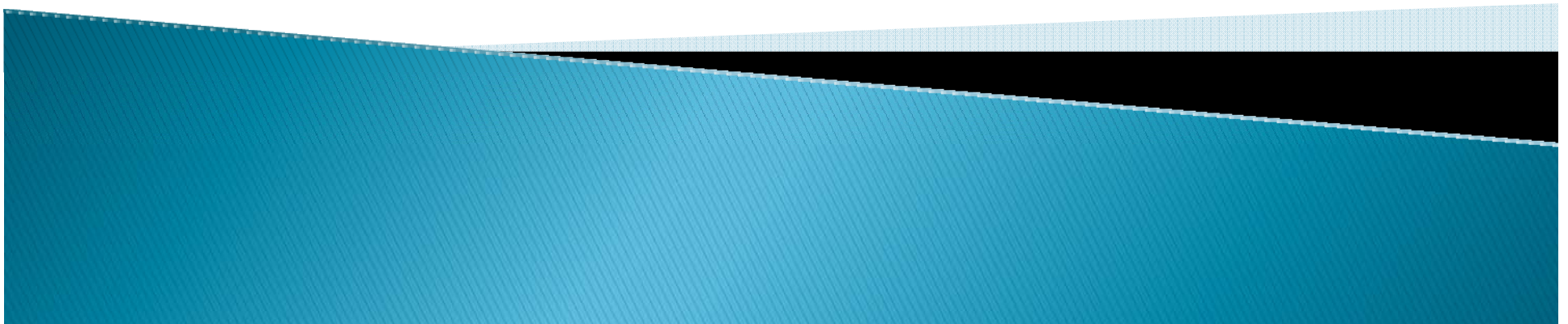


Federal Air Quality Standards

Cheryl Newton – U.S. EPA Region 5
June 30, 2010





Review of National Ambient Air Quality Standards (NAAQS)

- ▶ The Clean Air Act requires EPA to set two types of national ambient air quality standards (NAAQS) for “criteria” air pollutants:
 - *Primary standards* to protect public health with an adequate margin of safety
 - *Secondary standards* to protect public welfare (visibility, wildlife, crops, vegetation, national monuments and buildings)
- ▶ EPA has set NAAQS for six common air pollutants:
 - Nitrogen dioxide
 - Carbon monoxide
 - Lead
 - Particulate matter
 - Ground-level ozone (smog)
 - Sulfur dioxide
- ▶ The law requires EPA to review the scientific information and the standards for each pollutant every five years, and to obtain advice from the Clean Air Scientific Advisory Committee (CASAC) on each review
- ▶ Different considerations apply to setting NAAQS than to achieving them
 - **Setting NAAQS:** based on scientific evidence of health and environmental effects
 - **Achieving NAAQS:** account for cost, technical feasibility, time needed to attain

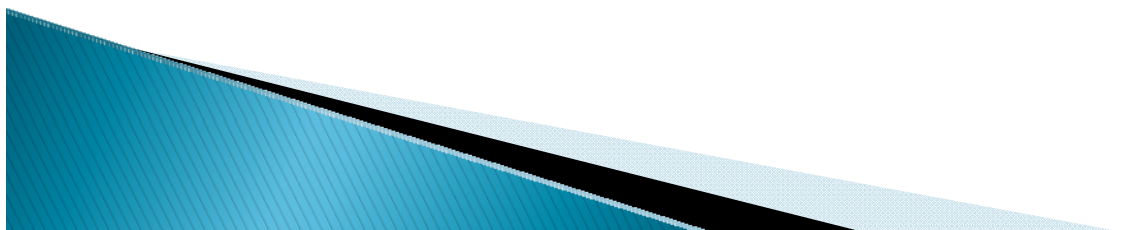
Ongoing NAAQS Reviews: Current Schedule

revised 3 15 2010

MILESTONE	POLLUTANT						
	Lead	NO ₂ Primary	SO ₂ Primary	Ozone	CO	PM	NO ₂ /SO ₂ Secondary
NPR	New schedule being developed	<u>Jun 26, 2009</u>	<u>Nov 16, 2009</u>	Jan 6, 2010	<u>Oct 28, 2010</u>	Nov 2010	<u>July 12, 2011</u>
NFR	<u>Oct 15, 2008</u>	<u>Jan 22, 2010</u>	<u>Jun 2, 2010</u>	Aug 31, 2010	<u>May 13, 2011</u>	July 2011	<u>Mar 20, 2012</u>

NOTE:

Underlined dates indicate court-ordered or settlement agreement deadlines.



Ongoing NAAQS Reviews: Comparison of Standards

revised 3 15 2010

	POLLUTANT					
	Lead ($\mu\text{g}/\text{m}^3$)	NO ₂ (ppm)	SO ₂ (ppb)	Ozone (ppm)	CO (ppm)	PM ($\mu\text{g}/\text{m}^3$)
Old Standard	1.5 (calendar quarterly)	0.053 (annual basis)	140 (daily) 30 (annual)	0.08 (8-hr avg) (aka 84 ppb)	9 (8-hour avg) 35 (1-hour avg)	65 (daily) 15 (annual)
New Standard	0.15 (rolling 3-mon. avg)	0.100 (hourly basis)	75 (hourly)	<u>0.060 – 0.070 (8 hr avg)</u> <u>(aka 60-70 ppb)</u> <u>and</u> <u>(7-15 ppm-hours)</u>	<u>To be proposed</u>	35 (daily) 15 (annual)

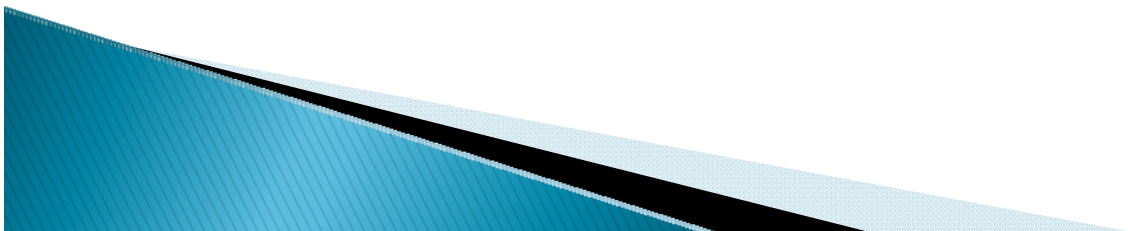
NOTE:

