EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

FAQ

OZONE AND NONATTAINMENT

Frequently Asked Questions (FAQ)

Ozone is a regional pollutant that is formed in the atmosphere over time from emissions of Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx). VOCs are compounds that evaporate easily into air. VOC emissions come from things such as industrial use of solvents and degreasing agents, evaporation of gasoline, and consumer products such as paints and cleaning products. NOx is emitted from cars, trucks, power plants, and various industrial sources, usually when some type of fuel is burned. When VOC and NOx emissions are combined on warm, sunny, non-breezy days, harmful ozone may be formed.

In this document, you will find questions answered by topic, grouped together for your convenience.

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OZONE FORMATION

1. How is ozone formed?

Ozone is a regional pollutant that is formed in the atmosphere over time from emissions of Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx). VOCs are compounds that evaporate easily into air. VOC emissions come from things such as industrial use of solvents and degreasing agents, evaporation of gasoline, and consumer products such as paints and cleaning products. NOx is emitted from cars, trucks, power plants, and various industrial sources, usually when some type of fuel is burned. When VOC and NOx emissions are combined on warm, sunny, non-breezy days, harmful ozone may be formed.

2. Why is some ozone good for us, and some is harmful?

The layer of ozone in the upper atmosphere helps protect the earth from the sun's harmful ultraviolet rays and is the "good" ozone. Ground-level ozone, however, is unhealthy to breathe. It can narrow a person's airways, causing the lungs to work harder to provide oxygen to the body. Individuals most susceptible to the effects of ozone exposure include those with a pre-existing or chronic respiratory disease, children, and adults who actively exercise or work outdoors.

HEALTH CONCERNS

3. At what level is ozone unhealthy?

The United States Environmental Protection Agency (USEPA) set air quality standards based on the latest health studies. The standards are set to protect the public against adverse health effects. In 2015, the USEPA lowered the standard from 75 to 70 parts per billion (ppb).

4. What effects can be caused by high ground-level ozone?

Exposure to high concentrations of ozone can include the following health effects:

- eye irritation
- difficulty in breathing / shortness of breath
- aggravated / prolonged coughing and chest pain
- increased aggravation of asthma
- increased susceptibility to respiratory infection resulting in increased hospital admissions and emergency room visits
- Repeated exposures could result in chronic inflammation and irreversible structural changes in the lungs, which can lead to premature aging of the lungs and illness such as bronchitis and emphysema.
- Growing evidence suggests association with heart disease and premature death.

Exposure to high ozone concentrations can include the following environmental effects:

- Ozone also impacts vegetation by reducing agricultural crop and forest yield, causing leaf injury
- Diminishing resistance to pests and disease
- Reducing tree seedling survival

GEOGRAPHIC LOCATION

5. What is a regional pollutant?

A regional pollutant is one that may impact areas far away from the sources of emissions. The impacts of ozone are usually not found directly at sources of VOCs or NOx because it takes time for them to combine in the atmosphere. Ozone isn't directly emitted from sources, instead VOCs and NOx turn into ozone in the atmosphere. This causes higher measurements of ozone in areas downwind of emission sources and can lead to emissions from sources far away creating ozone in different areas than where pollutants were emitted, depending on the weather.

6. How does ozone move/transport from other areas?

Weather conditions play a part in how much ozone is produced and where it has high ground-level impacts. Ozone is usually produced on warm, sunny, non-breezy days. Ozone levels are also dependent on the wind to blow VOCs, NO_X, or already created ozone into an area. This phenomenon is known as "transport". In Michigan, transport of ozone is most visible on the Lake Michigan side of the state. Recent air quality studies have shown that ozone produced over Lake Michigan from VOC and NO_X emissions at upwind states is transported into the shoreline of West Michigan.

7. How can I find out about ozone levels near me?

The best way to find out about current ozone levels near you is to check out the Ozone Action! interactive map which shows ozone levels in near real time. Another helpful resource is AirNow. The site gives information on the daily Air Quality index, as well as information on pollutants in the air and ozone level ratings. You can also sign up to receive alerts telling you when ozone levels may be dangerous. You can easily sign up for Enviroflash Alerts and get information sent right to your phone or e-mail. You can download the USEPA AirNow app (**AirNow.gov**) to check the Air Quality index on the go.

MEASUREMENT

8. How are ozone levels measured?

Michigan has 27 state and tribal air monitors throughout the state measuring ozone. These monitors measure ozone 24-hours a day during the 8-month ozone season. This season runs from March through October, when ozone is most likely to form in Michigan due to high temperatures and humidity. For more information on EGLEs ozone air monitoring visit **www.deqmiair.org**.

