government and academic air monitoring & air toxics studies are being conducted regarding both outdoor and indoor air.
- Over 40 studies help evaluate air quality. Scientifically designed studies help determine where the greatest risk exists.
- DNRE, EPA, academia and others work closely with local communities to communicate air monitor/toxics information.



← Air monitor vest from
EPA's DEARS study

*Detroit Air Toxic Initiative Summaries
in English, Spanish and Arabic →*





THE BAD

Initial USA Today articles:

'The Smokestack Effect: Toxic Air and America's Schools'

Special report

Youngest students often most vulnerable to toxic air

Neighbors: Darlene Patterson walks granddaughter Deonda Scott, 4, near the Wyandotte Early Childhood Center in Baton Rouge, less than half a mile from an ExxonMobil refinery, background.

Risk to kids might be 10 times higher

By Blake Morrison, Brad Heath and Rick Jervis
USA TODAY

BATON ROUGE — From the front door of the aged brick school, the 4-year-olds at Wyandotte Early Childhood Center can spot the cottony plumes from the refinery just over the trees.

The ExxonMobil plant, the nation's second-largest refinery, processes about a half-million barrels of crude oil each day. Its sprawling complex sits a few blocks from the school — and from the swing set on the playground and about 120 pairs of developing lungs.

Chris Traban, a spokesman for the East Baton Rouge Parish School System, says he's certain ExxonMobil would let the school district know if there were an accident at the plant that could hurt children. As for air quality, "It just doesn't come up in conversation," Traban says. "It's just

Special report The smokestack effect

Air tests reveal elevated levels of toxics at schools

Concerns focus on what kids breathe at many sites

By Brad Heath and Blake Morrison
USA TODAY

MIDLAND, Pa. — In this borough of 2,900 in the westernmost part of the state, the steel industry used to be the primary employer. Today, Midland's schools offer the most jobs — and now are beginning to unravel a mystery that could affect the health of their students.

For five days this fall, USA TODAY monitored the air near Midland Elementary-Middle School, a red-brick building blocks from the river-side steel plants that defined the town for generations. It was one of 95 schools in 30 states where the newspaper teamed with scientists at Johns Hopkins University and the University of Maryland to take samples and analyze toxic chemicals in the air.

The highest readings appeared near seven of the schools, including Midland. At those locations, USA TODAY's monitoring showed pollution at levels that could make people sick or significantly increase their risk of cancer if they were exposed to the chemicals for long periods.

Among the chemicals found in the air near the seven schools: the metals manganese and chromium, and the carcinogens benzene and lead.

Cover story

By Blake Morrison and Brad Heath
USA TODAY

ADDITION, Ohio — The growth of air-monitoring equipment has replaced the chatter of children at Mercedin Heights Elementary School in this Cincinnati suburb along the Ohio River.

School district officials pulled all students from kindergarten through third grade from the school for three days after air samples outside the building showed high levels of chemicals coming from the plastics plant across the street. The levels were so dangerous that the Ohio EPA concluded the risk of getting cancer there was 50 times higher than what the state considers acceptable.

The air outside 435 other schools — from Maine to California — across the state — from Maine

Special report The smokestack effect

Toxic air and America's schools

Next door: Main Street in Pottsville, Pa., is home to a tar plant, a steel plant and Pottsville Middle School.

Health risks stack up for school kids near industry

Analysis pinpoints toxic hot spots in 34 states

By Blake Morrison and Brad Heath
USA TODAY

USA TODAY used it to identify schools in toxic hot spots — a task the U.S. Environmental Protection Agency had never undertaken.

The result: a ranking of 127,800 public, private and parochial schools based on the concentrations and health hazards of chemicals likely to be in the air outside. The model's most recent version used emissions reports filed by 20,000 industrial sites in 2005, the year Hichens closed.

The potential problems that emerged were widespread, insidious and largely unaddressed.

