

## Nitrogen oxides (NO<sub>x</sub>)

Human Health Risk	M
Ecological Risk	
Socioeconomic Risk	L

Nitrogen oxides (NO<sub>x</sub>) are by-products of combustion, with nitrogen dioxide (NO<sub>2</sub>) being the most prevalent. Major sources of NO<sub>2</sub> in outdoor air are utility boilers and vehicles. Indoors, gas stoves and kerosene heaters also contribute to NO<sub>2</sub> exposures. Health effects are primarily to the respiratory system, although there are also immune system and cardiovascular impacts associated with exposure. Nitrogen dioxide is also a precursor to ozone as well as a constituent of acid precipitation; the effects of those are described separately.

### What's at risk?

Virtually the entire population is exposed to NO<sub>x</sub> and residents of urban areas are exposed to somewhat higher levels. As with other air pollutants, NO<sub>x</sub> can accumulate to higher concentrations indoors and pose greater risk. At particular risk are asthmatics and children.

### What are the human health impacts in New Jersey?

The concentration of NO<sub>2</sub> in New Jersey is below federal regulatory standards, but there is some evidence that the concentrations that do exist in New Jersey can increase the susceptibility of children to respiratory disease. There is some evidence of increased numbers of asthma episodes among the approximately 54,000 asthmatics that live in the three New Jersey counties with highest ambient NO<sub>2</sub> levels. For both children and asthmatics, indoor exposures increase the risk.

### What are the socioeconomic impacts in New Jersey?

Any impacts are expected to concern medical costs, but even these are uncertain and likely to be low.

### What's being done? .

New Jersey is required to reduce NO<sub>x</sub> emissions to comply with federal regulations. These reductions have been effective in the past for industrial sources and to a lesser degree with mobile sources. Increasing use of automobiles makes it more difficult to keep emissions from increasing.