

# Carbon monoxide: Deaths from Carbon monoxide

Type of EPHT Indicator	Health Outcome
Measures	<ol style="list-style-type: none"> <li>1. Annual number of deaths from CO poisoning</li> <li>2. Annual crude rate of death from CO poisoning</li> <li>3. Annual age-adjusted rate of death from CO poisoning</li> </ol>
Derivation of measure	<p><i>Numerator:</i> Resident deaths from CO poisoning for three unique groups:</p> <ul style="list-style-type: none"> <li>• Unintentional, non-fire related</li> <li>• Unintentional, fire-related</li> <li>• Unknown intent</li> </ul> <p><i>Denominator:</i> Midyear resident population. Rates age-adjusted by the direct method to the Year 2000 U.S. Standard Population</p>
Unit	<ol style="list-style-type: none"> <li>1. Number of Deaths</li> <li>2. Rate per 100,000 population</li> <li>3. Age-adjusted rate per 100,000 population</li> </ol>
Geographic Scope	State
Geographic Scale	State
Time Period	2000-Most Recent Year Available
Time Scale	Calendar year
Rationale	<p>CO is an odorless, colorless gas that usually remains undetectable until exposure results in injury or death. Carbon monoxide (CO) poisoning is a leading cause of unintentional poisoning deaths in the United States. CO poisoning is preventable; nonetheless, unintentional, non—fire-related CO poisoning is responsible for approximately 15,000 emergency department visits and nearly 500 deaths annually in the United States. During 1999—2004, CO poisoning was listed as a contributing cause of death on 16,447 death certificates in the United States and 2,631 (16%) were classified as both unintentional and non-fire-related deaths. The annual average age-adjusted death rate in the U.S. was 1.5 deaths per million persons. The US Consumer Product Safety Commission’s historical data indicate that there is a statistically significant increasing trend in non-fire CO fatalities from 1999 through 2007. In 2007, 183 unintentional consumer product-related, non-fire-related CO deaths were reported. Out of which, heating systems were associated with the largest percentage of non-fire CO poisoning fatalities at 38 percent (estimated 70 deaths); Engine-Driven Tools-related CO fatalities were also associated with 38 percent (69 deaths), and the remaining six product categories [Charcoal Grills or Charcoal (7 deaths); Ranges, Ovens (7 deaths); Water Heaters (3 deaths); Grills, Camp Stoves (3 deaths); Other Products (1 death); and Multiple Products (24 deaths)] combined were associated with a total of 25 percent.</p> <p>Death is the most severe outcome of CO poisoning. Unintentional CO poisoning deaths are usually preventable. Most localities have access</p>

	to data on their resident deaths.
<b>Use of the Measure</b>	These data can be used to assess the burden of severe CO poisoning, monitor trends over time, and enhance prevention, education, and evaluation efforts.
<b>Limitations of the Measure</b>	Death investigation laws vary by locale. In addition, variations may occur between localities in how medical examiners/coroners/physicians assign intentionality. Thus an area where the ME/coroner/physician is disinclined to attribute a CO poisoning to suicide will have a higher unintentional CO poisoning death rate than a comparable locale. Finally, CO poisonings that are unrecognized by the ME/coroner/physician will be attributed to other causes.
<b>Data Sources</b>	<i>Numerator:</i> Iowa Department of Public Health vital statistics systems (birth, death, and fetal death records) <i>Denominator:</i> Population counts or estimates from the U.S. Bureau of the Census
<b>Limitations of the Data Sources</b>	<i>Death Certificates:</i> Death investigation laws vary by locale. In addition, variations may occur between localities in how medical examiners/coroners/physicians assign intentionality. Thus an area where the ME/coroner/physician is disinclined to attribute a CO poisoning to suicide will have a higher unintentional CO poisoning death rate than a comparable locale. Finally, CO poisonings that are unrecognized by the ME/coroner/physician will be attributed to other causes.  <i>Census data:</i> <ul style="list-style-type: none"> <li>• Only available every 10 years, thus postcensal estimates are needed when calculating rates for years following the census year.</li> <li>• Postcensal estimates at the ZIP code level are not available from the Census Bureau. These need to be extrapolated or purchased from a vendor.</li> </ul>
<b>Related Indicators</b>	<ul style="list-style-type: none"> <li>• Hospitalizations for Carbon monoxide poisoning</li> <li>• Emergency Department Visits for Carbon monoxide poisoning</li> </ul>
<b>References</b>	<ol style="list-style-type: none"> <li>1. Centers for Disease Control Prevention, Carbon monoxide—related deaths—United States, 1999-2004. MMWR Morb Mortal Wkly Rep, 2007. 56(50): p. 1309-12.</li> <li>2. Centers for Disease Control Prevention, Unintentional non-fire-related carbon monoxide exposures—United States, 2001-2003. MMWR Morb Mortal Wkly Rep, 2005. 54(2): p. 36-9.</li> <li>3. Mott, J.A., et al., National vehicle emissions policies and practices and declining US carbon monoxide-related mortality. JAMA, 2002. 288(8): p. 988-95.</li> <li>4. Hnatov, MV. Non-Fire Carbon Monoxide Deaths Associated with the Use of Consumer Products 2007 Annual Estimates. Bethesda, MD: US Consumer Product Safety Commission. Available at: <a href="http://www.cpsc.gov/library/foia/foia11/os/co10.pdf">http://www.cpsc.gov/library/foia/foia11/os/co10.pdf</a>. Accessed July 18, 2012</li> </ol>