At Abraham Lincoln Elementary School in East Chicago, Ind., the model indicated levels of manganese more than a dozen times higher than what the government considers safe. The metal can cause mental and emotional problems after long exposures. Three factories within blocks of the school — located in one of the most impoverished areas of the state — concluded to release more than 6 tons of it in a single day.

Began in Dec 2008

The result – it generated fear

USA Today articles ... so far



'The Smokestack Effect: Toxic Air and America's Schools'

1. Schools near industry face chemical peril 12-7-2008; rev 12-10-2008
2. 'Weird' smell set off investigation at Ohio school 12-7-2008; rev 12-8-2008
3. No one knows what level of chemicals harms children 12-7-2008; rev 12-8-2008
4. Air tests reveal elevated levels of toxics at schools 12-8-2008; rev 12-9-2008
5. What USA today monitors found
6. Officials vow air near schools will be tested for toxics 12-9-2008; rev 12-10-2008
7. Cooperation helped Louisville pull off a cleanup coup 12-16-2008; rev 12-17-2008
8. Young students often most vulnerable to toxic air 12-21-2008; rev 12-22-2008
9. Possible air hazards rarely considered in plans for schools 12-29-2008; rev 12-30-2008
10. EPA nominee pledges to address toxic hot spots around schools 1-14-2009; rev 1-14-2009
11. EPA nominee pledges to use science 1-14-2009; rev 1-15-2009
12. EPA: Air tests near schools a priority 3-1-2009; rev 3-5-2009
13. States' tests of air questioned 3-4-2009; rev 3-5-2009
14. EPA announces schools for air quality checks 3-30-2009; rev 3-31-2009
15. Schools glad to have EPA sample air 3-30-2009; rev 3-31-2009
16. EPA to review system gauging air emissions 4-16-2009; rev 4-16-2009
17. Toxic 'carbon tet' lingers in air near schools 5-19-2009; rev 5-20-2009
18. EPA study: 2.2M live in areas where air poses cancer risk 6-23-2009; rev 7-26-2009
19. Testing for toxics at schools sparks questions, lawsuits 9-14-2009; rev 9-14-2009
- 20. Chemical found in air outside 15 schools 9-30-2009; rev 10-1-2009**
21. EPA finds manganese threat at 2 schools 10-28-2009; rev 10-29-2009
22. EPA detects brain-damaging toxic near school 12-15-2009; rev 12-15-2009
23. EPA vows to do all it can for school's air 1-22-2010

While all the USA Today articles generated public concern, ← this one alarmed a SE MI community

Oct 2009 USA Today Article re: Acrolein

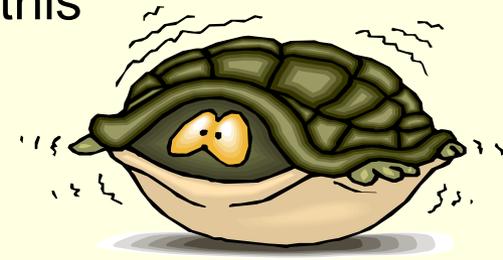


'The Smokestack Effect: Toxic Air and America's Schools' series

“Chemical Found In Air Outside 15 Schools”

Excerpts: “... **chemical that once was weaponized, acrolein**, can exacerbate asthma and irritate the eyes and throat. It is a byproduct of burning gasoline, wood and cigarettes, but the EPA has not yet determined the specific sources ...”

“**The highest level was recorded in August at Spain Elementary School in Detroit.** On Wednesday, the 830 students at Spain were paying homage to the late Michael Jackson when Principal Ronald Alexander heard about the monitoring results. “We've had a very marvelous day today, but this is a concern,” he said of the acrolein levels.”



Our Reaction to the article ... Utter Frustration!



Acrolein information reported for Detroit was **wrong!** EPA equipment had failed QA; however, collocated data from AVOC sampler [analyzed by the same lab] showed actual values to be well below the level of concern.

SO ... the community around Spain School was unnecessarily upset by releasing data that hadn't been fully QA/QC'd [and which had earlier been identified as 'suspect' by DNRE staff].



