## Carbon monoxide: Deaths from Carbon monoxide

<table>
<thead>
<tr>
<th>Type of EPHT Indicator</th>
<th>Health Outcome</th>
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| Measures               | 1. Annual number of deaths from CO poisoning  
                        | 2. Annual crude rate of death from CO poisoning  
                        | 3. Annual age-adjusted rate of death from CO poisoning |

| Derivation of measure | Numerator: Resident deaths from CO poisoning for three unique groups:  
                        | - Unintentional, non-fire related  
                        | - Unintentional, fire-related  
                        | - Unknown intent  
                        | Denominator: Midyear resident population. Rates age-adjusted by the direct method to the Year 2000 U.S. Standard Population |

| Unit                   | 1. Number of Deaths  
                        | 2. Rate per 100,000 population  
                        | 3. Age-adjusted rate per 100,000 population |

| Geographic Scope       | State |

| Geographic Scale       | State |

| Time Period            | 2000-Most Recent Year Available |

| Time Scale             | Calendar year |

**Rationale**

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.

Death is the most severe outcome of CO poisoning. Unintentional CO poisoning deaths are usually preventable. Most localities have access
Use of the Measure | These data can be used to assess the burden of severe CO poisoning, monitor trends over time, and enhance prevention, education, and evaluation efforts.

Limitations of the Measure | 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.

Data Sources | **Numerator:** Iowa Department of Public Health vital statistics systems (birth, death, and fetal death records)  
**Denominator:** Population counts or estimates from the U.S. Bureau of the Census

Limitations of the Data Sources | *Death Certificates:* 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.

*Census data:*  
- Only available every 10 years, thus postcensal estimates are needed when calculating rates for years following the census year.
- Postcensal estimates at the ZIP code level are not available from the Census Bureau. These need to be extrapolated or purchased from a vendor.

Related Indicators |  
- Hospitalizations for Carbon monoxide poisoning  
- Emergency Department Visits for Carbon monoxide poisoning

References |  