

OVERVIEW: POLLUTION EXPOSURE STANDARDS GUIDE

Carbon Monoxide (CO)

Air Quality Standard - 15-minute exposure	Pollutant ceiling limit or “hard cap”
World Health Organization	100 ppm (ceiling limit)
Air Quality Standard - 1-hr exposure	Pollutant level
World Health Organization	35 ppm
US National Standard (EPA) - Outdoor Air	35 ppm
Canadian National Standard - Outdoor Air	31 ppm
California Outdoor Air Quality Standard	20 ppm
Air Quality Standard - 8-hr exposure	Pollutant level
World Health Organization	10 ppm
US National Standard (EPA) - Outdoor Air	9 ppm
Illinois Dept of Public Health - Indoor guideline	9 ppm
Canadian National Standard - Outdoor Air	13 ppm
California Air Quality Standard - Outdoor Air	9 ppm
Air Quality Standard - 24-hr exposure	Pollutant level
World Health Organization	4 ppm

Carbon Monoxide Residential Alarm Standards (UL 2034) Set by U.S. Consumer Product Safety Commission	
CO Level in parts per million (ppm)	Time to Alarm (per UL 2034)
30 ppm	Alarm not required for up to 30 days .
70 ppm	Must alarm within 60–240 minutes .
150 ppm	Must alarm within 10–50 minutes .
400 ppm	Must alarm within 4–15 minutes .

Note: CPSC recommends installing CO alarms that meet the [residential UL 2034 standard](#) on [every level of the home and near sleeping areas](#). These requirements ensure alarms activate before CO levels become life-threatening, while preventing nuisance alarms at very low levels.

Nitrogen Dioxide (NO₂)

Short-term exposure can worsen asthma and other lung conditions. Long-term exposure is linked to chronic bronchitis, increased respiratory infections, greater likelihood of ER visits and hospitalization, and [scientific evidence suggests](#) that exposure to NO₂ could likely cause asthma in children. Since there are no federal indoor air quality standards for residential homes in the U.S., below other standards are referenced for both outdoor and indoor air quality standards.

Outdoor Standards for NO ₂	1-hr average in parts per billion (ppb)
US National Standard (EPA)	100 ppb
Canadian National Standard	60 ppb
California State Standard	180 ppb
Indoor Standard for NO ₂	1-hr average in parts per billion (ppb)
Canada	90 ppb
World Health Organization	106 ppb
Indoor Guidelines for NO ₂	24 hours in parts per billion (ppb)
Illinois Department of Public Health	50 ppb

Benzene C₆H₆

Benzene is a chemical found in methane gas and released into indoor air when gas appliances are used. Research shows stoves [can leak benzene](#), even when turned off and that cooking with gas can raise indoor benzene levels above those caused by secondhand tobacco smoke.

Health impacts:

- Benzene is a known carcinogen.
- Long-term exposure is linked to leukemia, blood disorders and immune system damage.
- Children and pregnant people are especially vulnerable.

Guidance:

The World Health Organization (WHO) and other health experts agree: **there is no safe level of benzene exposure**. Even small amounts can pose some risk, so the goal is to minimize exposure as much as possible.

Standard/ Guideline	Safety level
World Health Organization (WHO)	No safe level of exposure to benzene