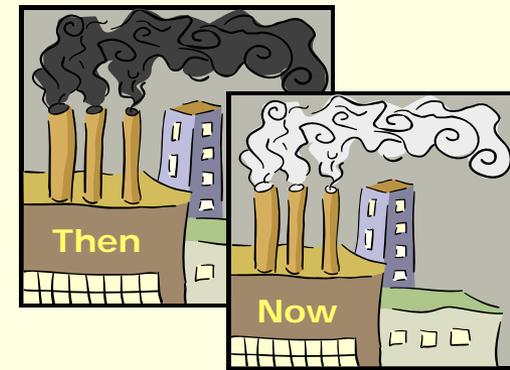
The environmental **in**justice here is that for six months there have been no subsequent news items to dispel the local community concerns regarding acrolein levels.



Our problem with the article regarding acrolein ...



- Data released by EPA to USA Today was bad – and still has not been corrected.
- USA Today didn't mention air improvements to local air quality. Trends indicate:
 1. Air emissions greatly reduced. Vehicles are cleaner & dirty ol' industries got cleaned up ... or shut down.
 2. Power plants and industries in area have invested hundreds of millions of dollars for controls.



Our problem with USA Today series reporting is overall style & conclusions



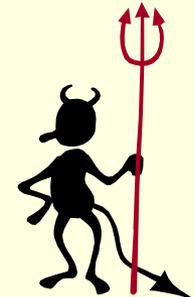
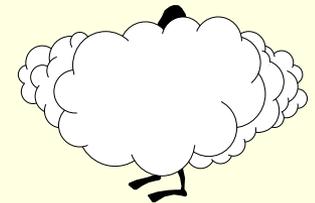
- The media (*much like some environmental organizations*) did **not** report air data in the manner prescribed by federal air rules. Monitoring technology used by USA Today does not conform to the specifications established in the *Technical Assistance Document* for the National Air Toxics Trend Network. Specifically ...
 - **Model results were misrepresented.**
 - **Models ignored other air emissions.**
 - **Implied 'ranking equals risk'.**
- Models must be used correctly and be directly related to actual data.
- Fit the tool to the task; how a tool is used is r-e-a-l-l-y important.



(Cont.) Problem with series reporting overall style & conclusions



- Comparative exposure risk not evaluated. For example, in regard to benzene, no info or comparison of relative risks from other toxic emissions were considered.
- Those identifying risk were never identified. MDNRE found it difficult to respond to claims by “Dr. X”, the unidentified (expert?) scientist and his mysterious calculation methods.
- Journalism needs a “bad guy”. Unfortunately, if it bleeds, it leads. It’s easy to target the state or local air agency as being “unresponsive”.



Public confusion ...



- Public just wants to know, “Is my air dirty?” and they have not been getting complete and honest answers.
- General public doesn’t understand that ranking alone doesn’t signify bad air. Three locations can meet every air health standard ... and one will always have the “worst” air.
- **Implication** is all it takes to “stir the pot”. Once riled, the public won’t believe the truth.

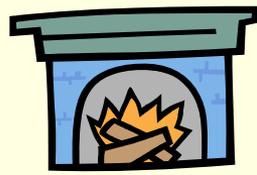


Ranking doesn't necessarily equal failure.

Public confusion ...



- When measuring environmental air toxics, it isn't always clear who the responsible "culprit" is. Emissions that impact a community come from a myriad of sources ... and the worst polluter isn't always a smokestack industry.



the UGLY

... and beyond

What we're really seeing at two Schools in MI ...



