



Site Navigation

- Cleanups, Remediation
- Emergency Response
- Licensing
- Permits, Registrations
- Preventing Pollution
- Recycling
- Reporting
- Rules

- Data
- Forms
- Maps
- Public Notices
- Publications
- Records
- Webcasts

- About Us
- Contact Us

How 's our Customer Service? Please fill out our [Customer Satisfaction Survey](#)

You are here: [Home](#) → [Publications](#) → [Periodicals](#) → [Natural Outlook](#) → [Spring 2004](#) → [Heading the Effects of Ozone](#)

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# Heading the Effects of Ozone

**Daily ozone forecasts should be taken seriously in view of health concerns associated with the pollutant.**

State and local governments spend lots of time tracking conditions that can lead to ozone formation. The TCEQ issues daily "alerts" to several metropolitan areas when levels of ozone begin to climb.

But just what can ozone exposure do? The question is important, considering the number of adults who work or exercise outside and the amount of time children spend playing or engaged in outdoor activities. But because ozone is clear and odorless, the potential for health consequences often goes ignored.

Ozone is a pollutant that results from reactions of volatile organic compounds, nitrogen oxides, and sunlight. Most health research has been aimed at "short-term" exposure--the amount of ozone a person encounters in a given day.

"The respiratory system is the primary concern," says Nathan Pechacek, a toxicologist at the TCEQ. "But you really have to look at the range of potential consequences. In a healthy person, that may be as mild as a cough, or in an asthmatic, it could be wheezing."

Much depends on an individual's age, health, and activity level, he said. "The most sensitive groups are children, asthmatics, active adults, and individuals who are unusually sensitive to ozone."

Pechacek described the following range of possible health effects:

**Irritation or inflammation of the respiratory tract.** Symptoms of irritation include cough and sore throat, discomfort with deep breathing, and fatigue--any one of which can appear and leave quickly. With inflammation, ozone reacts and damages the cells lining the airways, an effect that is often greater 24 hours after exposure. Persistent exposure may cause permanent cell changes.

**Airways affected.** Following ozone exposure, the respiratory airways become predisposed to narrowing during inhalation of stimuli such as allergens or pollutants. Breathing becomes more difficult. This condition usually goes away within 24 hours, but may persist longer in certain individuals.

**Reduced lung function.** The narrowing of airways due to inflammation can make it difficult to take deep breaths or to fully exhale. Medical tests will show whether lung function has decreased.

**Aggravation of respiratory disease.** Diseases such as asthma, emphysema, and chronic bronchitis intensify, resulting in more visits to doctors and hospitals, absences from school or work, and an increased need for medication use.

**Impaired immune response.** Ozone exposure can stress the immune system and affect the body's ability to fight off viral or bacterial infections.

Pechacek says anyone who is sensitive to ozone or planning on being active outdoors should take note of daily ozone predictions and tailor their schedules accordingly.

"That might be as simple as jogging in the morning rather than the afternoon or moving a child's activity indoors. The best advice is to check the forecast and, if needed, avoid long periods outdoors when ozone is high," he said.

[Back to the top](#)

**Get Wise to Ozone**  
During ozone season, the TCEQ issues daily ozone forecasts for nine metropolitan areas. See [www.tnrcc.state.tx.us/cgi-bin/monops/ozone\\_actionday](http://www.tnrcc.state.tx.us/cgi-bin/monops/ozone_actionday). Also, the agency will e-mail alerts when high ozone is measured. To be a recipient, visit [www.tnrcc.state.tx.us/air/monops/o3emailnotify.html](http://www.tnrcc.state.tx.us/air/monops/o3emailnotify.html).

| Metropolitan Area          | Ozone Season           |
|----------------------------|------------------------|
| Austin                     | April 1 to October 31  |
| Beaumont-Port Arthur       | May 1 to October 31    |
| Corpus Christi             | April 1 to October 31  |
| Dallas-Fort Worth          | May 1 to October 31    |
| El Paso-Juárez             | May 1 to October 31    |
| Houston-Galveston-Brazoria | March 1 to November 30 |
| San Antonio                | April 1 to October 31  |
| Tyler-Longview-Marshall    | May 3 to September 30  |
| Victoria                   | May 1 to September 30  |

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