



What is carbon monoxide?

- It is an invisible, odorless, colorless gas, that is a byproduct of incomplete combustion of fuels such as gasoline, wood, charcoal, coal, natural gas, propane, oil, kerosene and methane



Why is carbon monoxide harmful?

- It displaces oxygen in the blood and deprives the heart, brain, and other vital organs of oxygen
 - > The molecules attach to your red blood cells more easily than oxygen molecules, depriving oxygen from getting into the body. This may damage tissues and result in death
- Especially at risk are:
 - > Unborn babies
 - > Infants
 - > Older adults
 - > People who smoke
 - > People with chronic heart disease, anemia, or respiratory problems

Where does carbon monoxide come from?

- Heaters, fireplaces, furnaces, appliances and cooking sources using coal, wood, petroleum products, and other fuels
- Products and equipment powered by an internal combustion engine, such as portable generators, cars, lawn mowers, and power washers
- Car exhaust in an attached garage may leak carbon monoxide into the house even with the main garage door open, putting you at risk for carbon monoxide poisoning
- Operating equipment inside an attached garage increases the risk of introducing of carbon monoxide into a living space

Why should my home have carbon monoxide alarms?

- According to the Journal of the American Medical Association, approximately 2,100 people die from carbon monoxide poisoning every year in the United States
- There are more than 10,000 injuries annually from carbon monoxide

What are symptoms of carbon monoxide poisoning?

- Initial symptoms are similar to the flu, but without the fever:
 - > Headache
 - > Fatigue
 - > Shortness of breath
 - > Nausea
 - > Dizziness
 - > Skin may turn bright red
- Severe symptoms include:
 - > Mental confusion
 - > Vomiting
 - > Loss of muscular coordination
 - > Loss of consciousness
 - > Death

What is a carbon monoxide alarm?

- Detects carbon monoxide
- Produces a distinctive audible alert when carbon monoxide is detected
- Complies with ANSI/UL 2034 or 2075 or other nationally recognized testing laboratory
- May be a separate stand alone unit or part of detection and alarm system

What types of carbon monoxide alarms are available?

- Carbon monoxide only alarms: Activated by carbon monoxide
 - > May be battery-operated, plug-in (with a battery back-up), or hard-wired (with a battery back-up)
- Combination smoke/carbon monoxide alarms: Activated by smoke or carbon monoxide
 - > Combination smoke/carbon monoxide alarms must comply with ANSI/UL 217 and ANSI/UL 2034
 - > Combination smoke/carbon monoxide detectors must comply with ANSI/UL 268 and ANSI/UL 2075
- Ionization smoke/carbon monoxide alarms: Activated by smoke or carbon monoxide
These alarms are labeled on either the front or back of the alarm with:
 - > 'Smoke and carbon monoxide alarm'
 - > A lower case letter 'i' for ionization and the word 'ionization'
 - > The phrase 'contains radioactive material'**NOTE: These alarms do not require a 10-year battery**
- Photoelectric smoke/carbon monoxide alarm: Activated by smoke or carbon monoxide
These alarms are labeled on either the front or back of the alarm with:
 - > 'Smoke and carbon monoxide alarm'
 - > The capital letter 'P' for photoelectric and the word 'photoelectric'

- Photoelectric smoke/carbon monoxide with voice alarm: Activated by smoke or carbon monoxide. An audible voice tone speaks the type and location of danger in your home, when programmed. These alarms are labeled on either the front or back of the alarm with:
 - > A capital letter 'P' and the word 'photoelectric'
 - > 'Smoke and carbon monoxide alarm'
- Explosive gas & carbon monoxide alarm: Activated by carbon monoxide, propane or natural/methane gas. These alarms are labeled on either the front or back of the alarm with:
 - > 'Explosive gas and carbon monoxide alarm' on the front of the alarm.

Note: *For information about ionization or photoelectric smoke alarms, please visit the [Frequently Asked Smoke Alarm Questions](http://www.oregon.gov/OSP/SFM/docs/Comm_Ed/Smoke_Alarm_Info/FAQ_SmokeAlarms.pdf) Located at: http://www.oregon.gov/OSP/SFM/docs/Comm_Ed/Smoke_Alarm_Info/FAQ_SmokeAlarms.pdf*

Who does what, when?

- Oregon law requires carbon monoxide alarms to be installed following specific House Bill 3450 implementation dates:
 - > **JULY 1, 2010** – Office of State Fire Marshal (OSFM) Administrative Rules become effective
 - > **JULY 1, 2010** – For all new rental agreements, landlords must provide properly functioning carbon monoxide alarms for rental dwelling units with, or within a structure containing, a carbon monoxide source
 - > **APRIL 1, 2011** – Landlords must provide properly functioning carbon monoxide alarms for all rental dwelling units with or within a structure containing a carbon monoxide source
 - > **APRIL 1, 2011** – Home sellers of one-and two family dwellings, manufactured dwellings, or multifamily housing units containing a carbon monoxide source must have one or more properly functioning carbon monoxide alarms before conveying fee title or transferring possession of a dwelling.
 - > **APRIL 1, 2011** – Oregon Building Codes Division (BCD) adopts rules such that carbon monoxide alarms are required for new residential structures submitted for plan review as of April 1, 2011. Also effective on this date, carbon monoxide alarms are required in residential structures that undergo reconstruction, alteration or repair for which a building permit is required. Affected “residential structures” are those identified in section 310 of the Oregon Structural Specialty Code (OSSC) as a residential Group R occupancy. Examples of these uses may be characterized as; hotels, motels, apartments, dormitories, fraternities, sororities, one- and two-family dwellings, townhouses and residential care/assisted living facilities. In addition, SR-3 and SR-4 occupancies as defined in OSSC Appendix SR are included as they are principally built to 'residential' standards.

