

ENVIRONMENTAL Fact Sheet



29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

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Smog and Ground-Level Ozone *Challenges for Protecting New Hampshire's Air Quality*

What is Smog?

“Smog” and “ground-level ozone” are terms used to describe the results of chemical reactions in the atmosphere caused by nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of strong sunlight. On hot sunny days, these compounds react with oxygen in the air to produce ozone (O₃), or smog, at ground level. Unlike ozone in the upper atmosphere that occurs naturally and is beneficial because of its protective qualities, ozone at the Earth's surface is a man-made air pollutant that can have harmful effects on both humans and the environment.

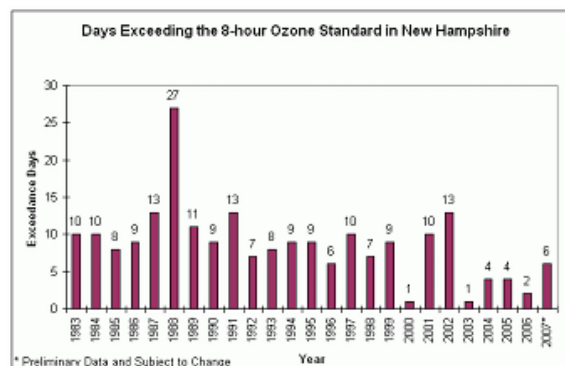
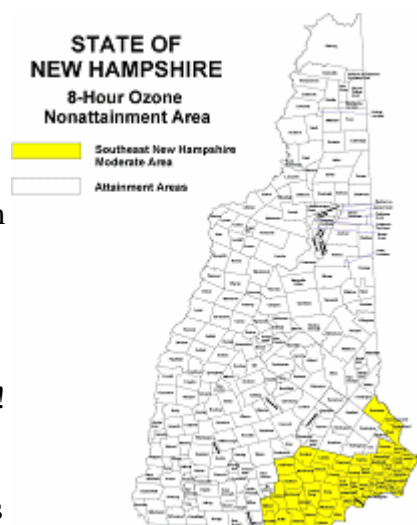
Where Does Ground-Level Ozone Come From?

Unlike other air pollutants, ground-level ozone is not emitted directly into the air but is produced when NO_x and VOCs from many sources combine. These ozone-producing pollutants come from local sources, such as cars, trucks, industrial boilers, power plants, paints, solvents, and other commercial and consumer products. About half of all manmade NO_x and VOC emissions in New Hampshire come from cars and trucks!

As the map here shows, in New Hampshire portions of Hillsborough, Merrimack, Rockingham, and Strafford counties are not in attainment with U.S. Environmental Protection Agency health standards for ground-level ozone. Since 1999, pollution reduction measures have resulted in increasingly smaller areas within New Hampshire that exceed the federal air quality standards for ozone.

In addition to the pollutants emitted from sources in New Hampshire, ozone and its precursors are transported into New Hampshire from sources up to several hundred miles away to our south and west. Ground-level ozone is a serious air pollution problem in the Northeast and mid-Atlantic states.

The chart below shows the number of days each year since 1983 when the ozone standard was exceeded anywhere within New Hampshire.



Health and Environmental Effects of Ozone

Ozone at ground-level poses health problems by irritating the nose, throat and lungs and causing chest pain, coughing and nausea. Long-term exposure may result in permanent damage to the lungs. Ozone aggravates respiratory conditions such as allergies, asthma and emphysema and can have pronounced effects, even on healthy individuals who work or play outdoors during hot, sunny summer months when levels of smog are usually at their highest. In addition to its effects on people, ozone is believed to harm forests and agricultural crops and may accelerate the deterioration of rubber tires, paints and dyes in fabrics.

The Challenge: Reducing Ground-Level Ozone

The federal Clean Air Act Amendments of 1990 require New Hampshire to take direct action to remedy unhealthy air quality. To date, New Hampshire has significantly reduced levels of NOx and VOCs and plans further emissions reductions from mobile sources. Much of New Hampshire's ozone reductions in the future will come from pollution controls being implemented in upwind regions, where much of the pollution originates before it is brought to the state by prevailing winds.

Dealing with the problem of ground-level ozone in New Hampshire will continue to be a significant issue for many years to come. Numerous programs have been proposed or implemented in an effort to control ground-level ozone and achieve the required reductions of ozone precursors. These programs include:

- Engine diagnostic testing of 1996 and newer automobiles, with maintenance required on vehicles that fail those emissions tests.
- Use of less-polluting reformulated gasoline.
- Adoption of federal emissions standards for new automobiles.
- Installation and use of vapor recovery systems at gas stations and gasoline loading terminals.
- Reduction of NOx and VOCs emissions from industrial sources.
- Reduction of VOCs emissions from solvents, portable fuel containers, and consumer products.
- Implementation of market-based emissions trading programs for permitted facilities.

What Can You Do?

Everyone can help meet the challenges of achieving and maintaining cleaner air for New Hampshire! Here are some things you can do to reduce emissions of smog-producing chemicals during your daily activities:

- Keep your automobile well tuned and maintained.
- Buy new cars with high fuel economy and low emission ratings whenever possible.
- Use gasoline stations that have special vapor recovery nozzles.
- Use spill-proof fuel containers and be careful not to spill gasoline when filling up your car, gas-powered lawn or garden equipment, boat or recreational vehicle.
- Make sure your tires are properly inflated and your wheels aligned.
- Carpool and/or reduce driving.
- Participate in your local utility's energy conservation programs.
- Use water-based or solvent-free paints whenever possible, and buy products that say "low VOC."
- Seal containers of household cleaners, solvents, and workshop or garden chemicals to prevent VOCs from evaporating into the air.

For more information, contact the N.H. Department of Environmental Services Air Resources Division at (603) 271-1370 or visit www.airquality.nh.gov