NONATTAINMENT

9. What does nonattainment mean?

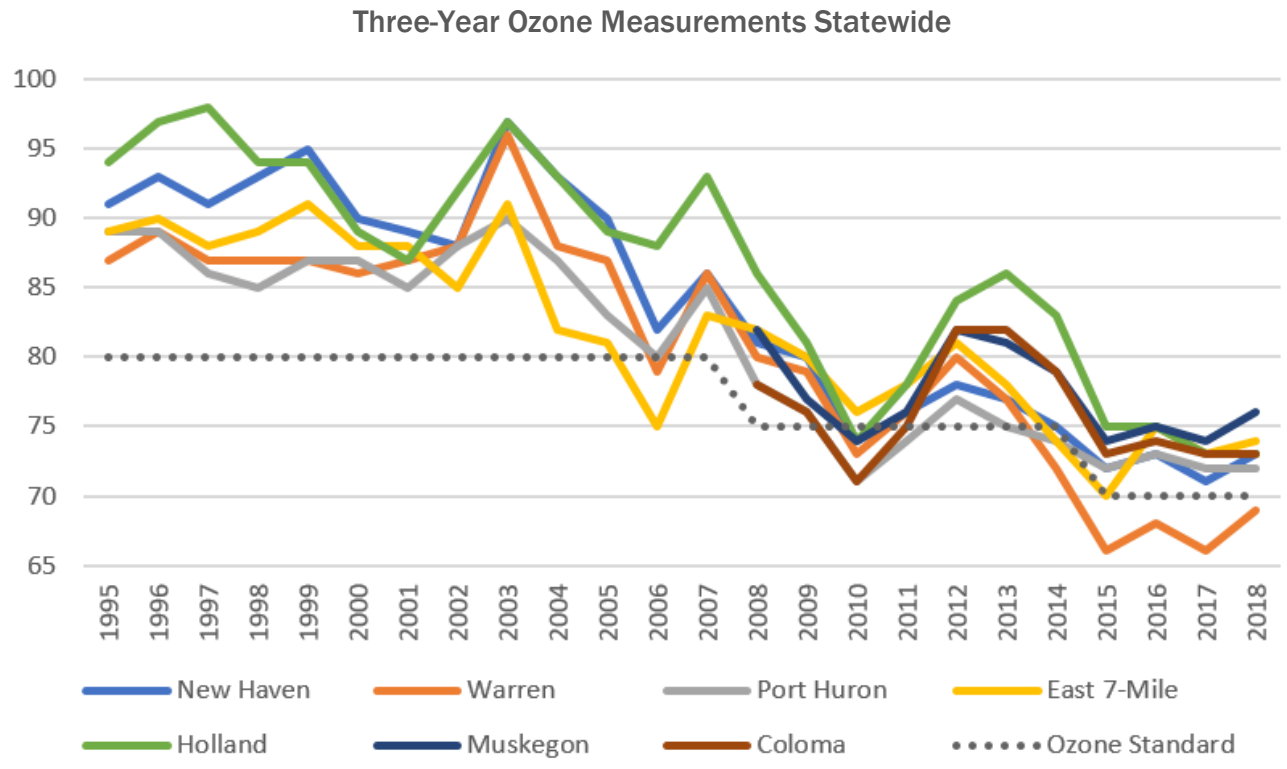
Nonattainment is a term applied to an area that has pollutant concentrations above federal air quality standards over a long period of time. An area may also be considered nonattainment if pollution from that area is contributing to poor air quality in another area. Areas that are meeting the air quality standards are considered attainment areas.

10. How are nonattainment areas determined?

The USEPA and EGLE work together to determine whether an area is in attainment or nonattainment. If an area had air quality measurements of high ozone for three or more years, EGLE and USEPA staff review further data to determine if the area should be considered nonattainment. Nonattainment is based on a review of air quality measurements, emissions information, computer air modeling results which provide insight to the dispersion of air pollution, and weather patterns.

11. Why are we nonattainment now when we weren't before?

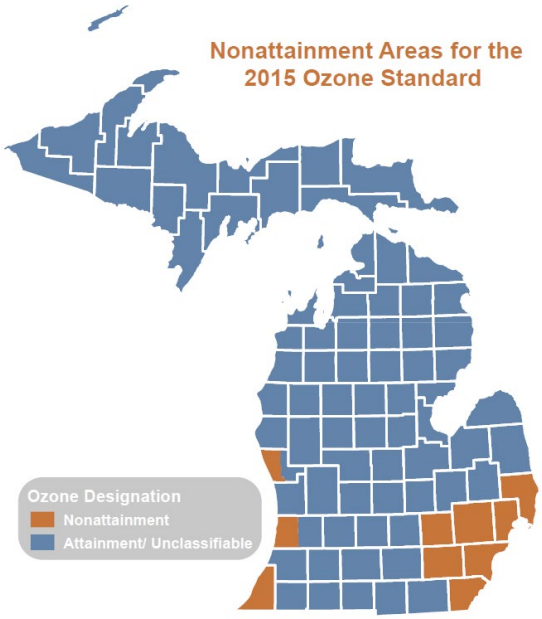
The amount of ozone pollution in the state has been falling since the creation of the federal Clean Air Act in 1970. For example, the table below shows the drop in ozone pollution measured at seven of the air monitors throughout Michigan's nonattainment areas. These are the seven monitors consistently measuring the highest ozone levels in the state. This table also shows how the USEPA ozone standard has been lowered over time. As the USAEPA gathers new and more complete information, they reassess what levels of ozone are protective human health. This assessment has resulted in the limit being reduced over time.



