

# Protecting Against the Silent Killer

## Legislating Carbon Monoxide Alarms



# Welcome

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# Objectives

- Understand carbon monoxide (CO), its effects and the importance of making sure residents have working CO alarms
- Learn about poisoning prevention measures and the types of CO alarms available
- Gain a working knowledge of the status of CO alarm requirements across the country



# Statistics and Facts



# What is CO?

- CO is a by-product of incomplete combustion produced when fossil fuels (e.g., oil, gas or coal) burn
- CO spreads evenly in the air, whereas smoke rises
- CO is especially dangerous because **you cannot see, smell or taste** it. The only way to detect CO is with an alarm.



\*Source: CDC CO FAQs

# How can CO poisoning occur?

- CO incidents occur throughout the year but are particularly common during:
  - Cold-weather months
    - 50% of CO incidents occur between November and February
  - Natural disasters resulting in power outages
    - Earthquakes
    - Major storms
    - Floods
    - Mudslides
- Whenever people turn to alternative sources of heat and power, the risk of CO poisoning increases
- CO alarms provide early warning in the event of an emergency.

## Sources of Carbon Monoxide

CO can be produced by any fuel-burning device, such as a furnace, boiler, stove and cars.



Furnace



Dryer Vent



Chimney

# U.S. CO Statistics

- Fire departments responded to an average of **nine CO incidents every hour** in 2010
- This corresponds to an estimated **80,100 CO incidents**
- According to the NFPA, this is a **96% increase** from reported incidents in 2003, likely due to an increase in CO alarm installation and/or legislation
- There has also been an **increase in CO deaths from 1999 to 2009**, likely caused by an increase in deaths involving generators
- A survey found that **40%** of Americans do not have even one working CO alarm
- **Most homes** do not have the recommended number of CO alarms

\*Sources: NFPA "Non-Fire Carbon Monoxide Incidents" Report; CPSC "Non-Fire Carbon Monoxide Deaths Associated with the Use of Consumer Products – 2012 Annual Estimates"

Every year in the United States, there are

# 80,000

carbon monoxide incidents.



Carbon monoxide is the **#1** cause of **accidental poisoning** in the U.S.



# At Risk

- All people and pets are at risk for CO poisoning
- Anyone living in a home with fuel-burning appliances, a fireplace or an attached garage
- Children and older adults are more susceptible
- Unborn babies, infants and people with conditions affecting the heart, lungs and circulatory system

The silent killer cannot be seen, heard or smelled.



Having CO alarms in your home is an important way to **protect** your loved ones.





# Common Confusion

- CO (carbon monoxide) is poisonous and potentially fatal
- CO<sub>2</sub> (carbon dioxide) is what we exhale and is not harmful

