

Hazardous chemical exposure: guidelines for the optometric office

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ABSTRACT

BACKGROUND

The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (HCS) applies to all types of employers, including optometrists. The purpose of the standard is to ensure that employees are aware of chemical hazards in the workplace and know how to protect themselves. Any optometric office that uses chemicals such as acetone, alcohol, lens-tinting dyes, or disinfection chemicals must comply with HCS.

METHODS

Optometrists must develop, implement, and maintain a written Hazard Communication Program for their practices. The program must describe how they plan to meet the requirements of HCS. It should include the development of a listing of all hazardous chemicals used in the office, the collection of appropriate Material Safety Data Sheets (MSDS) for each chemical, the labeling of hazardous chemical containers, and the provision of an effective employee-training program.

RESULTS

The implementation of an effective Hazard Communication Program will help ensure employee safety. A sample outline for a Hazard Communication Program for an optometric office is provided.

CONCLUSIONS

Optometrists with one or more employees have an obligation to ensure these employees are provided with a healthy and safe workplace. OSHA has established specific requirements relating to employees' potential exposure to chemicals. Failure to comply with OSHA regulations may result in significant fines.

KEY WORDS

hazardous chemicals, Hazard Communication Standard, Occupational Safety and Health Administration

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Potential risks for exposure to hazardous chemicals exist in many workplace settings, including optometrists' offices. The Occupational Safety and Health Administration (OSHA) has issued the "Hazard Communication Standard" (HCS)—also called "Right to Know"—to ensure employers and employees are aware of chemical hazards and know how to protect themselves in the workplace.

HCS, which may be found in Title 29, Code of Federal Regulations, Section 1910.1200, establishes uniform requirements to ensure that chemical hazard information is transmitted to those who are exposed to various chemicals in the workplace.¹ This regulation covers all employees who are exposed to hazardous chemicals under normal working conditions or in a foreseeable emergency. All employers, including optometrists, are required to meet these regulations if hazardous chemicals are used by their employees. Many chemicals commonly used in optometric offices fall into this category (*see* Box).

Chemical manufacturers have the responsibility of determining the hazards of each product and conveying this information to purchasers through Material Safety Data Sheets (MSDS) and labels. Employers are responsible for obtaining this information and communicating it to their employees by means of a Hazard Communication Program. This article outlines the requirements of the Hazard Communication Standard and the specific steps optometrists need to take to comply.

Developing a hazard communication program

Optometrists must develop, implement, and maintain a written Hazard Communication Program. The program must be readily available to employees as well as OSHA representatives. (A sample program is included in Appendix 1, *see* p. 230) It must include the following:

Listing of hazardous chemicals

A complete list of hazardous chemicals used in the office needs to be developed.¹ The responsibility of determining whether a chemical is

hazardous falls on the manufacturer or importer of the chemical.² They must review available scientific evidence concerning the chemical hazards of their products and report this information to those who use them.

Optometrists should carefully examine their offices and prepare a list of all hazardous chemicals used. The definition of chemical hazards in the HCS is very broad. Chemicals covered by the standard include liquids, solids, gases, vapors, fumes, and mists. However, the following items are excluded from coverage:

- Items intended for personal use;
- Items used in the workplace in the same manner and duration as a normal consumer (e.g., glass cleaner, whiteout correction fluid); and
- Food, drugs, and cosmetics brought into the office for employee consumption.

If a question exists regarding whether a particular chemical is covered, it is best to include the chemical in the Hazard Communication Program. The hazardous chemical list serves as an inventory for everything that must be labeled and for which Material Safety Data Sheets must be obtained.

