



OSHA REGIONAL NOTICE

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

DIRECTIVE NUMBER: CPL 04-00 (LEP 23) EFFECTIVE DATE: October 1, 2016

SUBJECT:

Local Emphasis Program for Carbon Monoxide Hazards in Construction

REGIONAL IDENTIFIER: Region V

ABSTRACT

- Purpose:** This Notice establishes a Local Emphasis Program (LEP) for the purpose of scheduling and conducting inspections of the carbon monoxide hazards in construction.
- Scope:** The Area Directors will use the procedures described in Paragraph VIII of this Notice as the basis for developing and implementing inspection activity in those projects involving construction using temporary heating systems and/or internal combustion engine equipment in enclosed areas.
- References:** CPL 02-00-160, August 2, 2016, Field Operations Manual (FOM)
OSHA Instruction CPL 04-00-001, November 10, 1999, Procedures for Approval of Local Emphasis Programs (LEP)
OSHA Instruction CPL 02-00-155, September 6, 2013, Inspection Scheduling for Construction
OSHA Instruction CPL 02-00-051, CPL 2-0.51J, May 28, 1998, Enforcement Exemptions and Limitations under the Appropriations Act (Change Effective January 29, 2016)
CDC MMWR, Weekly December 21, 2007 / 56(50); 1309-1312, Carbon Monoxide – Related Deaths – United States, 1999-2004
- Action Offices:** This Notice applies to the Appleton, Eau Claire, Madison, and Milwaukee, Wisconsin Area Offices.
- Originating Office:** Milwaukee Area Office
- Contact:** Assistant Regional Administrator

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By and Under the Authority of

Ken Nishiyama Atha
Regional Administrator

- I. Purpose. The objective of this Local Emphasis Program (LEP) is to reduce exposures associated with carbon monoxide and related safety and health hazards for construction employees working in enclosed areas such as on scaffolding and in newly constructed or remodeled buildings where temporary heating devices or internal combustion engine equipment are being used.

This LEP will heighten awareness of hazards associated with carbon monoxide within the construction industry and will also encourage employers to take steps to plan engineering controls, correct hazards, and comply with current safety and health regulations and practices.

Carbon monoxide (CO) is a colorless, odorless, tasteless toxic gas produced by incomplete combustion in fuel-burning devices such as motor vehicles, gas-powered furnaces, and portable generators. Persons with CO exposure often overlook the immediate symptoms (e.g., headache, nausea, dizziness, or confusion) and undetected exposure can be fatal. People can also experience non-immediate, potential after-shift effects, such as driving in an altered condition or succumbing to the effects of exposure at home.

- II. Scope. This Notice applies to the Appleton, Eau Claire, Madison, and Milwaukee Wisconsin Area Offices.
- III. References. CPL 02-00-160, August 2, 2016, Field Operations Manual (FOM); OSHA Instruction CPL 04-00-001, November 10, 1999, Procedures for Approval of Local Emphasis Programs (LEP); OSHA Instruction CPL 02-00-155, September 6, 2013, Inspection Scheduling for Construction; OSHA Instruction CPL 02-00-051, CPL 2-0.51J, May 28, 1998, Enforcement Exemptions and Limitations Under the Appropriations Act (Change Effective January 29, 2016); CDC MMWR, Weekly December 21, 2007 / 56(50);1309-1312, Carbon Monoxide – Related Deaths – United States, 1999-2004
- IV. Expiration. This Notice expires on September 30, 2017.
- V. Action. The Area Offices will use the procedures described in Section VIII of this LEP as the basis for developing and implementing inspection activity in those projects involving enclosed areas using temporary heating devices and/or internal combustion engine equipment.
- VI. Policy. The Area Directors shall use this LEP as described herein as the basis for scheduling and conducting inspections of construction sites. The targeting and selection program is intended to be used on any construction site where carbon monoxide hazards have been alleged and/or identified.

