CHERIE K. BERRY
COMMISSIONER

SCOTT MABRY
ASSISTANT DEPUTY COMMISSIONER
OCCUPATIONAL SAFETY AND HEALTH DIVISION

MEMO

To: OSH Division
From: Scott Mabry, Assistant Deputy Commissioner
Date: February 11, 2019
Re: Enforcement Policy for Respiratory Hazards Not Covered by OSHA Permissible Exposure Limits

On November 2, 2018 the Occupational Safety and Health Administration issued a memorandum on the Enforcement Policy for Respiratory Hazards Not Covered by OSHA Permissible Exposure Limits. The memo clarifies existing agency enforcement policy for citing general duty clause citations for air contaminants not covered under OSHA law.

After review of this document, the OSH Division has determined that it will adopt the memorandum for use in North Carolina with the following modifications.

References to Section 5(a)(1) of the Occupational Safety and Health Act will mean NCGS 95-129(1). Regional administrator or other federal personnel will mean the appropriate OSH Division management personnel (director, assistant director, bureau chief, or district supervisor).

OSH will modify the recommended Hazard Alert Letter to add the following statement at the end of the second to last paragraph. "Whereas, if conditions still exist or have not improved, then it could result in citations." The letter will be placed in OSHA Express.

The memorandum is attached.

U.S. Department of Labor

Occupational Safety and Health Administration
Washington, D.C. 20210

NOV 02 2018

MEMORANDUM FOR: REGIONAL ADMINISTRATORS

FROM: KIMBERLY STILLE, Acting Director
Directorate of Enforcement Programs

SUBJECT: Enforcement Policy for Respiratory Hazards Not Covered by OSHA Permissible Exposure Limits

As you are aware, Section 5(a)(1) of the Occupational Safety and Health Act (OSH Act) is occasionally used to cite respiratory hazards from exposure to an air contaminant that is not covered by an OSHA permissible exposure limit (PEL). This memorandum serves to clarify existing Agency enforcement policy for developing these citations.

Specifically, Section 5(a)(1) of the OSH Act requires each employer to "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm." As explained in the OSHA Field Operations Manual (FOM) (CPL 02-00-160), when enforcing this requirement, the Occupational Safety and Health Review Commission and court precedent have determined that the following elements must be established in order for OSHA to prove a violation of the general duty clause:

1. The employer failed to keep the workplace free of a hazard to which employees of that employer were exposed;
2. The hazard was recognized;
3. The hazard was causing or was likely to cause death or serious physical harm; and,
4. There was a feasible and useful method to correct the hazard.

When applying these elements to respiratory hazards, it is important for Area Directors to ensure that 5(a)(1) citations are not based solely on evidence that a measured exposure exceeded a recommended occupational exposure limit (OEL), such as a Threshold Limit Value (TLV)[1], or based on the fact that there is a documented exposure to a recognized carcinogen.[2] Unless the case file evidence proves *all four* of the above elements, the Area Office should issue a hazard alert letter (HAL). The HAL should advise the employer that one or more employees at the establishment was being, or had been, exposed to a potentially serious respiratory hazard from a chemical that exceeded an OEL, and provide a series of recommended exposure control suggestions. For your information, attached is a sample HAL for a respiratory hazard.

However, if the evidence *does* provide sufficient proof of the four elements listed above, then the general duty clause should be cited, following the general guidance in the FOM, Chapter 4. We are providing the following additional guidance for developing evidence for each of these elements when specifically applied to *respiratory* hazards:

a) *The employer failed to keep the workplace free of a hazard to which employees of that employer were exposed* – Evidence that documents this element includes personal air sampling results, written workplace observations, photographs, and witness statements noting how workers were exposed to the chemical, and descriptions of any implemented engineering, work practice, and administrative control measures, and personal protective equipment. The evidence should also substantiate that regular and continuing employee exposure to the chemical at the measured levels could reasonably occur. However, if the exposed employees were wearing appropriate respiratory protection with no deficiencies in the respirator program, then the likelihood that OSHA could establish a respiratory hazard covered by the general duty clause would be low.