U.S. ENVIRONMENTAL PROTECTION AGENCY

Assessing Outdoor Air Near Schools



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Assessing Outdoor Air
Near Schools Home

About the Project

Hoja informativa

Basic Information

Map of Schools

List of Schools

Monitored Pollutants

Children's Health
Issues

What You Can Do

Frequent Questions

Preguntas y
respuestas

Related Links

Technical Information

EPA Contacts

'Our job is to protect the American public where they live, work and play – and that certainly includes protecting schoolchildren where they learn.' Administrator Lisa P. Jackson

As part of a new air toxics monitoring initiative, EPA, state and local air pollution control agencies will monitor the outdoor air around schools for pollutants known as [toxic air pollutants](#), or air toxics. The Clean Air Act includes a list of 187 of these pollutants. Air toxics are of potential concern because exposure to high levels of these pollutants over many decades could result in long-term health effects.

Information for Schools

- [School Environments](#)

EPA [selected schools](#) after evaluating a number of factors including results from an EPA computer modeling analysis, the mix of pollution sources near the schools, results from an analysis conducted for a recent newspaper series on air toxics at schools, and information from state and local air pollution agencies.

EPA and our partners at state and local air pollution control agencies will:

- collect samples of outdoor air near selected schools over 60 days,
- analyze those samples for air toxics of potential concern,
- report on levels of air toxics found and their potential for long-term health impacts,
- evaluate actions that may be needed to reduce levels of pollutants of concern, and
- take action as needed to ensure that nearby industries are in compliance with clean air regulations.

Part of EPA's mission is to reduce the amount of toxic air pollutants in the air we breathe. For several decades we have issued rules and regulations that have cut emissions of these compounds from automobiles; trucks; buses; and a wide array of industries ranging from large facilities like chemical plants, refineries, paper plants, and factories, to smaller facilities like gasoline stations and dry cleaners.

From 1990 to 2005, emissions of air toxics in the United States declined 41 percent, as a result of federal and state regulations, and local emission reduction programs. However, levels of different air toxics can vary widely from place to place depending upon a number of factors including the amount and types of industry nearby, proximity to heavily traveled or congested roadways, and weather patterns. This study will help us better understand the air around selected schools throughout the country.

This web site provides information on this initiative, the schools where we plan to begin monitoring, background information on air toxics, and links to other programs EPA has in place to protect communities and school environments. When monitoring results are available, likely starting in summer 2009 for some schools, EPA will post them on this site.

[About the Project](#) - Fact sheet summarizing the key components of this initiative

[Basic Information](#) - Background on EPA's assessment of outdoor air near schools

[Map of Schools](#) - Identifies the locations of the schools where outdoor air will be monitored

[List of Schools](#) - School names, locations, and pollutants to be monitored in tabular form

[Monitored Pollutants](#) - Information about pollutants EPA will monitor in outdoor air

[Children's Health Issues](#) - Information of air quality, children's health, and programs EPA sponsors for schools and children