Obtaining material safety data sheets

MSDSs contain information developed by manufacturers concerning hazardous chemicals and provide details about information found on warning labels. It is required that information be provided on: the physical and chemical properties of the chemical; physical hazards of the chemical; known acute and chronic health effects; primary routes of entry; exposure limits; whether the chemical is considered to be a carcinogen; precautionary measures; emergency and first-aid procedures; the identification of the organization (name, address, phone number) responsible for preparing the MSDS; and date of preparation.¹

The manufacturer is responsible for automatically providing MSDSs to the distributor or user of the hazardous chemical. The optometrist is responsible for making sure there is a MSDS for every item on the list of hazardous chemicals for the office. If a manufacturer sends an updated MSDS, the old copy should be replaced with the current information. If there is a hazardous chemical on the list for which no MSDS was provided, the optometrist should contact the manufacturer or supplier to obtain it.¹ A copy of a letter or documentation of a phone call to the manufacturer

should be kept to show a good faith effort has been made to obtain the MSDS.²

The MSDSs must be readily available to employees.¹ A staff member can be assigned responsibility for obtaining and maintaining all MSDSs for the office and notifying the manufacturer if an MSDS is not received.² The person responsible must be identified in the written Hazard Communication Program.

Labeling of chemicals

Chemical manufacturers must label containers of hazardous chemicals with the identity of the chemicals, appropriate hazard warnings, and the name and address of the manufacturer.¹ Labels serve as an immediate warning to employees of hazardous chemicals and provide a link to more detailed information in the MSDSs.³ The optometrist is responsible for making sure each chemical on the list of hazardous chemicals for the office is properly labeled. Labels must never be removed or defaced. The only situation in which labeling is not required is if the chemical is used immediately in a temporary container by the person preparing the chemical.

The hazard warnings on the containers may be words, pictures, or symbols that properly convey chemical hazards. Signs, placards, operating procedures, and other written material may be substituted for labels, as long as the method identifies the containers to which it is applicable and conveys the same information as the labels.³ A staff person can be designated to be responsible for ensuring labeling is proper for each hazardous chemical.² The person responsible must be identified in the written Hazard Communication Program.

Providing employee information and training

An effective training and information program must be established and maintained for all employees exposed to hazardous chemicals, including employees with potential for exposure during an emergency. Information and training should be provided at the time of initial assignment and whenever a new hazard is introduced.³

Information provided for employees should include the requirements of the Hazard Communication Standard, the components of the office Hazard Communication Program, work procedures in areas in which hazardous chemicals exist, location of a copy of the written Hazard Communication Program, listing of hazardous chemicals, and MSDS forms.^{1,3}

Training must include information on:^{1,3,4}

- How the Hazard Communication Program is implemented;
- How to interpret information on labels and MSDSs;
- How employees can obtain and use available hazard information;
- The physical hazards of chemicals in employees' work areas and measures employees can take for protection from these hazards;
- Health hazards—including signs and symptoms related to chemical exposure—and medical conditions that may be aggravated by chemical exposure; and
- Procedures implemented for employee protection, such as engineering controls, work practices, personal protective equipment (PPE), and emergency procedures.

Employee training should promote safe handling of hazardous chemicals.² A properly conducted program ensures employee comprehension and understanding. A record of employee training should be maintained. The person responsible for training should be identified in writing, along with the format of the training (e.g., audio/visual, classroom instruction).² Special training is also required for nonroutine tasks, such as cleaning of containers, that may expose the employee to hazardous chemicals; proper precautions to reduce or avoid exposure should be covered during training. Employees may receive training elsewhere (e.g., a trade school), but the optometrist is responsible for ensuring they have been trained properly.

Informing contractors

On-site contractors (e.g., painters, cleaners) must be informed of chemical hazards they may encounter in the office. The optometrist should explain the labeling system, clearly state whether protective equipment is required, and notify the contractor of the location of MSDSs. The contractors should also notify the optometrist of any hazardous chemicals they may use, and the chemicals should be labeled properly.

Providing personal protective equipment

Personal protective equipment (PPE) may be needed to create a barrier against chemical hazards in the workplace. PPE should be used in conjunction with engineering, work practice, and administrative controls. Optometrists should perform an evaluation to determine if PPE is needed to protect against the hazards in the office. A standard operating procedure should

Hazardous chemical listing

Partial list of some hazardous chemicals that may be used in an optometric practice

- Acetone
- Antistatic/anti-fog lens cleaners
- Contact lens disinfection systems containing hydrogen peroxide
 - Denatured alcohol
 - Disinfectants
 - Hydrogen peroxide
 - Isopropanol
- Ophthalmic lens chemical-tempering salts
 - Ophthalmic lens-dye neutralizers
 - Ophthalmic lens-tinting dyes

Box

then be developed and employees trained on proper use of PPE.⁴

OSHA requires eye and face protection when there is a reasonable probability of preventing injury when the equipment is used. Eye protection with side shields must be provided when there is potential for eye injury from flying objects, chemicals, and other risks. PPE must be disinfected between use, if used by more than one employee.⁴

The need for ear protection and a hearing conservation program is based on both noise level and exposure time. While this will probably not be required for most optometric offices, an OSHA consultant or industrial hygienist can help make this determination.