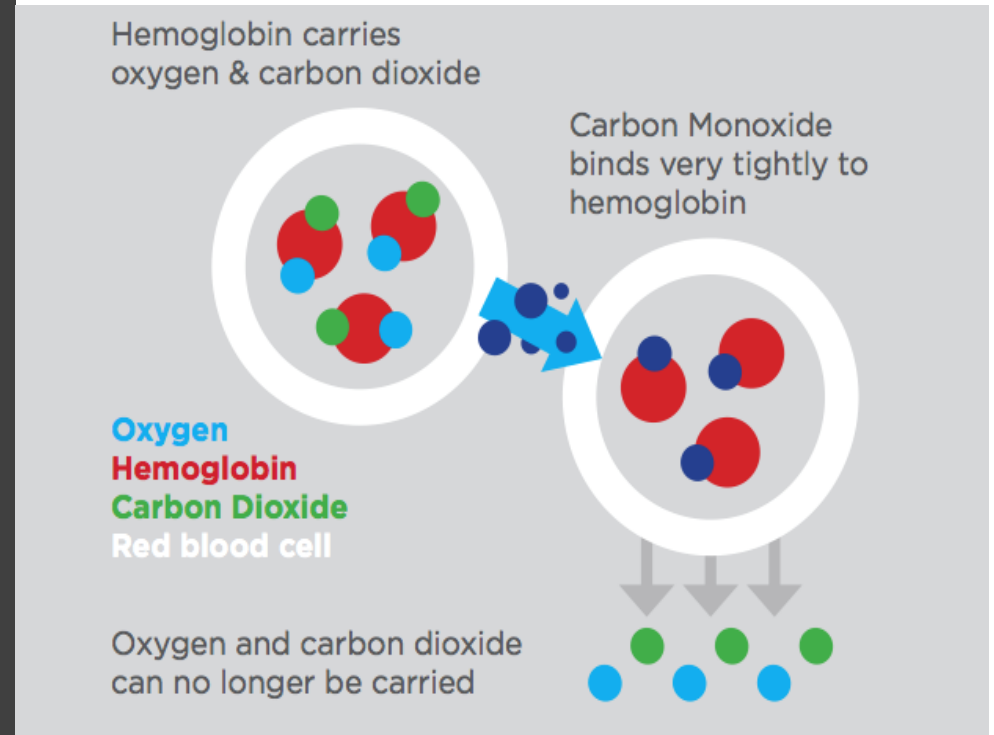


CO Symptoms



# CO Poisoning on the Body

- According to the CDC, **red blood cells** pick up CO more quickly than they pick up oxygen
- If there is a lot of CO in the air, the **body may replace oxygen** in the blood with poisonous CO
- This **blocks oxygen** from getting into the body, which can damage tissues and result in illness or even death
- Exposure to CO produces **flu-like symptoms** such as nausea, dizzy spells, fatigue and vomiting
- People often treat this like the flu, which is the **last thing** one should do



# Symptoms of CO

- The initial symptoms of low to moderate CO poisoning are similar to the flu but without the fever, including:
  - Headache
  - Fatigue
  - Shortness of breath
  - Nausea
  - Dizziness
- High-level CO poisoning results in progressively more severe symptoms, including:
  - Mental confusion
  - Vomiting
  - Loss of muscular coordination
  - Loss of consciousness
  - Ultimately death



Alarm Technology



## FIRST ALERT

offers plug-ins, battery, wall mount and tabletop alarms.



WIRED



BATTERY



PLUG-IN

# KEY STEPS

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Have alarms on every level, every bedroom.



Test alarms regularly.



Alarms do not last forever. Remember to replace!



Have an escape plan and practice it with your entire family.

# CO Alarms

- Tested and certified
  - ANSI/UL 2034 for CO alarms
  - ANSI/UL 2075 for CO/gas explosive alarms
- Variety of different alarms and power source
- Combination smoke and CO alarms
- 10-year sealed battery alarms – No battery replacements for the life of the alarm.



# Recommended Placement

- The NFPA recommends installing CO alarms near **every sleeping area** and on **every level** of the home
- CO alarms may be **placed high or low** because carbon monoxide disperses evenly in the air
  - Combination smoke/CO alarms should be installed according to smoke alarm guidelines
- Install alarms **at least 15 feet away** from sources of CO to reduce the chance of false or “nuisance” alarms
- Refer to alarms’ **user manuals** for specific instructions



## Smoke Alarm

One on every level and in every bedroom



## Carbon Monoxide Alarm

One on every level and in every bedroom



## Fire Extinguisher

One on every level, plus kitchen and garage





# Replacing Alarms

- Alarms don't last forever
  - Replace CO alarms every 5 to 7 years (unless it is a 10-year CO alarm)
- Always remove malfunctioning, outdated or defunct alarms
- First Alert CO alarms have end-of-life signals, letting residents know when it is time to replace.