[What You Can Do](#) - Actions you can take to reduce air pollution

Air Toxics Monitoring @ 2 Michigan Schools

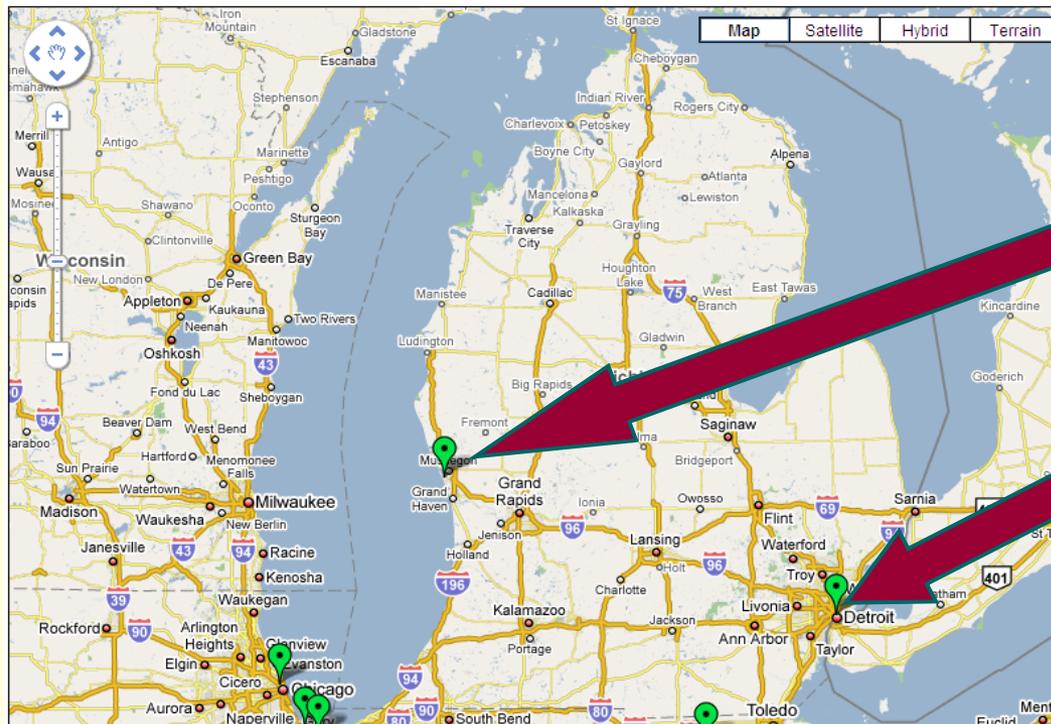


Assessing Outdoor Air Near Schools

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Map of Schools

[Need help navigating the map?](#)



Two sites established:

MUSKEGON
Lincoln Park Elementary

DETROIT
Spain Elementary



DETROIT: Spain Elementary



Results of valid samples: All monitored toxic air pollutants are WELL below the level of concern.

- Key Pollutant **1,3-Butadiene** (Micrograms/cubic meter) **Sample Screening Level: 20**
Samples 1-10: **0.051; 0.073; 0.053; 0.040; 0.038; 0.035; 0.075; 0.11; 0.075; 0.16**
- Key Pollutant **Benzene** (Micrograms/cubic meter) **Sample Screening Level: 30**
Samples 1-10: **0.627; 0.540; 0.540; 0.607; 0.352; 0.336; 0.617; 0.649; 0.674; 1.30**

NOTE: According to USA Today, Spain is ranked in USA Today's 21st percentile and was reported as having the highest acrolein levels in the nation!

Acrolein data is absent from the Spain School webpage ... the bad data value of $9.31 \mu\text{g}/\text{m}^3$ released to and by USA TODAY was deleted due to QA; collocated valid data clearly illustrates levels that day were well below the $7 \mu\text{g}/\text{m}^3$ "level of concern" The collocated data from the AVOCs monitor on that date: $1.38 \mu\text{g}/\text{m}^3$

Air Monitoring staff experts react to erroneous news articles →



Muskegon: Lincoln Elementary



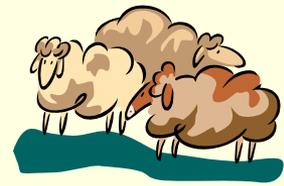
Results of valid samples: All monitored toxic air pollutants are WELL below the level of concern.

- Key Pollutant **Chromium** (Nanograms/cubic meter) **Sample Screening Level: 580**
Samples 1-18: 0.0160; 0.0269; 0.0971; ND; 0.057; --; 0.0384; 0.0097; 0.0346; 0.0104;
1.58; 0.592; 0.0839; ND; --; 0.0147; 0.105; 0.0264
- Key Pollutant **Cobalt** (Nanograms/cubic meter) **Sample Screening Level: 100**
Samples 1-15: --; --; 0.27; --; 1.11; 0.33; 0.06; 0.02; 1.87; 2.02; 2.28; 0.11; --; --; 0.04
- Key Pollutant **Nickel** (Nanograms/cubic meter) **Sample Screening Level: 200**
Samples 1-15: --; --; 0.47; --; 4.14; 1.30; 0.47; 0.22; 10.9; 12.6; 2.35; 0.99; --; --; 0.10
- Pollutant **Manganese** (Nanograms/cubic meter) **Sample Screening Level: 500**
Samples 1-10: 1.04; -- ; 9.39; 22.9; 60.6; 2.83; 34.3; 2.88; 1.76 ; 7.11 ; -- ; -- ; 5.06

**NOTE: According to USA Today, Lincoln is ranked in 1st percentile and 'supposed' to be one of the nations worst schools!
*Data collected does not support that assessment.***



"Perception may be Reality", but ... Credibility is Everything!