VII. Background. There are an increasing number of construction projects that use temporary heating devices for comfort and operational necessities during the winter construction season. According to the Centers for Disease Control and Prevention (CDC), carbon monoxide exposures most frequently occur between November and February in the Midwest. Buildings typically have openings closed off with plastic and wood. Fuel for the temporary heating devices can be propane, kerosene, natural gas, gasoline, or diesel; all of which are capable of producing dangerous levels of carbon monoxide. The fuel for these heating devices tends to be expensive, which is one of the reasons the contractors try to keep the structure sealed.

The construction process also normally involves extensive use of internal combustion engine equipment such as, but not limited to, welding machines, mixers, cement finishers (powered trowels), forklifts, scissors lifts, generators, and articulating and telescoping platform trucks. In addition, there may be cement trucks and other vehicles operating inside enclosed areas. These types of equipment are also capable of producing dangerous levels of carbon monoxide.

Due to the fact that most of the activities are conducted on the interior of the building, OSHA's ability to conduct inspections in this type of environment has been limited to responding to fatalities, employee complaints, and/or referrals. This stage of the construction project has not traditionally been made available through "Dodge Reports," which consist of construction work sites provided from a randomly generated computer list by the University of Tennessee. Each year numerous work sites are evacuated and employees are treated for carbon monoxide poisoning. Past inspections conducted on these types of projects have resulted in citations including overexposures to carbon monoxide, ventilation, training, and work site monitoring. OSHA wants to be able to proactively inspect facilities at higher risk of having elevated levels of carbon monoxide rather than just responding to employee complaints, outside referrals, and fatalities for which employee carbon monoxide poisonings have likely occurred.

According to the CDC, unintentional, non-fire related death from carbon monoxide poisoning in Wisconsin from 1999-2004 was approximately 79 cases. In addition, unintentional carbon monoxide exposure accounts for an estimated 15,000 emergency department visits and 500 unintentional deaths in the United States each year.

Along with the hazards of carbon monoxide, additional hazards are presented by equipment used in heat generation and related construction processes and shall be addressed. These hazards include but are not limited to electrical (condition of flexible cords and cables) and fire (proper storage, labeling, and use of flammable and combustible liquids and gases).

Recent case law supports OSHA's use of 1926.20(b)(2) which requires employers to maintain programs that "provide for frequent and regular inspection of...job sites." Because CO is colorless and odorless, the only reasonable way to inspect the work site to ensure that the PEL for CO will not be exceeded is by air monitoring. The requirements under 1926.20(b)(2) are in addition to the employer's obligation to ensure that employees are not exposed to 8-hour Time Weighted Average (TWA) levels of CO at a concentration above 50 ppm (OSHA PEL) through 1926.55(a) and (b).*

**See Elliot Construction Corp., OSHRC decision Docket No.07-1578, 8/28/12.*

VIII. Procedures. The following procedures will be used in targeting and scheduling of inspections conducted under this LEP.

- a. For reasons outlined previously, it would be impossible to develop a list for random selection of these types of construction projects. Therefore, inspections conducted under this LEP will be initiated by: CSHO observation, complaints, and referrals from outside sources.
- b. The sites to be considered for inspection will consist of those enclosed structures where temporary heating devices and/or internal combustion engine equipment are being used.

All work sites meeting these selection criteria, where carbon monoxide hazards are likely to be present (see examples below), as determined through CSHO observation, employee complaint, or outside referral, will be inspected under this LEP.

Examples of observed project conditions where carbon monoxide hazards are likely to be present include, but are not limited to CSHO observation of: poorly ventilated spaces such as trenches, enclosed scaffolding projects, or enclosed or semi-enclosed portions of a building (e.g. containments for lead or asbestos abatement) or structures being constructed (e.g. warehouse, gymnasium, or large retail facility) where:

- i. Space heating equipment using fuel sources are alleged or likely to be utilized due to ambient temperatures, or are visibly present. For further information, refer to 29 CFR 1926.153 and 1926.154.
- ii. Internal combustion engines (e.g. generators, partner saws, concrete mixers, scissor or boom lifts) are being utilized.
- iii. Supplied air respirators are alleged or likely to be utilized to protect the health of employees and the breathing air on site is generated from

internal-combustion compressors. For further information, refer to 29 CFR 1910.134(i).