b) *The hazard was recognized* – OSHA can establish this element in one of two ways. (1) For employer recognition: Evidence may include employee complaints to management, illness and injury logs, consultant reports, a previous HAL, internal safety and health policies related to workplace operations involving the chemical that may refer to an OEL, or information from a manufacturer describing safety and health precautions for equipment or chemicals used in the workplace such as the chemical manufacturers' safety data sheet (SDS). (2) For industry recognition: Evidence may include an industry or trade association's guidance document, or an assessment from an industry expert describing the work practice or operation used at the establishment and explaining the particular health hazards and recommended control measures. Alternatively, a similar publication from a (non-OSHA) federal, state, or local government agency, or from a professional organization, may also provide good evidence. Some examples of government agencies include the National Institute for Occupational Safety and Health (NIOSH), the National Toxicology Program (NTP), and the U.S. Environmental Protection Agency (EPA). Examples of organizations include The Center for Construction Research and Training (CPWR, formerly The Center to Protect Workers' Rights), the American Conference of Governmental Industrial Hygienists (ACGIH®), and the Occupational Alliance for Risk Science (OARS).

c) *The hazard was causing or was likely to cause death or serious physical harm* – Although an illness or injury from the measured exposure need not have occurred yet, the strongest evidence is an employee illness/injury, hospitalization, fatality, or medical diagnosis related to workplace exposure. In the absence of this, the evidence must include more than just the fact that a measured exposure exceeded a TLV or REL, because these recommended limits may be much lower than the level at which a serious heath effect may be experienced. In most cases, proving this element will require an expert or industry-related peer reviewed study to document that serious physical harm could occur at the measured level with continuing employee exposure. Additionally, establishing serious physical harm for some respiratory hazards may be particularly difficult if the resulting illness, such as cancer, would require a substantial period of time to occur.

d) *There was a feasible and useful method to correct the hazard* – Evidence may include the SDS describing work practices for safe handling, engineering controls, and personal protective equipment, or published industry and/or NIOSH studies (e.g., health hazard evaluations (HHEs)) involving similar chemical processes or operations. Proving that feasible abatement measures would eliminate or materially reduce workplace exposure to a level that no longer presents a serious health hazard will likely require expert testimony.

For technical assistance in developing the required evidence related to the above elements, OSHA compliance officers may coordinate with their Regional Office to contact the Directorate of Technical Support and Emergency Management's (DTSEM) Salt Lake Technical Center (SLTC) at (801) 233-4900 and the Office of Occupational Medicine and Nursing (OOMN) at (202) 693-2323. For additional guidance for compliance officers, the Directorate of Training and Education's (DTE) OSHA Training Institute (OTI) has developed a job aid on this subject, which also includes tips for writing chemical 5(a)(1) citations.

Please distribute this memorandum to all health compliance officers. If you have any questions on this, please contact the Office of Health Enforcement at (202) 693-2190.

Attachment

Endnote (1) - Per 29 CFR 1910.1200, *Hazard Communication*, chemical manufacturers must list on their product's safety data sheet (SDS) all known exposure limits. Specifically, Section 8 of the SDS must include: "OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available." [*See* Table D.1, 1910.1200 Appendix D]. For evaluating respiratory hazards of chemicals without a PEL, compliance officers may refer to applicable published OELs, which include, but are not limited to, the following:

a) Recommended Exposure Limits (RELs) issued by the National Institute for Occupational Safety and Health (NIOSH);
b) Threshold Limit Values® (TLVs®) published by the American Conference of Governmental Industrial Hygienists (ACGIH®); and
c) Workplace Environmental Exposure Levels® (WEELs®) published by the Occupational Alliance for Risk Science (OARS), which is managed by Toxicology Excellence for Risk Assessment (TERA™).
d) Other recommended exposure limits from chemical manufacturers or industry/trade associations, such as may be provided on SDSs or in industry guidance publications.