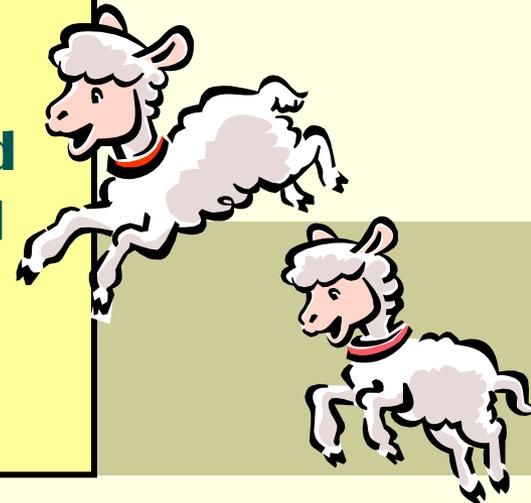


We in Michigan's DNRE Air Quality Division
provide monitoring data that is:
Real ... Accurate ... Quality Assured.

Nevertheless, who does the public believe?

PERHAPS THE REAL QUESTION IS:

**Has the inaccurate representation of
air quality in our communities created
a "boy who cried wolf" situation? Will
the public believe any of us to be
credible when a "genuine" air toxics
issue surfaces?**





Working together toward a clearer future



Tips for reporting air quality information ...



- **Only report data from scientifically accurate & transparent efforts. Good research can withstand peer review.**
 - Use EPA (state/local agency) data and models correctly.
 - Use comparable monitoring tools.
 - Provide balance – recognize limitations of evaluation tools.
- **Report “good news”; air quality improvements too.**
 - Don't report old data when newer information is available.
- **Don't be afraid to admit that quick fixes are often 'not'.**
 - Snapshots can blur the picture
 - Some types of monitoring takes time ...do it right!
- **Talk/Work with state & local air agencies early on.**
 - Be objective
 - Conclusions should not be made prior to interaction.
 - Knowledgeable staff input adds integrity to reporting.



SHARED GOALS ...



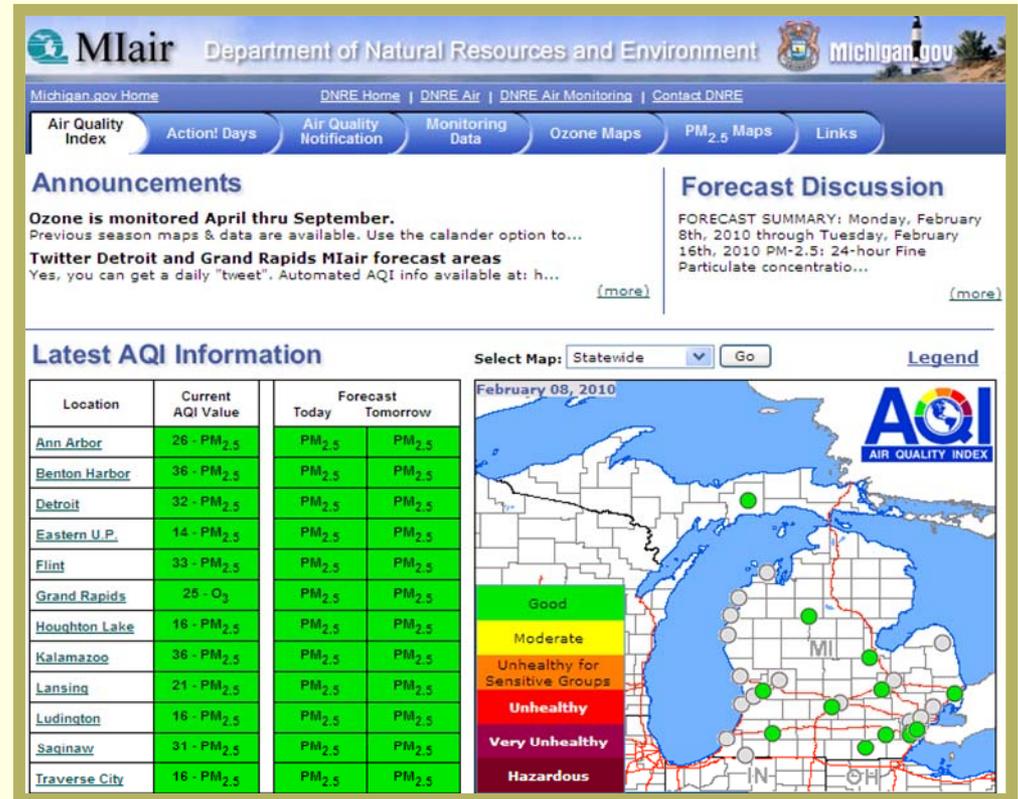
We all want better air - especially for our children. Science remains the best driver of message & actions.

