

Carbon Monoxide Mortality

What are we going to do now?

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In the News

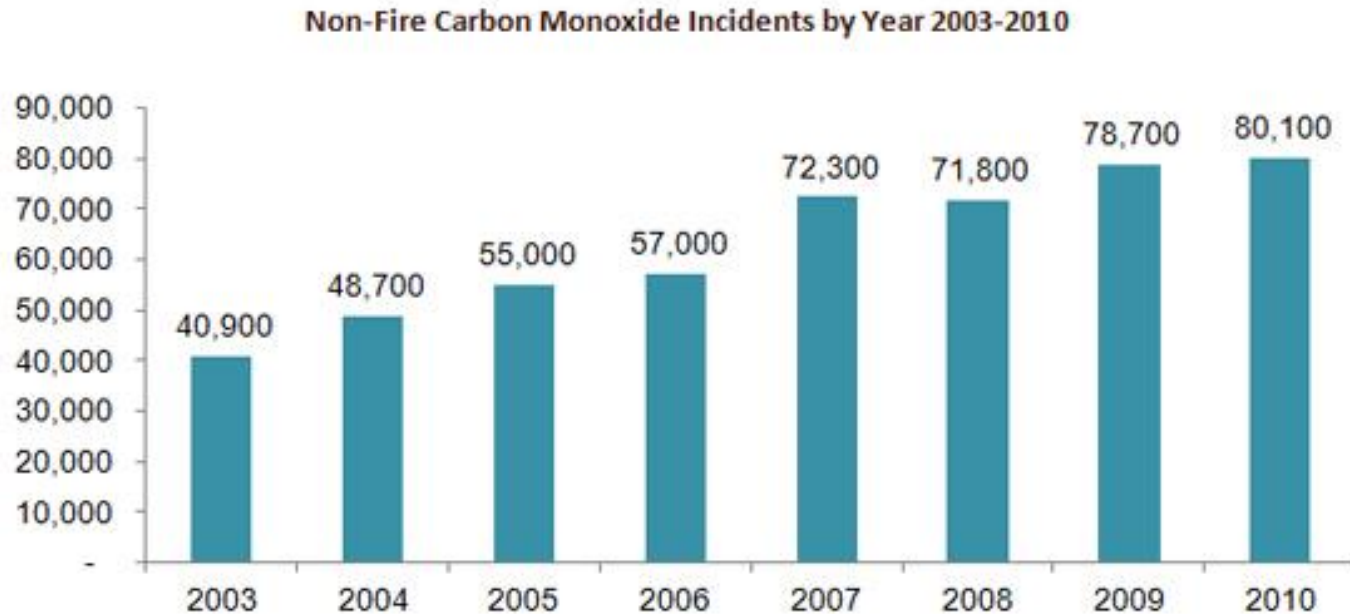
- Woman 72 dies in Gary, Indiana
- Two men found dead in Northside home in Jacksonville, Florida
- Two women in Lindstrom, Minnesota are the latest victims
- Three deaths, an elderly couple and an 11 year old boy die in motel room in Boone, South Carolina
- Two dead and 12 injured in Passaic, New Jersey
- Family of four overcome in Parks, AZ

CO Alarm Requirements

<u>Organization</u>	<u>Period</u>	<u>CO level</u>	<u>Notes</u>
ASHRAE	8 hrs	9 ppm	from Standard 62.2-2013
USEPA	8 hrs	9 ppm	NAAQS (outdoor air)
	1 hr	35 ppm	“ “ “
ACGIH	8 hrs	25 ppm	Threshold Limit Value (*)
NIOSH	8 hrs	35 ppm	Recommended Exposure Limit (*)
	15 min	200 ppm	Short-term Exp. Limit (*)
OSHA	8 hrs	50 ppm	Permissible Exp. Limit (*)
WHO	24 hrs	6 ppm	indoor air
	8 hrs	9 ppm	“ “
	1 hr	30 ppm	“ “
	15 min	87 ppm	“ “