- c. Upon observation of a jobsite where carbon monoxide hazards are likely to be present, the CSHO will notify the Area Office identifying the name of the contractor (if available) and the location of the building. The Area Director or Team Leader will determine if the site has been inspected regarding this LEP within the last 30 days. If the site has not been inspected within the last 30 days, permission will be given to inspect the site. If the site has been inspected within the last 30 days regarding this LEP, an inspection will be authorized only if an imminent danger appears to be present or at the Area Director's discretion.
 - d. Carbon monoxide monitoring procedures for exposed employees will follow the guidance in the OSHA Technical Manual, the FOM, manufacturer's instructions, and other recognized procedures as part of this Local Emphasis Program.
 - e. Biological exposure assessments using post-exposure carbon monoxide calculations [carboxyhemoglobin (COHb) levels], if necessary, shall be performed in accordance with the procedures outlined by the OSHA Salt Lake Technical Center (SLTC). The Medical Access Order (MAO) process must be followed to obtain employee medical records.
- IX. OIS Coding. Inspections conducted under this program will be coded as Program Planned in the Inspection Type Tab for Initiating Type, and "CO" under the Inspection Emphasis Program, Local Emphasis Program. These inspections will be coded as Health inspections.
- X. Safety & Health Consideration for CSHOs. CSHOs shall make sure they have a calibrated carbon monoxide gas monitor on and running when entering the site. CSHOs shall reference the equipment manual, as well as the OSHA Technical Manual, for standard set-up, accuracy percentage, and alarm setting procedures.

The first alarm shall be set at 35 ppm [NIOSH Recommended Exposure Limit (REL) for an 8-hour TWA], which is below the OSHA Permissible Exposure Level (PEL) of 50 ppm.

The second alarm shall be set for 150 ppm, which is below the NIOSH REL ceiling value of 200 ppm.

If the CSHO experiences symptoms of overexposure (headache, dizziness), the CSHO is instructed to exit the work area immediately and proceed to the building exterior and into fresh air.

If the first alarm goes off, the CSHO shall proceed with caution and limit the amount of time in the area as the 35 ppm NIOSH REL for an 8-hour TWA may be reached.

CSHOs shall additionally ensure the exposure to carbon monoxide is maintained below 200 ppm (NIOSH REL ceiling value).

If the CSHO's exposure reaches 150 ppm (i.e., the second alarm goes off), the CSHO shall immediately proceed to the building exterior and into fresh air.

CSHOs should be aware that OSHA issued air purifying respirators and cartridges will not protect against the toxic effects of carbon monoxide.

Due to potential fall hazards, the CSHO should request that the employees descend from the scaffold to check carbon monoxide monitors or conduct interviews.

CSHOs must follow the Regional and Area Office SHMS - Safety and Health Management System Fall Protection procedures.

Only trained CSHOs familiar with the hazards in this type of construction will perform inspection activities under this LEP. The inspecting CSHO(s) must be familiar with the correct use (including any limitations), maintenance, and care of carbon monoxide monitors. Cross-training of CSHOs is encouraged and shall be overseen by the Area Director or his/her designee.

- XI. Evaluation Procedures. It is important that this program be evaluated in a timely manner in order to assess its potential future value and to make any necessary modifications.
 - a. The Milwaukee Area Office will be the Champion of this Local Emphasis Program.
 - b. The Milwaukee Area Office will prepare a written evaluation of this LEP in the format specified by OSHA Instruction CPL 04-00-001. Evaluations will be submitted annually for the previous Fiscal Year.
 - c. The Milwaukee Area Office shall prepare and submit the final evaluation report to the ARA/EP no later than September 8 of the Fiscal Year the LEP is in effect.

- XII. Outreach Activities. This LEP and the hazards associated with carbon monoxide in construction will be discussed during all applicable outreach opportunities, including, but not limited to, OSHA speeches, training sessions and Area Office newsletters. The Milwaukee Area Office will coordinate initial outreach efforts which will begin prior to the initiation of this LEP.