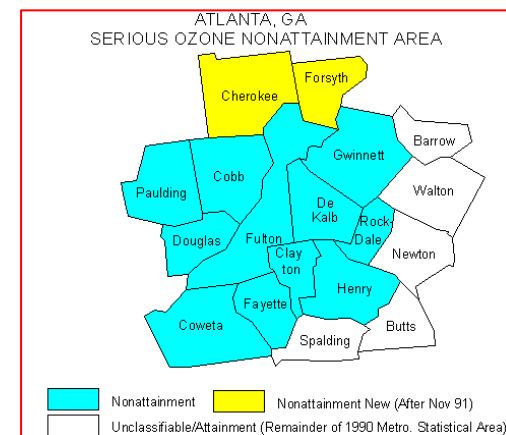
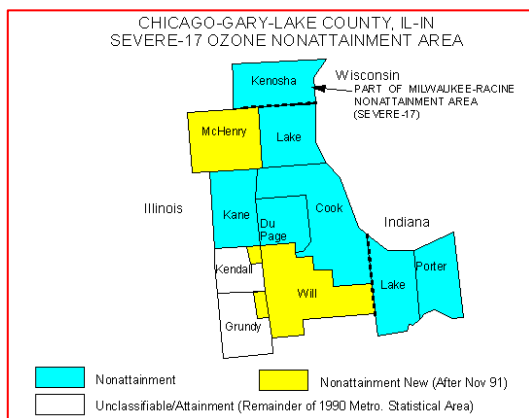
Underlined dates indicate proposed levels that have not yet been finalized.



Air and Radiation Division

Some Nonattainment and SIP Basics





What is a “nonattainment” (NA) area?

Nonattainment Area ...

➤ *any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.*

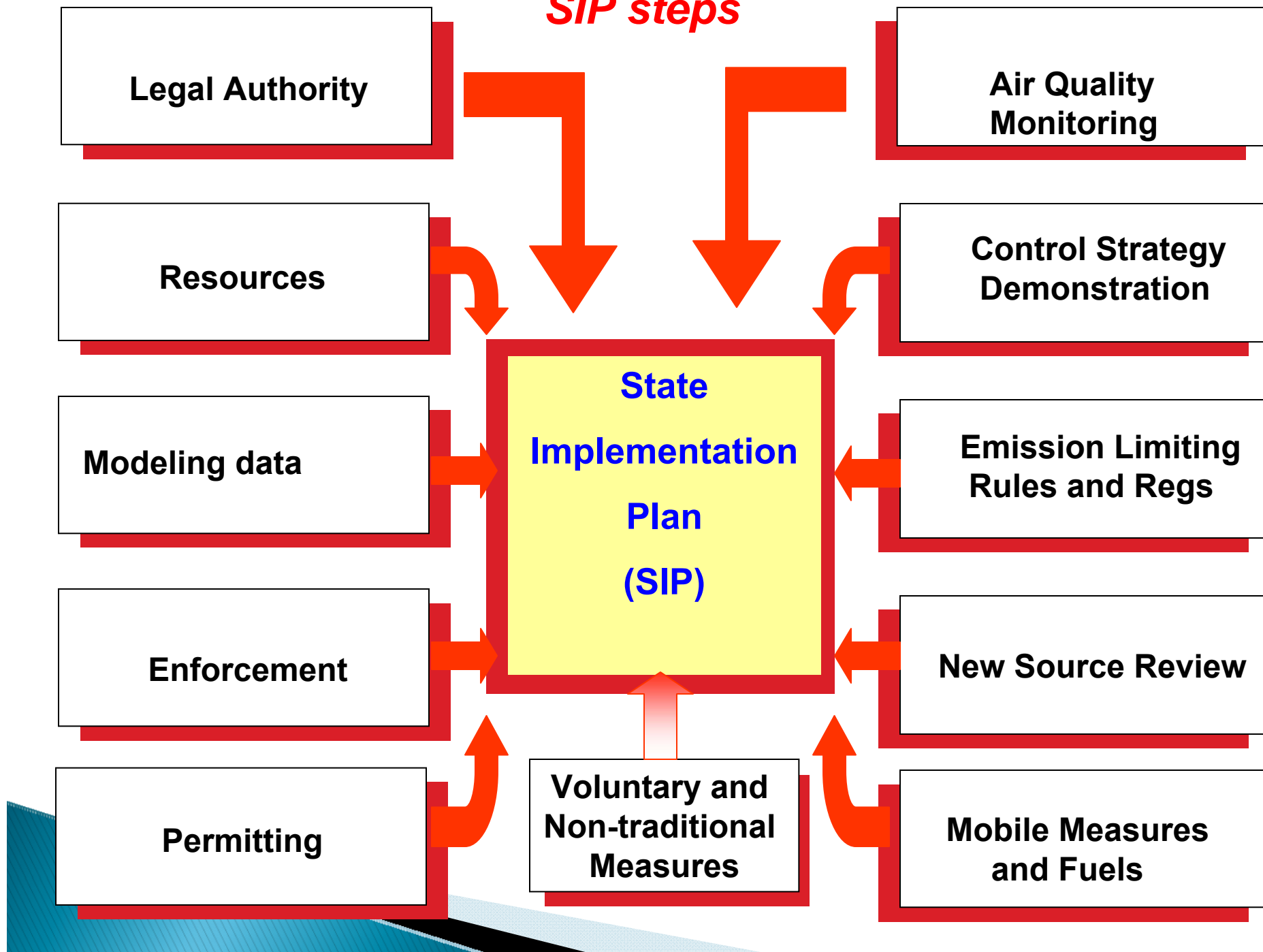
What is a State Implementation Plan (SIP)?



It's a plan for "clean air!"

- CAA requires a general plan to achieve the NAAQS in all areas of the country and a specific plan for each nonattainment area.
- These plans, State Implementation Plans (SIPs) are developed by States (and locals) and submitted to US EPA for approval through Federal rulemaking.
- After US EPA approval, these SIPs and associated control measures are enforceable at both the state and national levels.

