

# Study provides details on portable generator emissions and carbon monoxide exposure

July 11 2013

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Despite warnings to the contrary, many people continue to operate portable generators indoors or close to open windows, doors, or vents, resulting in more than 500 deaths since 2005. And each year, more than 20,000 people visit the emergency room and more than 4,000 are hospitalized due to exposure to toxic levels of carbon monoxide (CO), a colorless, odorless gas. Fatality is highest among people 65 and older.

A new computer modeling study by National Institute of Standards and Technology (NIST) researchers scrutinizes the deadly relationship between CO emissions and occupant exposure. They conducted simulations of 87 types of dwellings representative of the U.S. housing stock with a generator operating within a room in the house, its basement, or attached garage.

The study considered two scenarios of portable-generator operation: continuous operation for 18 hours and operation with some type of control technology that causes the generator to shut off periodically, or so-called "burst" releases.

Regardless of housing type or location, generators that release as little as 27 grams of CO per hour continuously for 18 hours cause 80 percent of the modeled cases to result in an exposure predicted to reach dangerous levels. In comparison, current commercially available generators that were tested by NIST in a previous study emitted CO at a rate of 500 to 4,000 grams per hour.

For generators characterized by burst releases of CO, the NIST team found that CO emissions of more than 139 grams resulted in dangerous levels of exposure.

The findings, reported to the U.S. Consumer Product Safety Commission, could help in setting limits on CO emissions from portable generators.

**More information:** Persily, A. et al. Residential Carbon Monoxide Exposure due to Indoor Generator Operation: Effects of Source Location and Emission Rate (NIST Technical Note 1782), June 2013. Downloadable from: [www.nist.gov/manuscript-public ... ch.cfm?pub\\_id=912394](http://www.nist.gov/manuscript-publication-search/?pub_id=912394).

Emmerich, S., Persily, A. and Wang, L. Modeling and Measuring the Effects of Portable Gasoline Powered Generator Exhaust on Indoor Carbon Monoxide Level (NIST Technical Note 1781), Feb 2013.

Provided by National Institute of Standards and Technology

Citation: Study provides details on portable generator emissions and carbon monoxide exposure (2013, July 11) retrieved 26 June 2024 from <https://phys.org/news/2013-07-portable-emissions-carbon-monoxide-exposure.html>

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