The carbon monoxide alarm requirements for new construction, reconstruction, alteration and repair are applicable regardless of the presence of a carbon monoxide source

Please see the following link to view OSSC Section 310:
http://www.cbs.state.or.us/external/bcd/notices/Adopted_Rules/2011/021711_CarbonMonoxide_pr.pdf

Please see the following links for information on the respective code changes related to carbon monoxide alarm/detectors and code book insert pages:

Oregon Residential Specialty Code:
http://www.bcd.oregon.gov/programs/residential/Carbon_Monoxide_Alarms_Section_R326_eff_040111.pdf

Oregon Structural Specialty Code:
http://www.cbs.state.or.us/external/bcd/notices/Adopted_Rules/2011/021711_CarbonMonoxide_pr.pdf

Appendix N (Oregon Low Rise Code):
http://www.cbs.state.or.us/external/bcd/programs/structural/2010ossc_amendments/2010_OSSC_CarbonMonoxide_AN103.6_eff040111.pdf

May I modify my hard-wired smoke alarm system for a combination carbon monoxide and smoke alarm?

- You may replace a hardwired smoke alarm for a hardwired battery back-up smoke/carbon monoxide combination alarm
- Switching from one manufacturer's unit to another requires a power adapter plug.
- Manufacturers advise adapter plugs may be changed using wire nuts and may require a qualified electrician

Where do I install carbon monoxide alarms?

- On each level of your home with sleeping areas
- In each bedroom or within 15 feet outside of each sleeping area
- Install alarms according to the manufacturer's instructions

Do current rules require carbon monoxide alarm in all bedrooms?

- No, but it is still a recommended best practice to have them in the bedroom and within 15 feet outside the bedroom
- The law requires a carbon monoxide alarm on each level of your home with sleeping areas or within 15 feet of each sleeping area; however, ductwork from sources often goes directly to bedrooms, bypassing hallways outside of sleeping areas

I understand the rules provide minimum requirements. What other recommendations are there for placement of carbon monoxide alarms?

- Securely fasten plug-in devices to the wall.
- Install a CO alarm in every room containing a carbon monoxide source, except a garage intended for parking vehicles.

- Install a carbon monoxide alarm system in multi-family dwellings in any enclosed common area within the building if the common area is connected to:
 - > A carbon monoxide source located in or attached to the structure and a dwelling unit

Where should carbon monoxide alarms NOT be installed?

- Garages and kitchens
- Extremely dusty, dirty, humid, or greasy areas
- In direct sunlight or areas prone to temperature extremes. These include unconditioned crawl spaces such as ventilated attics, basement, and crawl spaces, unfinished attics, insulated or poorly insulated ceilings, and porches
- In electrical outlets covered by curtains or other obstructions
- In turbulent air such as near ceiling fans, heat vents, air conditioners, fresh air returns, or open windows. (Blowing air may prevent carbon monoxide from reaching the sensors)
- Directly above or beside fuel-burning appliances, as appliances may emit a trace amount of carbon monoxide only upon start-up
- Within 15 feet of heating and cooking appliances, or in or near very humid areas such as bathrooms

How often do I replace my carbon monoxide alarm?

- Most carbon monoxide alarms have a five year limited warranty
- Manufacturers recommend replacing alarms five years from date of production

How do I keep my carbon monoxide alarm working?

- Test alarms monthly
- Use canned air or vacuum alarms regularly to remove dust and cobwebs
- Never disconnect or remove alarm batteries for other use. For battery operated, replace the alarms' battery(s) at least once per year
- Carbon monoxide alarms and carbon monoxide/smoke combination alarms are not required to have a 10-year battery

What should I do when the carbon monoxide alarm sounds?

- Don't ignore the alarm! It is intended to warn household members before they experience symptoms
- Silence the alarm
- Move everyone outside to fresh air and call for help from a fresh air location:
 - > If anyone is experiencing symptoms of carbon monoxide poisoning, call 9-1-1
 - > If no one has symptoms, ventilate the building and contact a qualified service technician
- Have all home equipment powered by fuels such as gas, wood, coal, natural gas, propane, oil, or methane inspected by a qualified technician.
- Have fuel-burning heating equipment and chimneys inspected by a professional every year before cold weather sets in

Where do I find more sources of information?

For Landlords:

Metro Multifamily Housing Association
921 SW Washington Suite 772
Portland, OR 97205
503-226-4533

For Homebuilders:

Oregon Home Builders Association
375 Taylor Street NE Salem, OR 97301
503-378-9066

Building Codes Division
P.O. Box 14470
Salem, OR 97309-0404
503-378-4133

For Realtors:

Oregon Association of Realtors 2110
Mission Street SE, Suite 310
Salem, OR 97308
503-362-3645

Building Codes Division
P.O. Box 14470
Salem, OR 97309-0404
503-378-4133

For Adult Foster Home Program:

Connie Rush - DHS
Seniors and People with Disabilities
500 Summer St. NE E12
Salem, OR 97301-1073
800-232-3020

For more information on fire prevention, contact: Colleen Olson
Office of State Fire Marshal
phone 503-934-8228, email: colleen.olson@state.or.us