SIP steps

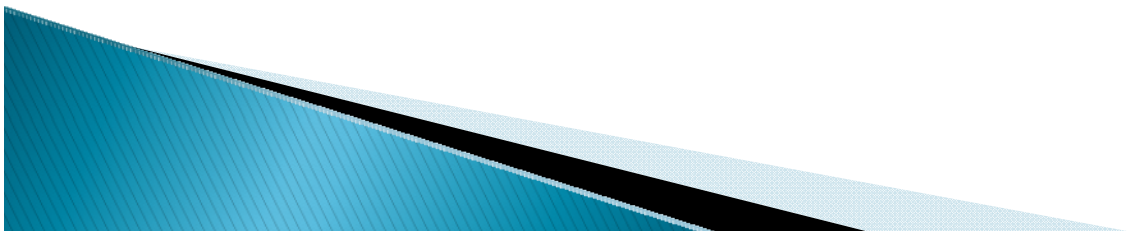




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Region 5 Air Quality

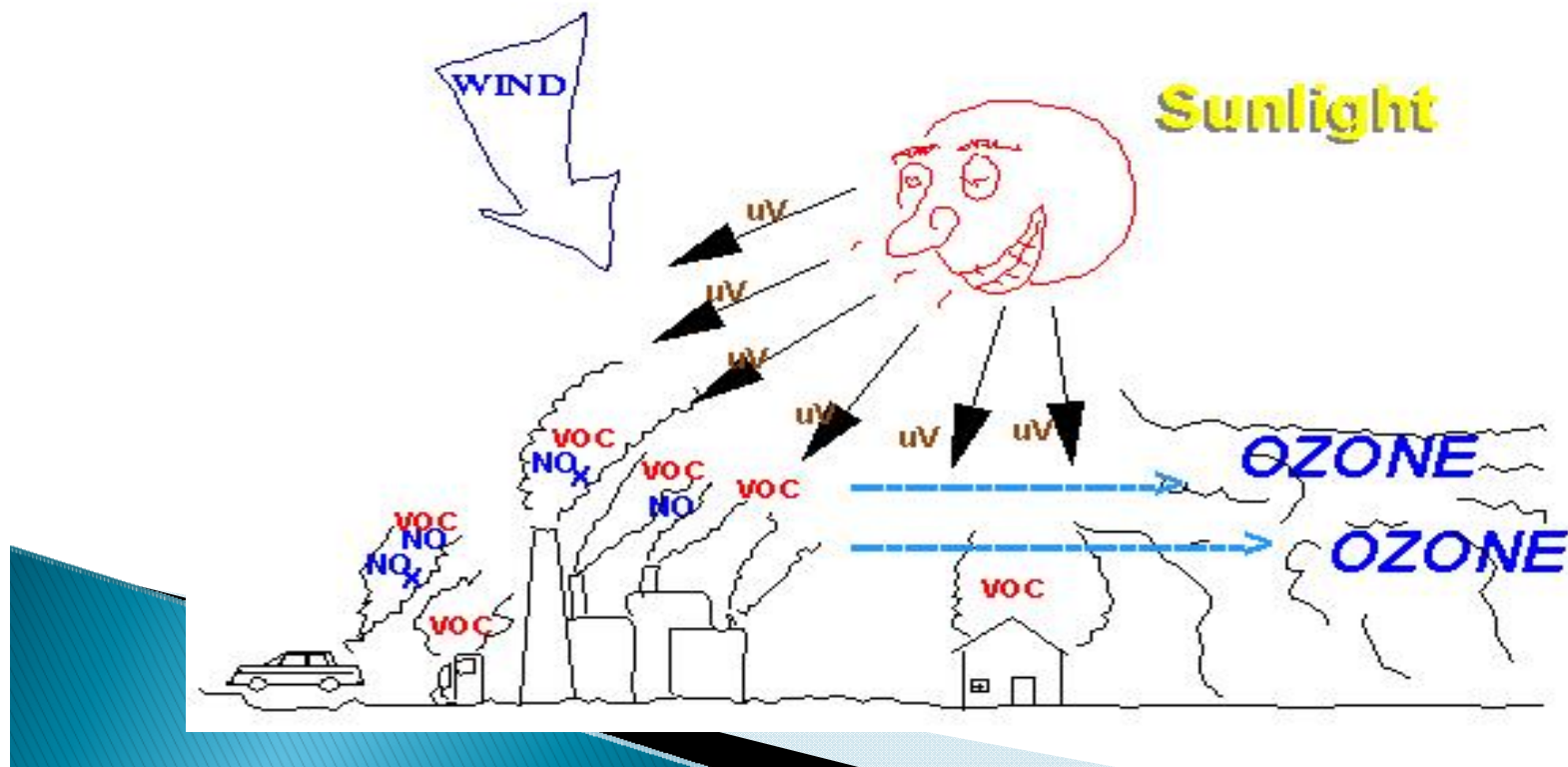
1997 8-Hour Ozone Standard
(.08 ppm aka 84 ppb)








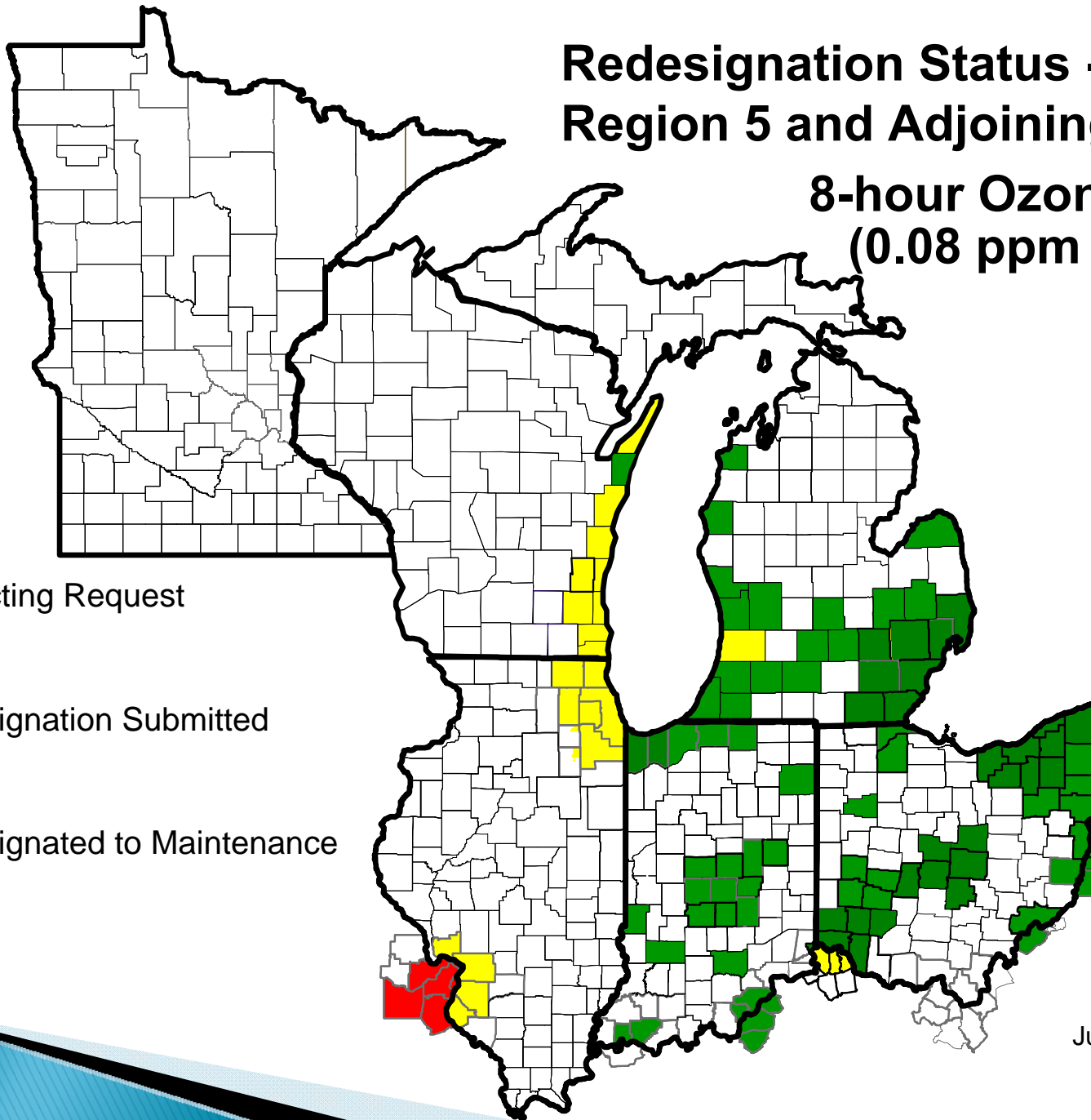
Where does ozone come from?