## 4 beeps and a pause

**Emergency:** Carbon Monoxide has been detected. Move to fresh air and call 911.



## 1 beep every minute

**Low battery:** It's time to replace the batteries in your carbon monoxide alarm.



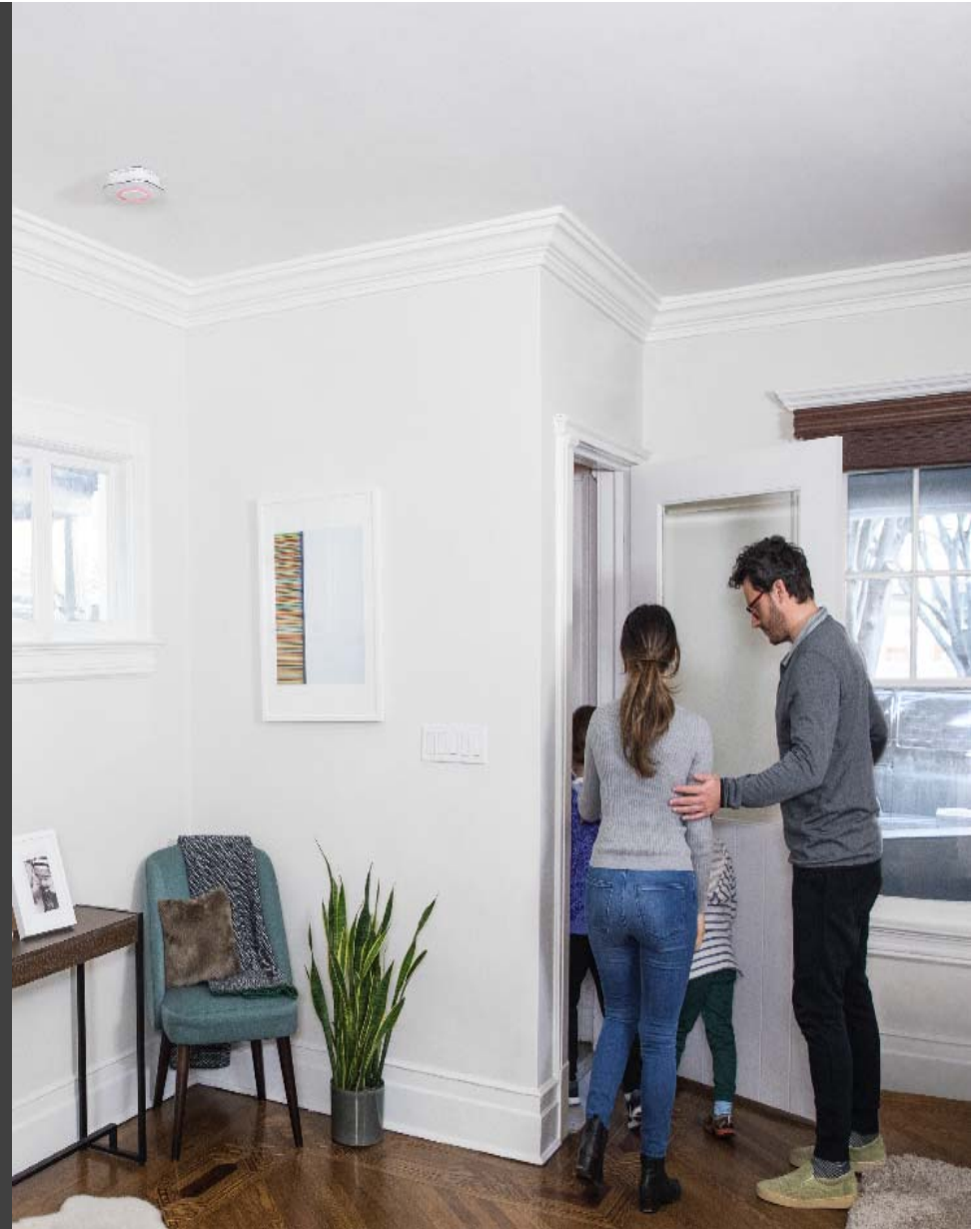
## 5 beeps every minute

**End of Life:** It's time to replace your carbon monoxide alarm.



# If a CO Alarm Sounds

- Operate the test/silence button
- Call local emergency services – the fire department or 911
- Move to fresh air immediately
- Do not re-enter the premises or move away from the fresh air until first responders have cleared the home for re-entry