Endnote (2) - Per 29 CFR 1910.1200, *Hazard Communication*, chemical manufacturers must also list on their product's SDS all known carcinogenic ingredients when greater than 0.1% of the product mixture. Specifically, Section 11 of the SDS must include all known toxicological information, including: "Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA." [*See* Table D.1, 1910.1200 Appendix D].

Attachment – Sample Hazard Alert Letter for a Chemical with no PEL

[Date]

ABC Company
[Address]

RE: Inspection Number XXXXXXX

Dear Company Owner:

An inspection of your workplace at [address], initiated on [date], disclosed conditions that are consistent with employee exposure to 1-bromopropane. 1-bromopropane (CAS: 106-94-5), as covered in this inspection, was used as a solvent in your vapor degreasing operations. Symptoms of exposure to 1-bromopropane (or 1BP) include irritation and damage to the nervous system. Neurological damage can appear as headaches, dizziness, loss of consciousness, slurred speech, confusion, difficulty walking, and/or loss of feeling in the arms and legs. Exposure to employees can occur by inhalation and absorption through skin contact. Studies have shown that health effects from exposure to this chemical may present within as little as two days, however most serious effects are more commonly associated with prolonged exposure.

Currently, Federal OSHA does not have a specific exposure standard for 1BP. However, OSHA and the National Institute for Occupational Safety and Health (NIOSH) jointly issued a hazard alert for occupational exposure to 1BP in 2013. (*See* enclosed copy). In 2014, the American Conference of Governmental Industrial Hygienists (ACGIH®) adopted a Threshold Limit Value® (TLV®) for 1-bromopropane of 0.1 parts per million (ppm), or 0.5 milligrams per cubic meter (0.5 mg/m^3), as an 8-hour time-weighted average (TWA).

Monitoring Results: Measured employee exposures to 1-bromopropane were well above the AGCIH 8-hour TLV of 0.1 ppm as discussed in the below sampling results.

During the inspection at your facility, three employees were monitored to determine their exposure to 1BP. On [date], one employee spraying the interior of metal parts with different concentrations of 1BP solutions in the [spray area] was exposed to [xx] ppm of 1BP, as an 8-hr TWA. The employee conducting the spraying was sampled for [aaa] minutes, with zero exposure assumed for the remainder of the 480-minute shift. On [date], one employee manually coating the exterior of metal parts with various 1BP solutions in the [coating area] was exposed to [YY] ppm 1BP as an 8-hr TWA. The employee conducting the coating was sampled for [bbb] minutes, with zero exposure assumed for the remainder of the 480-minute shift. On [date], one employee operating the flush-and-blow system in close proximity to the degreaser was exposed to [ZZ] ppm 1BP as an 8-hr TWA. The flush-and-blow operator was sampled for [ccc] minutes, with zero exposure assumed for the remainder of the 480-minute shift. All three employees' 8-hr TWAs for 1BP was significantly greater than the ACGIH TLV of 0.1 ppm.

We recommend that you voluntarily take the necessary steps to materially reduce or eliminate your employees' exposures to the conditions listed above.

While the risk of health hazards associated with exposure to 1BP can be reduced or eliminated by implementing a single means of abatement, in most cases a variety of abatement methods will provide a more effective method of addressing these hazards. These include workplace analysis of jobs and tasks to assess hazards associated with those jobs and tasks and the steps to abate them: product substitutions; engineering, administrative, and work practice controls; accurate injury and illness recordkeeping; medical surveillance; medical management of occupational illnesses and injuries; education and training of employees; and management oversight.

We have examined available information on the hazards associated with the degreasing operation conducted at your facility. The evaluation suggests that one or more of the following additional methods of abatement should be implemented.