HOW VOCs AND NO_x FORM
GROUNDLEVEL OZONE



Redesignation Status - Region 5 and Adjoining Areas 8-hour Ozone Areas (0.08 ppm standard)

-  Expecting Request
-  Redesignation Submitted
-  Redesignated to Maintenance area



June 2, 2010



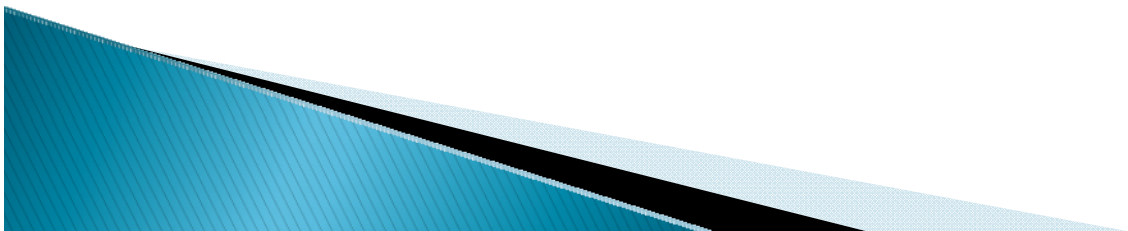
Air and Radiation Division

2010 8-Hour Ozone Standard

Proposed Range:




Primary (.060 ppm to 0.070 ppm)

Secondary (7-15 ppm-hours)