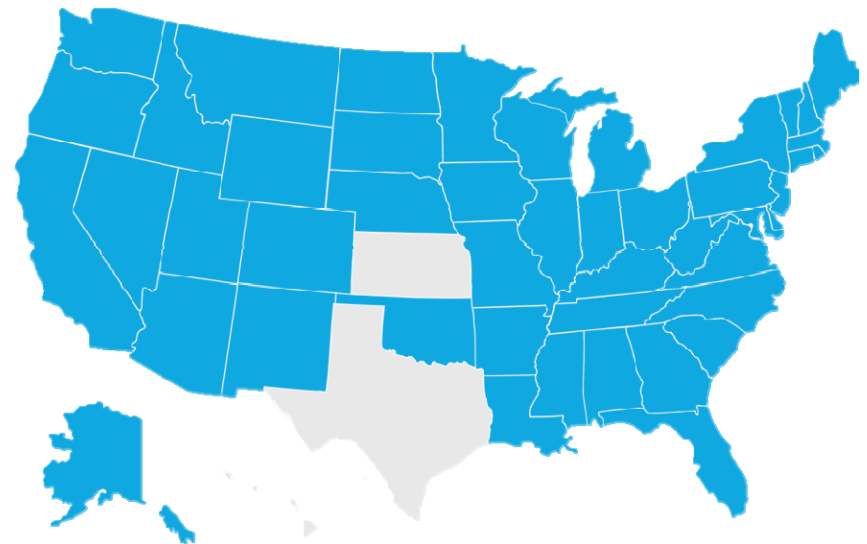
# Alarm Requirements



# Legislation

- Nearly all states have some sort of carbon monoxide alarm requirement, either through adoption of IRC 2009 or subsequent editions, or further state or local legislation.
- For instance, many states adopted new building codes that took effect in 2010-2012. One- and two-family homes and townhomes with not more than three stories built in these years feature carbon monoxide alarms that have a useful life of seven years.
- The code requires CO alarms in the immediate vicinity of bedrooms.

## Carbon Monoxide



\*Key: States in blue have some form of CO legislation, either at the state or local level.



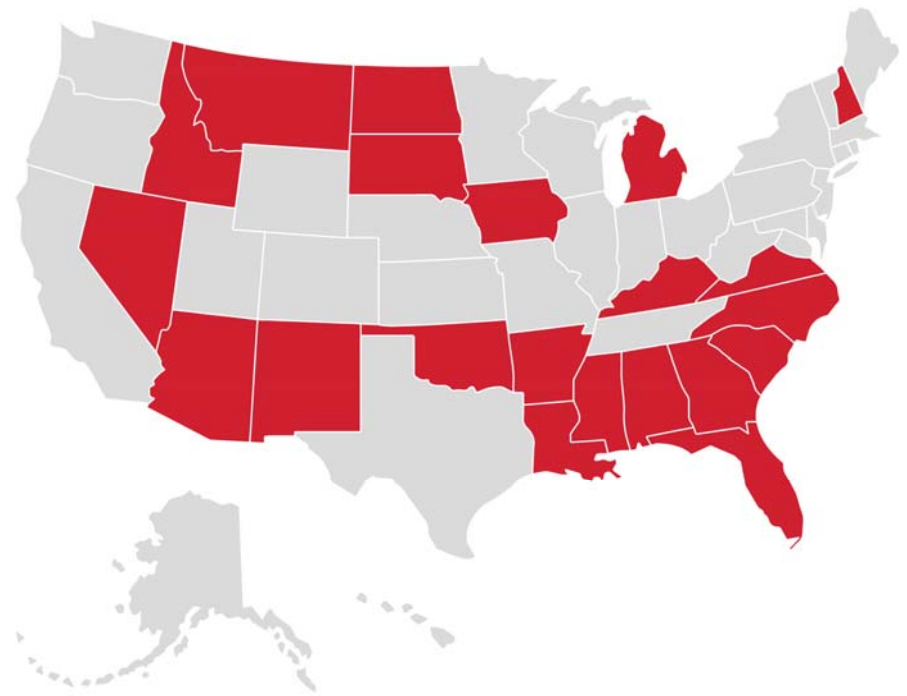
# Legislation Lacking

- Existing homes
- Apartment buildings
- Student housing
- Hotels
- Religious homes
- Daycares
- Senior housing
- Schools