1. Engineering Controls.

   Engineering controls are the first line of defense in employee protection. Therefore, your company should provide appropriate engineering controls throughout the facility. Employees should be trained on the use of the engineering controls to ensure that occupational exposure to 1BP is maintained below levels that are hazardous to employees. The following engineering controls are recommended:

   - Engineering of the spray and coating areas so that employees are isolated from the operation where 1BP is applied to the interior or exterior of the metal parts. This could include a system that automatically coats the parts or by means of increasing the distance between the employees and the spray operation.
   - Installation of local exhaust ventilation systems where the employees conduct the operations to reduce the amount of exposure. For the spray area, a local ventilation should be located where the employee is spraying the interior of the parts, and for the coating area, a local hood ventilation system should be set up such that any vapors from the rags are collected before reaching the employee's breathing zone. Additionally, ventilation should be considered around the degreasing tank in order to capture fugitive 1BP vapors escaping from the degreasing tank during the degreasing process.

2. Administrative and Work Practices Controls.

   The following work practices should be used to reduce occupational exposure to 1BP during degreasing operations:

   - Evaluation of employee body positioning during the various operations. By observing and evaluating the operator's location during various points in the coating operations, it may be possible to prevent the operator from standing in an area where exposure to fugitive 1BP vapors is likely. This includes consideration for where the fans are located in relation to the employees, as well.

- Revise the coating operation's standard operating procedure to document how often the spray hood requires cleaning, how to effectively conduct the cleaning with less employee exposure, and how much solution is required on a rag to effectively coat the exterior of the parts.
- Instituting a job rotation schedule for the spray area and activities around the degreaser. Other company employees should be trained on these operations so that employees could rotate in and out during the course of the day.
- Ensuring appropriate preventative maintenance is conducted on the degreaser and still according to the manufacturer's recommendations.
- Conducting personal air monitoring on a regular basis to determine employee exposure levels to 1BP, ensuring that personal air samples are taken from the employee's breathing zone. Breathing zone samples provide the best indication of the concentration of contaminants in the air the employee is actually breathing.
- Ensuring employees immediately and thoroughly wash their skin with soap and flowing water if dermal contact with 1BP occurs.

3. Personal Protective Equipment.

To be effective, personal protective equipment must be individually selected, properly fitted and periodically refitted, conscientiously and properly worn, regularly maintained, and replaced as necessary. In addition, employers must:

- Perform a revised workplace hazard assessment in accordance with 29 CFR 1910.132(d) to determine if hazards are present, or are likely to be present which necessitate the use of personal protective equipment (PPE), and identify and evaluate respiratory hazards as required by 29 CFR 1910.134(d)(1)(iii).
- Establish, implement, and maintain a written respiratory protection program in accordance with 29 CFR 1910.134(c) in any workplace where respirators are necessary to protect employee health.
- Provide and ensure that employees use appropriate respiratory protection where necessary to protect employee health.
- Provide and ensure the use of the appropriate gloves (e.g., butyl, nitrile), goggles, and protective clothing when necessary to protect employees from workplace hazards (e.g., exposure to contaminated equipment, chemical containers).
- Train employees on the limitations and proper use and maintenance of required PPE in accordance with 29 CFR 1910.132(f).

4. Training and Information.

Employers must comply with the OSHA Hazard Communication standard, 29 CFR 1910.1200. In particular, employers must ensure that employees exposed to 1BP are trained in and have access to the following information:

- The operations in their workplace where hazardous chemicals are present;

- Safety data sheets (SDSs) for chemicals containing 1BP, which must include information about the signs and symptoms of exposure and the hazards of dermal contact with 1BP;
- Any protective measures the employer is using to reduce employee exposures to 1BP;
- Specific work practices employees can use to reduce exposure to 1BP;
- Appropriate use of personal protective equipment;
- Methods that may be used to detect the presence of the 1BP in the workplace, such as workplace monitoring.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. OSHA may return to your work site in one year to further examine employee exposures to 1BP.

Enclosed is the above-mentioned OSHA publication that may be of assistance to you in preventing work-related injuries and illnesses in your workplace. If you have any questions, please feel free to call [###].

Sincerely,

Area Director

Enclosure (OSHA/NIOSH Hazard Alert publication)