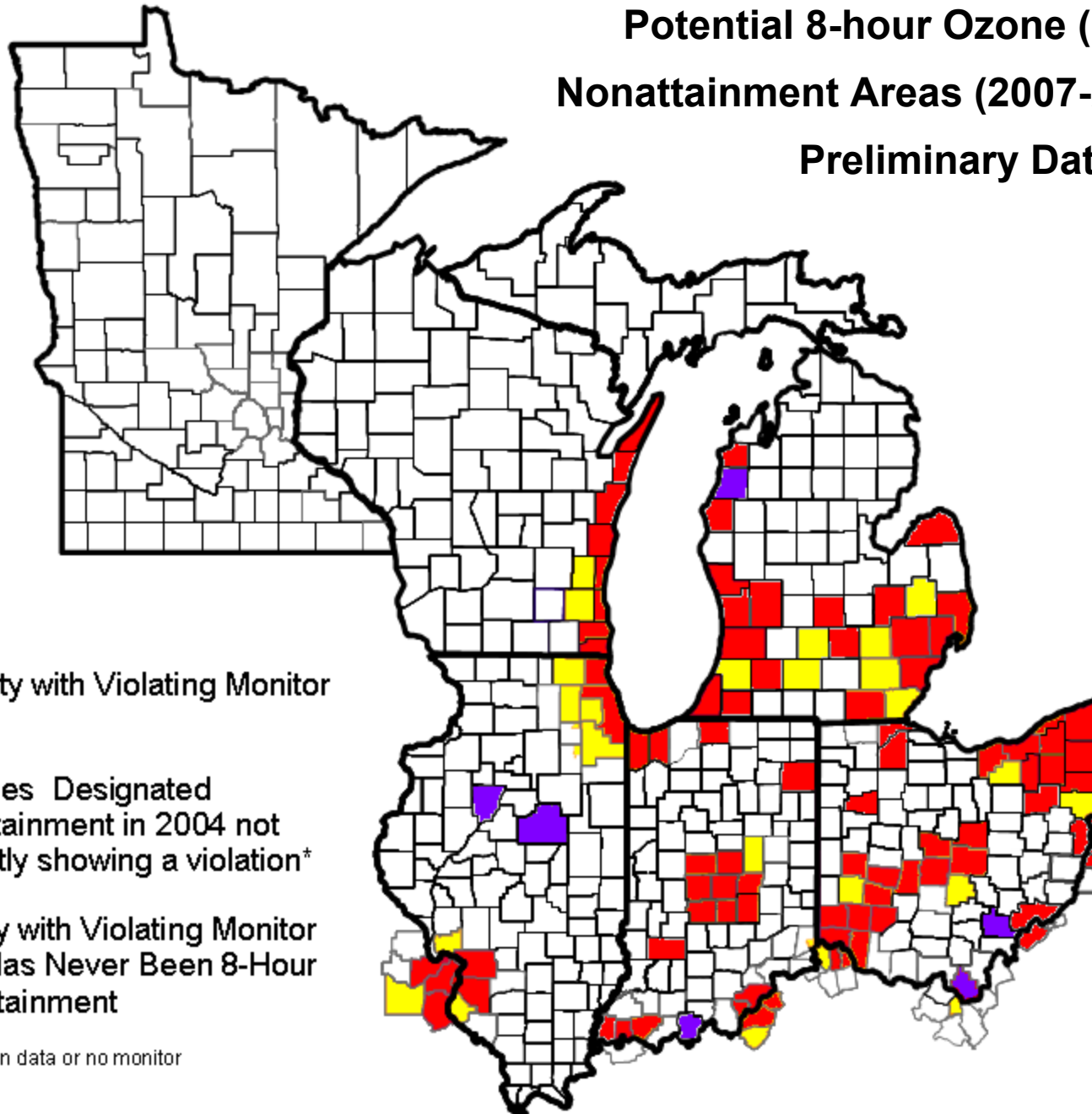




**Potential 8-hour Ozone (.070 ppm)
Nonattainment Areas (2007-2009 data)
Preliminary Data**

-  County with Violating Monitor
-  Counties Designated Nonattainment in 2004 not currently showing a violation*
-  County with Violating Monitor That Has Never Been 8-Hour Nonattainment

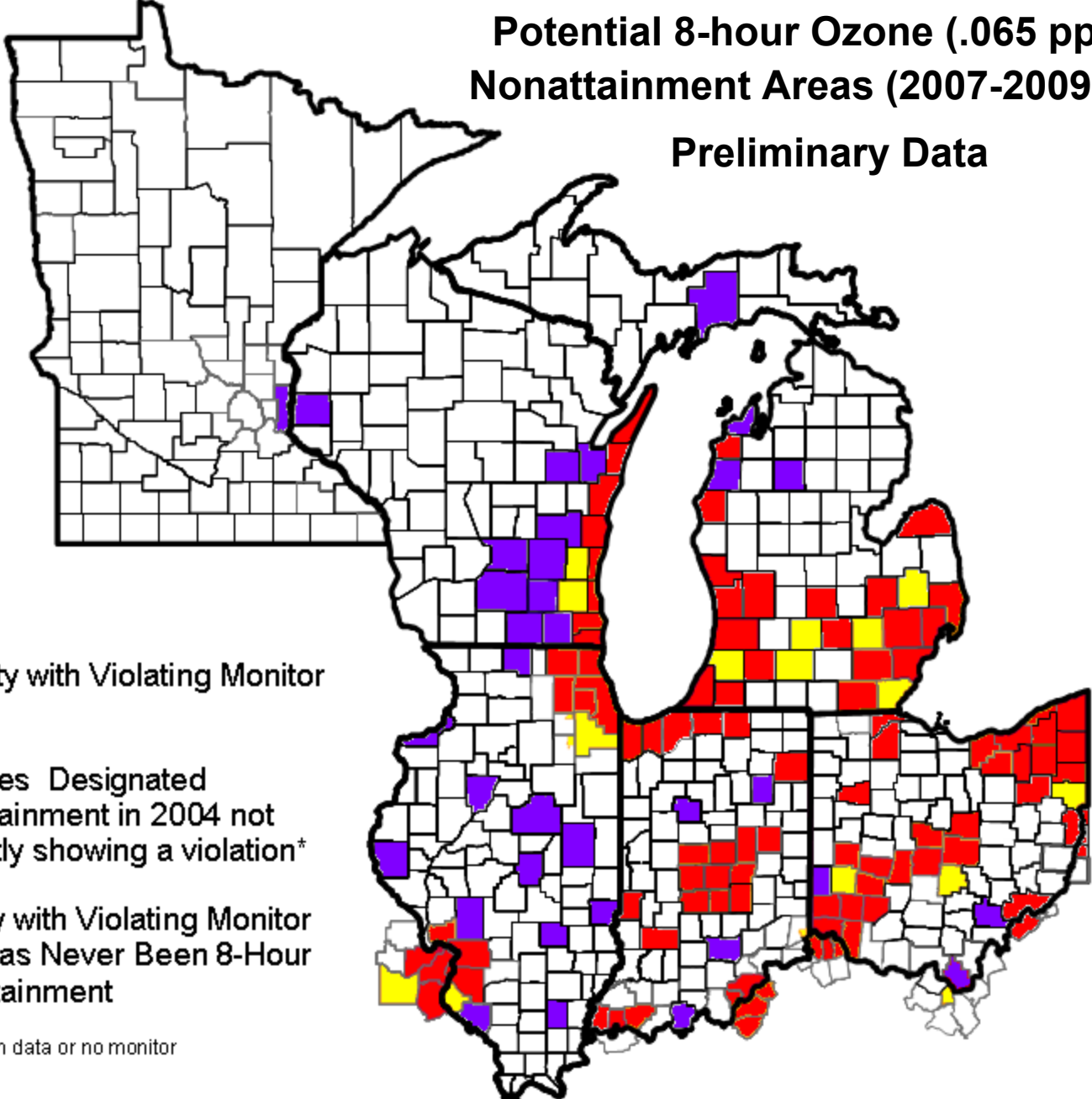



*Could be due to clean data or no monitor





Potential 8-hour Ozone (.065 ppm) Nonattainment Areas (2007-2009 data)




Preliminary Data

- 
- The map displays the Great Lakes region, including parts of Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, and Pennsylvania. County boundaries are outlined in black. Counties are color-coded based on their ozone nonattainment status: red for counties with violating monitors, yellow for counties designated as nonattainment in 2004 but not currently showing a violation, and purple for counties with violating monitors that have never been 8-hour nonattainment. A legend on the left side of the map provides the key for these colors.
-  County with Violating Monitor
 -  Counties Designated Nonattainment in 2004 not currently showing a violation*
 -  County with Violating Monitor That Has Never Been 8-Hour Nonattainment