# Is a single code enough?

- Several states that have adopted IRC 2009 or later editions have gaps to fill.
  - AL
  - AZ
  - AR
  - FL
  - GA
  - ID
  - IA
  - KY
  - LA
  - MI
  - MS
  - MT
  - NV
  - NH
  - NM
  - NC
  - ND
  - OK
  - SC
  - SD
  - VA



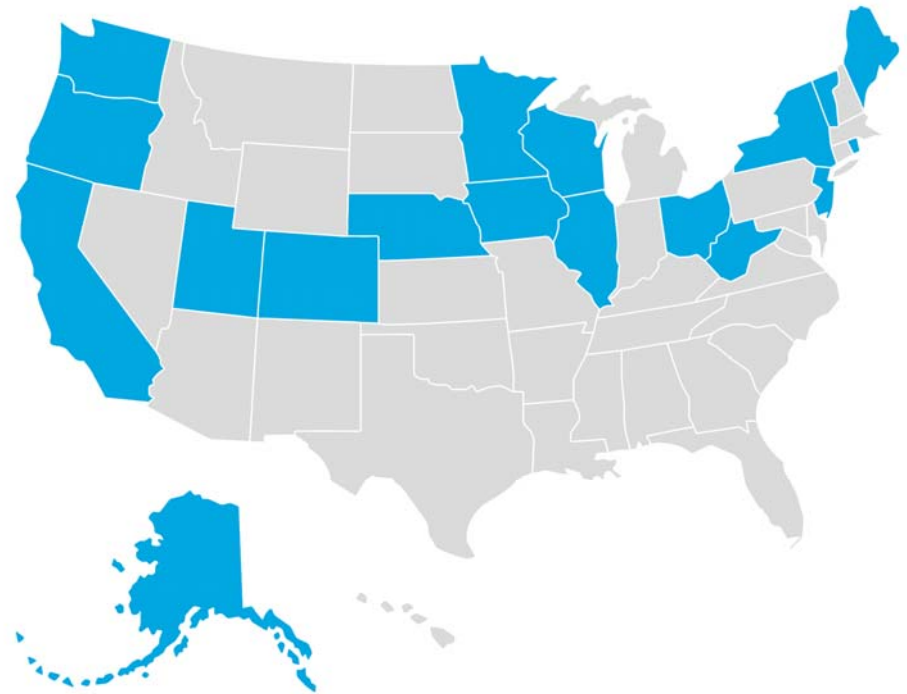
# Considerations

- Differences Abound
  - Type of dwelling
  - Location
  - Power source/date of construction
  - Owner-occupied vs. rental properties
  - Public gathering places vs. private dwelling
  - Enforceability



# “Seeing” the Danger

- A number of states have some model legislation that aims to cover as many residents as possible.
  - AK
  - CA
  - CO
  - IL
  - IA
  - ME
  - MN
  - NE
  - NJ
  - NY
  - OH
  - OR
  - RI
  - UT
  - VT
  - WA
  - WV
  - WI





# A Model in Practicality

Breathe easy, Washington!

- Newly constructed one- and two-family dwellings and townhomes not more than three stories (effective January 2011)
- Owner-occupied single-family homes upon sale or transfer (effective July 2011)
- Existing R-1, R-2 and R-3 occupancies (effective January 2013)



Resources



# Educational Resources

- Alarm maintenance
- Safety tips
- Kid activity sheets
- Escape plans
- NFPA's Installation Guide
  - Waiver
  - Survey



# For More Information

## First Alert

[www.firstalert.com](http://www.firstalert.com)

[www.firstalert.com/carbonmonoxide](http://www.firstalert.com/carbonmonoxide)

## National Volunteer Fire Council

[www.nvfc.org](http://www.nvfc.org)

## National Fire Protection Association

[www.nfpa.org](http://www.nfpa.org)

## U.S. Consumer Product Safety Commission

<https://www.cpsc.gov/>

## U.S. Fire Administration

[www.usfa.fema.gov](http://www.usfa.fema.gov)



# Recap

- Understand carbon monoxide (CO), its effects and a key solution: making sure residents have working CO alarms
- Learn about poisoning prevention measures and the types of CO alarms available
- Gain a working knowledge of the status of CO alarm requirements across the country





Thank You!