In 2008, the USEPA set the ozone standard at 75 ppb. That limit was based on the health data available. At that time the entire state of Michigan was measuring attainment. In 2015, the USEPA reviewed the ozone standard again and based on a review of updated scientific data and health studies which indicated health impacts are seen at ozone levels above 70 ppb, lowered the standard. Based on the 70 ppb ozone level, there are now four nonattainment areas in the state.

12. What areas are nonattainment in Michigan?

In Michigan, the following counties are nonattainment for the ozone standard: Berrien, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne. Portions of Allegan and Muskegon counties are also nonattainment.



13. Are there different degrees of nonattainment areas?

The USEPA classifies nonattainment areas based on the severity of the air quality problem. All of Michigan's nonattainment areas are classified as marginal, which is the lowest level of classification. This means the areas are over the federal standard, but not by very much, and have few mandatory requirements. However, the higher the measured concentration is over the standard or if an area cannot lower ozone pollution within a specified time frame, the state may be moved to a higher classification. Higher classifications result in more required actions.

Nonattainment Classifications	Potential Resulting Actions
Marginal	Company offsets required; EGLE rules to reduce VOCs and NOx voluntary
Moderate	More company offsets, more EGLE rules to reduce VOCs and NOx, and vehicle inspection and maintenance required
Serious	Even more company offsets and EGLE rules to reduce VOCs and NOx required; More intense vehicle inspection and maintenance required; Additional company permitting requirements required
Severe	All Serious classification requirements; Reformulated gasoline required
Extreme	All Severe classification requirements; Cleaner fuels for company boilers required

14. What is the state doing to improve air quality in nonattainment areas?

EGLE is required to update its plan for how it will reduce ozone pollution. The state must submit this updated plan, known as the 2015 ozone State Implementation Plan (SIP), to the USEPA for approval. The 2015 ozone SIP is due in 2021. Because ozone is produced by a combination of VOC and NOx emissions, EGLE is currently working to decide the best VOC and NOx reduction strategies to include in the plan. This may include reducing VOC content of consumer products, adopting more stringent regulations on industrial sources, and increasing public awareness of ways individuals can help reduce ozone formation (see **What can I do as a resident?** below). This can mean cutting down emissions from vehicles, industrial factories and more sources that produce ozone. The most common sources include gasoline stations, gasoline powered machinery, and car exhaust. In addition, any time a company requests through a permitting action to emit VOC or NOx pollution in a nonattainment area, they must find ways of reducing pollution in that same area (see **What is an offset?** below).

Michigan currently has measures in place to reduce ozone, including low-vapor gasoline, consumer product regulations, regulations for industrial painting and solvent-using operations, and DERA and Volkswagen grants to local communities to replace dirtier buses with cleaner ones. In addition, EGLE is currently working with stakeholders to develop VOC and NOx emission reduction regulations as part of the 2015 ozone SIP.

GETTING INVOLVED

15. What can I do as a resident?

Residents in nonattainment areas can play their part, especially on hot days, by limiting driving, fueling up vehicles and lawn mowers in the evening, not mowing the lawn or using other gasoline powered equipment on clean air action days, setting air conditioning thermostats to 1 or 2 degrees higher, switching to more energy efficient lighting, and turning off lights and air conditioners when not needed.

If you live in the West Michigan area, more information can be found at www.wmcac.org/take-action-1.

If you live in the Southeast Michigan area, more information can be found at www.semcog.org/keep-the-air-clean.

COMPANY ACTIONS

16. What do companies have to do differently in a nonattainment area?

The main difference for companies in attainment areas and nonattainment areas is the process they go through to request an increase of emissions. For large increases in emissions requiring permitting, companies in nonattainment areas must meet additional requirements, including the requirement to get offsets. This means that there will be emission reductions with the offsets, likely from a nearby area of the original pollutant source. The goal of the offsets is to move towards lower overall pollutant levels in an area.

17. What is an "*offset*"? Why can companies increase emissions in nonattainment areas?

Companies located in nonattainment areas may apply for permits to increase emissions, but they must be balanced by equal or greater decreases in emissions in the same nonattainment area, called an "offset." These offsets require companies to either reduce emissions from another part of their company or find another company with decreasing emissions to balance out their increase in emissions. The goal is to allow for continued economic development, while still working towards the goal of improved air quality.

Offsetting works to improve air quality because ozone is a regional pollutant. Reductions of VOCs or NOx even miles away can end up reducing ozone pollution in the nonattainment area since ozone can be transported from other locations.

18. How do nonattainment areas go back to being attainment areas?

Reduce air pollution! Michigan has until 2021 to meet the federal ozone standard. If Michigan successfully lowers ozone levels and attains the standard, the state can be redesignated as attainment. If ozone concentrations remain above 70 ppb, the state will continue to be nonattainment. If that occurs, then more stringent requirements will apply to reduce ozone pollution further (see 13. Are there different degrees of nonattainment areas? above).

MORE INFORMATION

EGLE Air Quality Web Site:

- Michigan.gov/AIR
- SIP & Attainment webpage
- Air Monitoring webpage
- Michigan.gov/OzoneAction

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