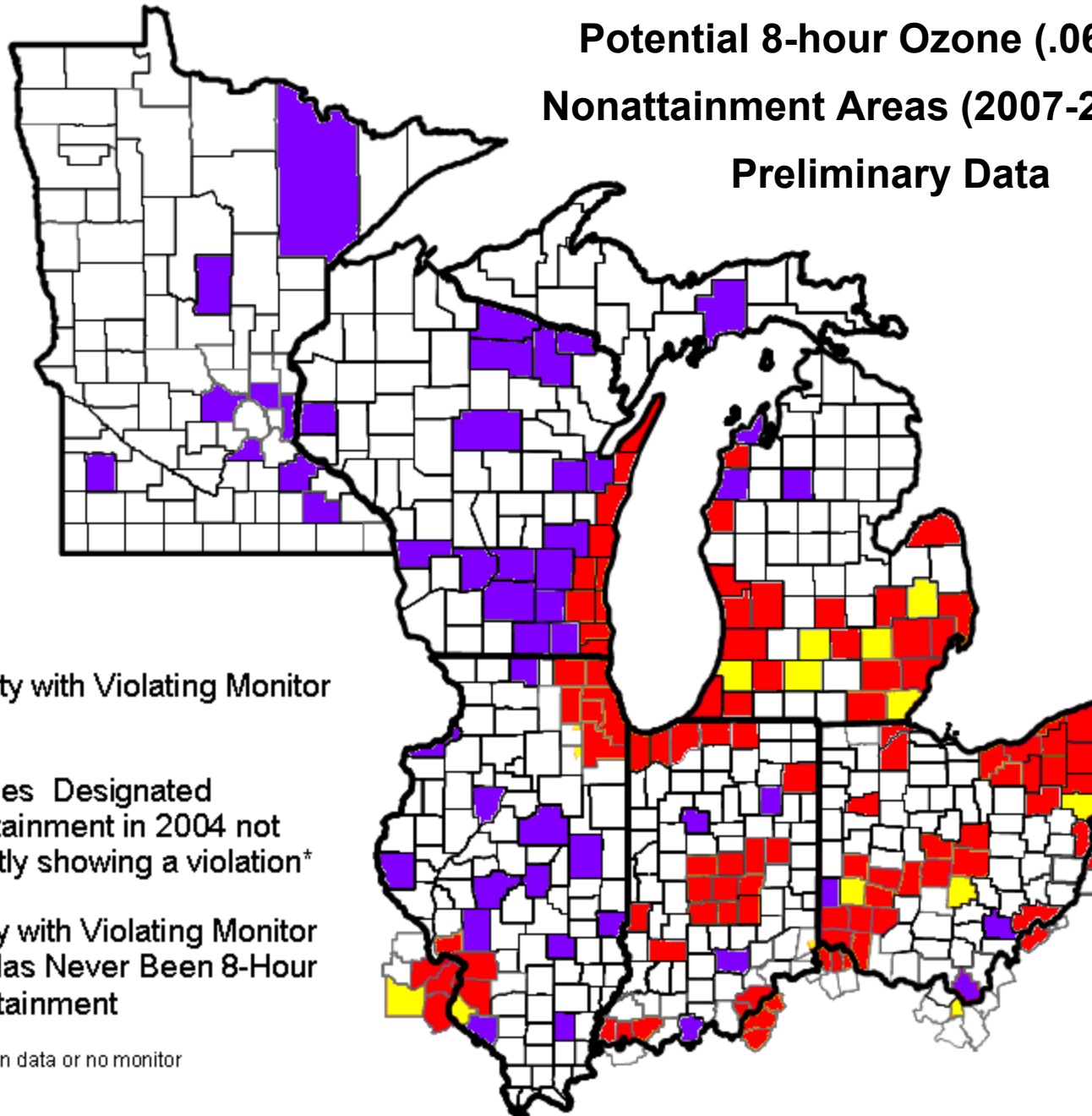
*Could be due to clean data or no monitor



**Potential 8-hour Ozone (.060 ppm)
Nonattainment Areas (2007-2009 data)
Preliminary Data**

-  County with Violating Monitor
-  Counties Designated Nonattainment in 2004 not currently showing a violation*
-  County with Violating Monitor That Has Never Been 8-Hour Nonattainment

*Could be due to clean data or no monitor

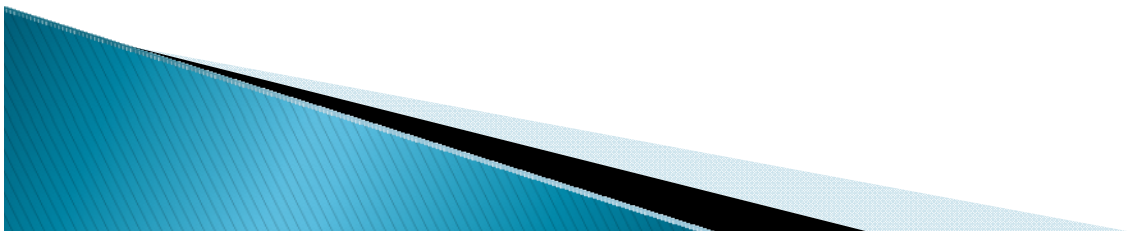




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1997 PM_{2.5} Standard

(15 $\mu\text{g}/\text{m}^3$ annual standard)



Wood-Burning Stoves



Power Plants



Heavy Duty Diesel Engines



Natural Sources



Where does particulate matter come from?