Air agencies have limited resources during these tough economic times. Staff time used to “correct” misinformation, delays improvements.

We ALL need to work together toward the universal goal of clean air ... which must be achieved within the framework of established scientific principles.

A witty saying proves nothing.

- Voltaire (1694-1778)

MIair Department of Natural Resources and Environment Michigan.gov

Michigan.gov Home | DNRE Home | DNRE Air | DNRE Air Monitoring | Contact DNRE

Air Quality Index | Action Days | Air Quality Notification | Monitoring Data | Ozone Maps | PM_{2.5} Maps | Links

Announcements

Ozone is monitored April thru September.
Previous season maps & data are available. Use the calander option to...

Twitter Detroit and Grand Rapids MIair forecast areas
Yes, you can get a daily "tweet". Automated AQI info available at: h... [\(more\)](#)

Forecast Discussion

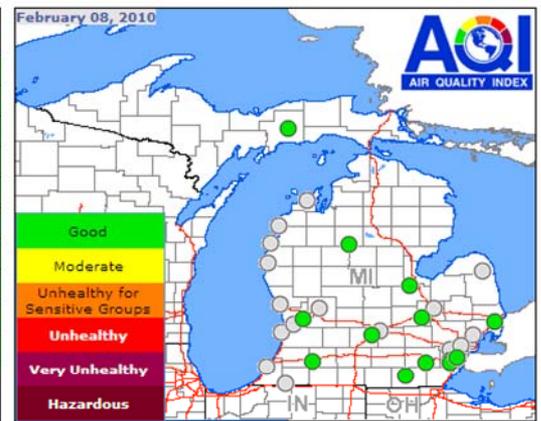
FORECAST SUMMARY: Monday, February 8th, 2010 through Tuesday, February 16th, 2010 PM-2.5: 24-hour Fine Particulate concentration... [\(more\)](#)

Latest AQI Information

Select Map: Statewide [Legend](#)

Location	Current AQI Value	Forecast	
		Today	Tomorrow
Ann Arbor	26 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Benton Harbor	36 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Detroit	32 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Eastern U.P.	14 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Flint	33 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Grand Rapids	25 - O ₃	PM _{2.5}	PM _{2.5}
Houghton Lake	16 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Kalamazoo	36 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Lansing	21 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Ludington	16 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Saginaw	31 - PM _{2.5}	PM _{2.5}	PM _{2.5}
Traverse City	16 - PM _{2.5}	PM _{2.5}	PM _{2.5}

February 08, 2010



Do your share to clean the air ...
because **MIair** is **Your** air!