(*) above indicates a standard for an occupational situation

NFPA Reports

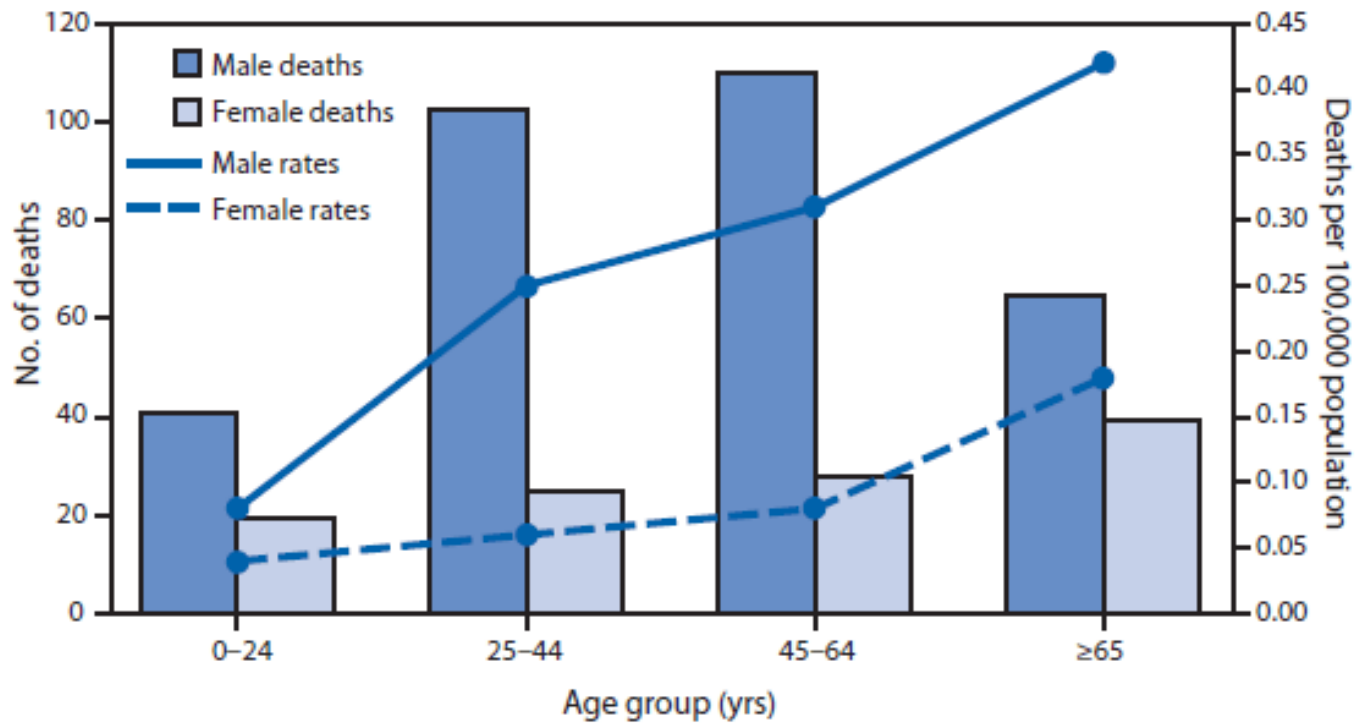


Source: "Non-Fire Carbon Monoxide Incidents", Ben Evarts, March 2012 <http://www.nfpa.org/News-and-Research/Fire-statistics-and-reports/Fire-statistics/Non-fire-incidents/Carbon-monoxide-incidents>

Center for Disease Control Facts

- Over 5000 Carbon Monoxide (CO) deaths in a 10 year period
- 20,000 visits to the emergency room
- 4000 hospitalized
- Non-fire related
- In only 10% of the deaths investigated CO monitors were present
- In many cases CO monitors were disabled or the alarms were misunderstood

Center for Disease Control CO Poisoning



Locations with Inspector Alarm Activation

- Food Processing Facility – Southern Zone – October 9, 2017
- Church – Massachusetts – November, 2017
- Nursing Home – Minnesota – December 14, 2017
- National Guard Barracks – Maryland – December, 2017
- Nursing Home – New York – January, 10 2018
- Hospital – January, 2018
- Bank – New York – January 31, 2018
- Supermarket – New Jersey – February 1, 2018
- Medical Tubing Manufacturer – Maryland – February 12, 2018
- Food Processing – Southern Zone – February, 2018
- Nursing Home – New Jersey – February 21, 2018
- Apartment Building – New Jersey – February 26, 2018

At What Cost?

- Approximately 6600 individuals are estimated to sustain long-term cognitive sequela annually
 - Total loss in earnings of approximately \$925 million
- 334 individuals die from accidental, non-fire related CO poisoning
 - Average loss of 26 years of productivity accounting for \$355 million
 - 2800 are hospitalized with acute medical care costs of \$33 million
- Available data indicate that accidental CO poisoning in the US conservatively costs society over \$1.3 billion, resulting from direct hospital costs and lost earnings
- Recent settlements suggest if you inspected a room with an object involved in a CO incident you will be named in lawsuit
 - **Average cost to defend exceed \$250,000**
 - Settlements vary, averages exceed \$1M

What Can We Do?

- Insist on regular maintenance
- Insist on regular flue and combustion air vents/damper inspections
- Increase awareness at the inspector level
- Support initiatives to get detection



What Can We Do?

- Educate clients on the dangers and cost associated with CO
- Insist that inspections include the boiler flue connections!



Areas of Focus

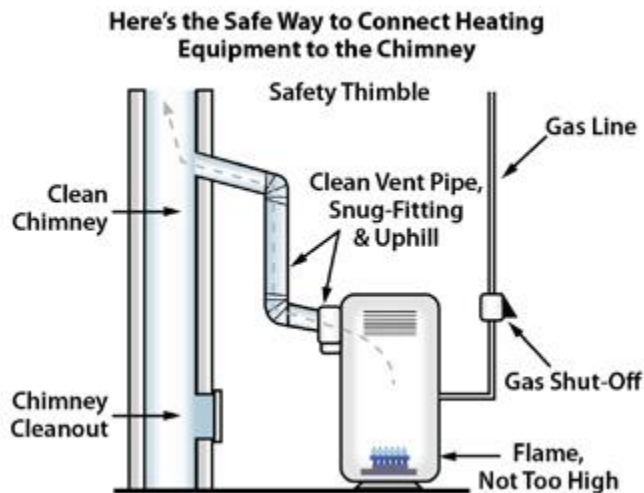
- Equipment user training
- Change management
- Transfer of knowledge
- Detection
- Verify detection!
- Personnel detection devices for inspectors

What Will It Take?

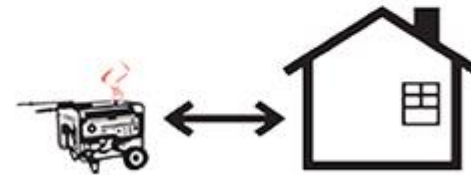
- Inaction = irrelevancy
- Train your staff
- QC should include flue and combustion air inlets
- Support regulatory changes
- Ask for CO monitors



Questions?



NEVER use a generator indoors, in garages, or carports.



ONLY use outdoors and far from open windows, doors, and vents.

Thank You



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