Cars and Trucks



Non-Road Vehicles



Forest Fires



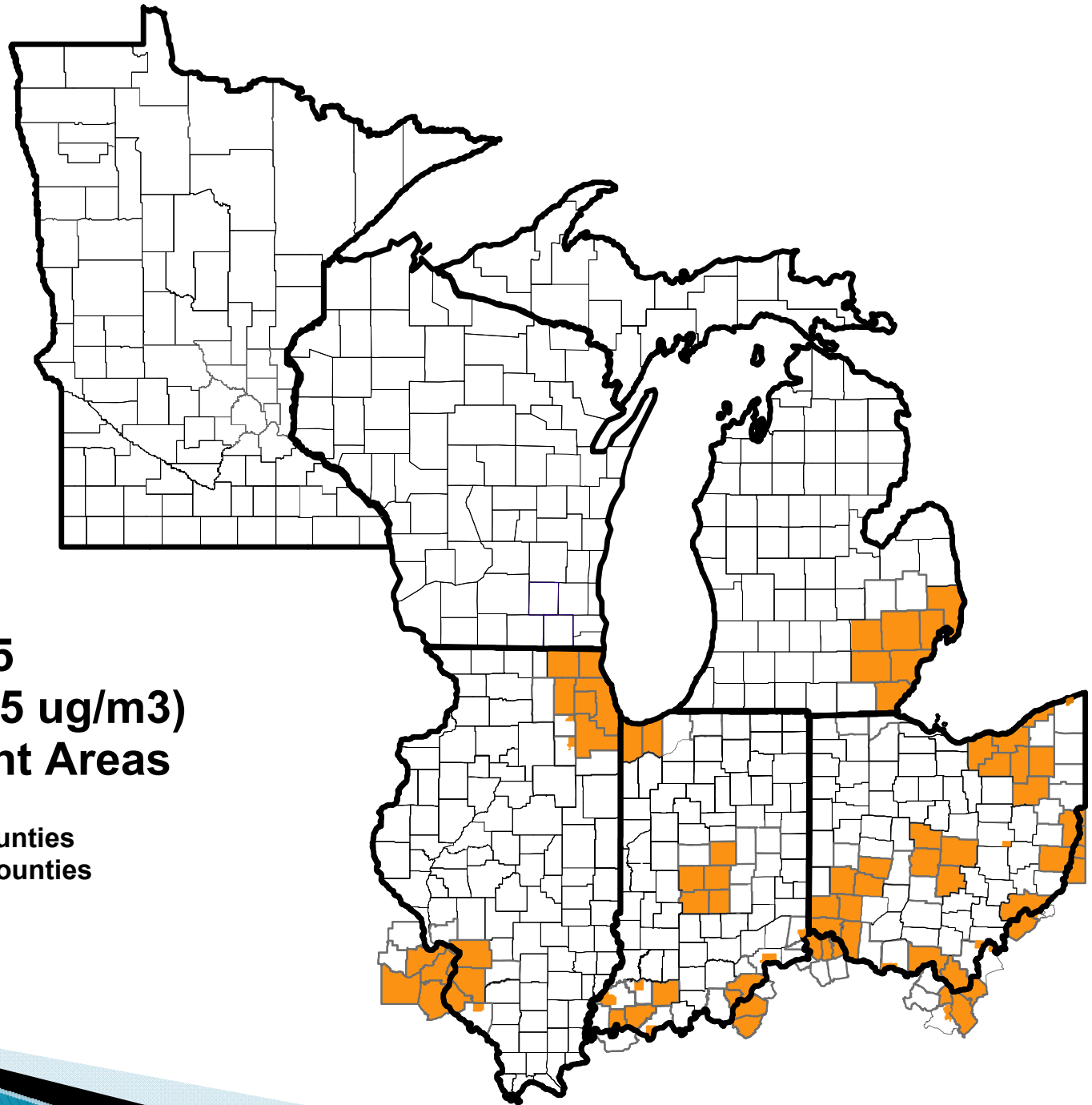
Industrial Sources





PM 2.5 (Annual std. 15 ug/m³) Nonattainment Areas

**51 Full Counties
12 Partial Counties**

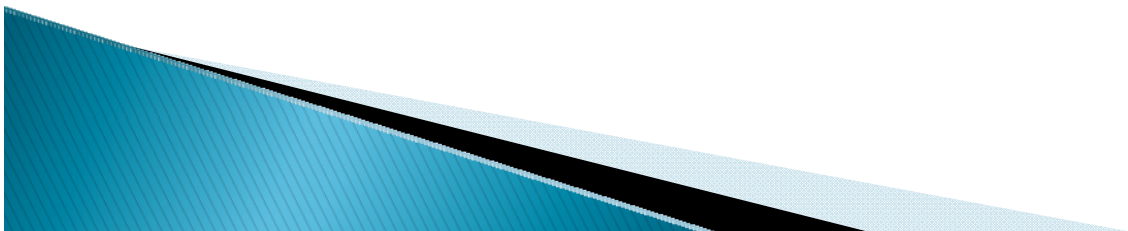




Air and Radiation Division

2006 PM_{2.5} Standard

(35 $\mu\text{g}/\text{m}^3$ daily standard)



A map of Wisconsin with county boundaries. A few counties in the eastern part of the state are highlighted in red. The text "Air" is partially visible on the right side. The date "5/19/10" is in the bottom left corner.

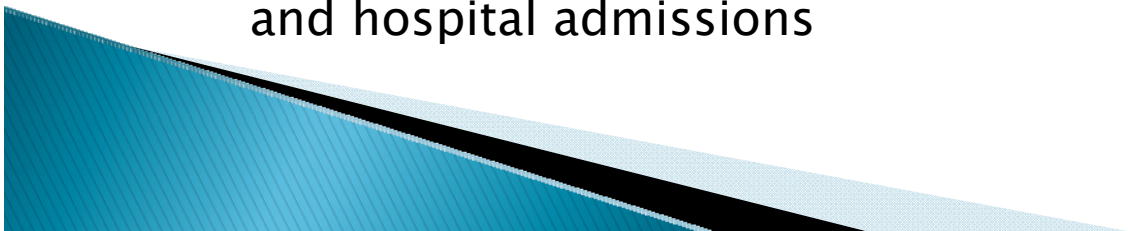
11

Designations Based on 2006-2008 Air Quality Data

5/19/10

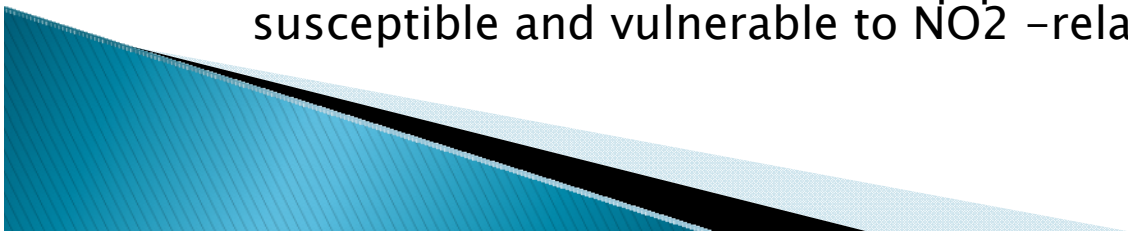
Final NO₂ Standards

- ▶ EPA determined that the existing primary annual average NO₂ standard of 53 ppb alone is not sufficient to protect public health with an adequate margin of safety
- ▶ EPA is setting a new 1-hour NO₂ that defines the maximum allowable concentration anywhere in an area – primarily near major roads
 - Set at a level of 100 ppb
 - Expressed as the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations
- ▶ EPA is retaining the current annual average NO₂ standard of 53 ppb
- ▶ This suite of primary standards will:
 - Limit short-term exposures to peak NO₂ concentrations, which often occur near major roads and could worsen asthma symptoms
 - Maintain community-wide NO₂ concentrations below levels associated with respiratory-related emergency department visits and hospital admissions



Updating the Monitoring Network

- ▶ The monitoring networks for NAAQS pollutants focus on monitoring in locations of maximum concentrations
- ▶ EPA is requiring changes to the monitoring network that will capture short-term NO₂ concentrations such as those that occur near roads, community-wide NO₂ concentrations, and low income or minority at-risk communities
 - **Near Road**
 - At least one monitor would be located near a major road in any urban area with a population greater than or equal to 500,000 people.
 - **Community-Wide**
 - A minimum of one monitor would be placed in any urban area with a population greater than or equal to 1 million people to assess community-wide concentrations
 - A second monitor would be required near a major road in areas with either:
 - population greater than or equal to 2.5 million people, or
 - one or more road segments with an annual average daily traffic count greater than or equal to 250,000 vehicles
 - **Susceptible and Vulnerable Communities**
 - Working with the states, EPA Regional Administrators will site at least 40 additional NO₂ monitors to help protect communities that are susceptible and vulnerable to NO₂ -related health effects

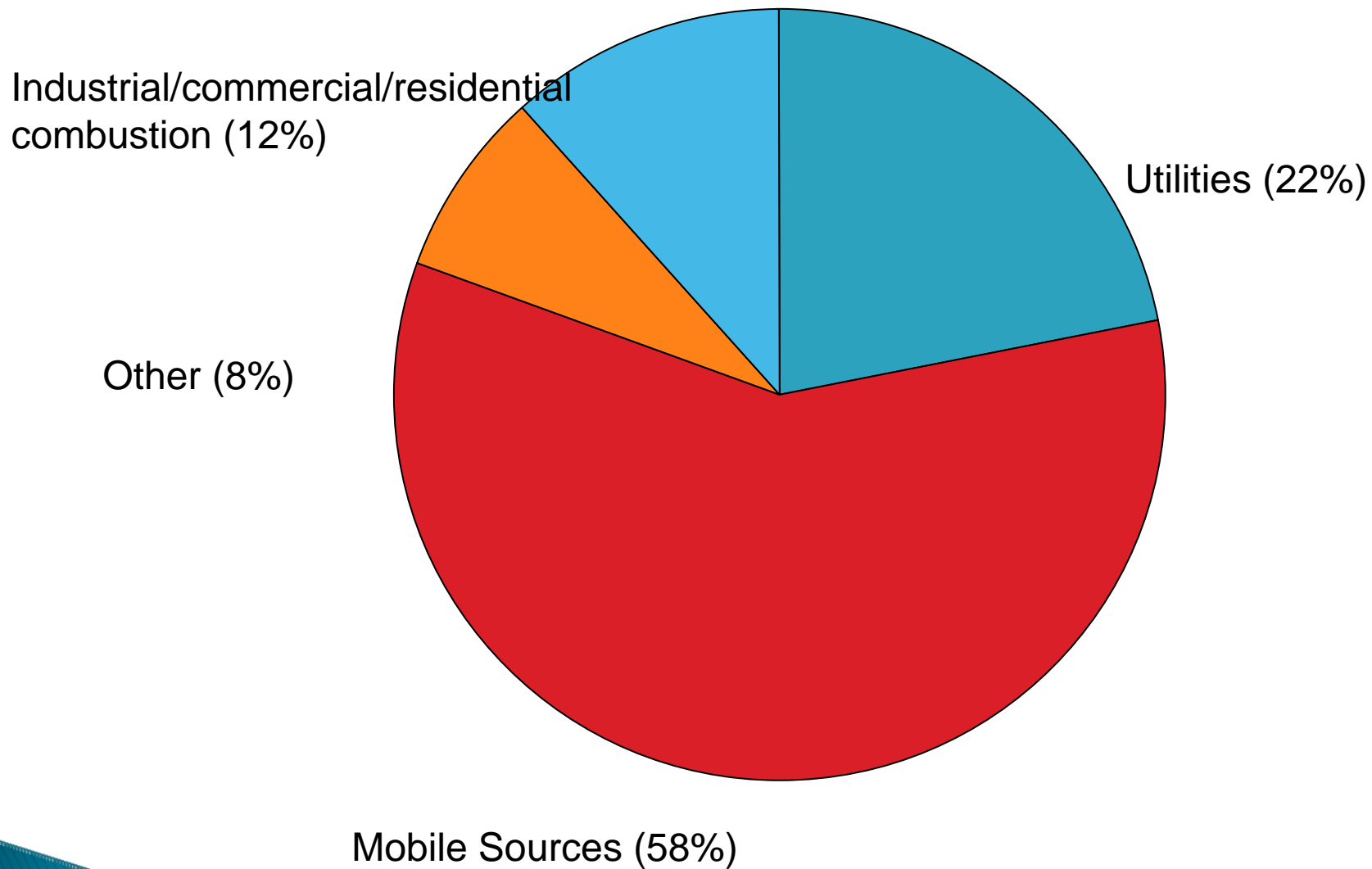


Updating the Monitoring Network

- ▶ EPA is requiring all new NO₂ monitors to begin operating no later than January 1, 2013
- ▶ EPA estimates the revised NO₂ monitoring requirements will lead to:
 - 126 NO₂ monitoring sites near major roads in 102 urban areas.
 - 53 additional monitoring sites to assess community-wide levels across wider urban areas.
 - 40 monitors in low income or minority at-risk communities.

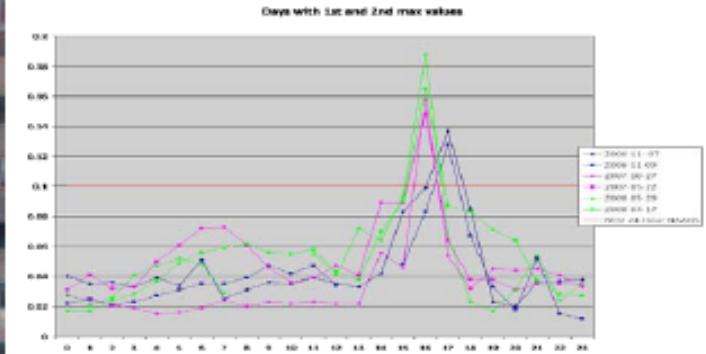


Sources of NO_x Pollution



Based on 2002 National Emissions Inventory data

Chicago NO₂ Problem



Near Roadway Studies

- ▶ Continued future emphasis on near roadway impacts:
 - EPA/University of Michigan
 - (1) investigating a diverse range of respiratory outcomes in children with asthma that are associated with near-road exposures to air pollutants, and
 - (2) characterizing the pollutants and exposures associated with these outcomes.
 - Future Plans?