Torso protection must be provided when such risks as heat and splashes from hot chemicals threaten the torso. Vests, jackets, aprons, coveralls, and full-body suits are available in various materials. Rubber, neoprene, and plastics provide protection against many chemicals.⁴

Arm and hand protection should be used when such risks as burns and chemical absorption exist. Rubber gloves are usually most effective against these hazards.⁴

Evaluating ventilation

Precautions must be taken to reduce or eliminate airborne contaminants and fumes in the office. The prevention of atmospheric contamination is usually achieved by engineering controls, such as exhaust

hoods. The type ventilation needed will depend on the chemical used and the employee's exposure time. MSDSs address ventilation and make recommendations. However, the appropriate ventilation can only be properly determined by evaluating the particular workplace. A professional consultant, such as an industrial hygienist or OSHA consultant, can help determine the appropriate ventilation for a particular workplace.⁵

Other OSHA regulations

In addition to meeting the specific requirements of the Hazard Communications Standard, optometrists need to be aware of other requirements that apply to their offices. OSHA requires all employers to post a notice, informing employees of the OSHA Act of 1970. The notice informs employees of protections and obligations provided for in the Act. It also advises them to contact their employer or the Department of Labor for assistance or additional information. The notice must be posted by the optometrist in a conspicuous area, readily available to employees.⁶ Copies of the notice can be obtained from any OSHA office.

Developing an emergency action plan

Proper planning for emergencies helps minimize the risk of employee injury. Basic steps can be taken to prepare for emergencies such as fire, explosion, and personal injury. OSHA requires that an emergency action plan be implemented in writing for employers with 11 or more employees and at least orally communicated for employers with 10 or fewer employees. The plan must cover at least the following:^{7,8}

- Emergency escape procedures and escape-route assignments;
- Procedures to account for all employees after an emergency evacuation;
- Means of reporting fires and other emergencies; and
- Name of person to contact for further information of duties under the plan.

For purposes of emergency evacuation, a floor plan that clearly shows the emergency escape routes should be developed. A method of communication is needed to alert all employees to evacuate. Exits must be clearly marked and not obstructed in any way. Exit signs must be at least six inches tall and three-quarters of an inch wide and must be illuminated if office hours are conducted after dark. All employees must be instructed on what their actions are to be in emergency situations. Emergency phone numbers should be

posted in conspicuous locations. If there are any changes in the plan or the employees' responsibilities, the plan should be reviewed. A copy of the plan should be kept where employees can easily refer to it.^{7,8} Employee training is essential to an effective emergency action plan.

Recording occupational injuries

Employers with 11 or more employees at any point during the year are required to keep illness and injury records, regardless of whether any occurred. Optometrists in this category should request the OSHA 200 log and summary form.

OSHA inspection

Compliance Safety and Health Officers (CSHOs) of the Department of Labor are authorized to enter, inspect, and investigate, during regular working hours, any place where work is performed by an employee for an employer.⁹ Routine inspection of an optometric practice is rare. Most inspections occur as a result of a complaint filed by an employee or past employee who feels a hazardous working condition may exist. To determine the extent to which a practice is in compliance with the HCS, the CSHO will ask to see a copy of the practice's written Hazard Communication Program. Employees may also be interviewed to determine if training is adequate.

An optometrist may refuse to permit the CSHO to enter. The CSHO will ascertain a reason for the refusal and report the refusal and reason to the Area Director of OSHA. The Area Director may then get an inspection warrant and the CSHO may return for the inspection. At the conclusion of the inspection, the CSHO will advise the optometrist informally of any apparent violations. The optometrist will be given the opportunity to present additional pertinent information. The area director will decide whether to issue a citation and the appropriate penalty.

OSHA consultant

Each state provides consultants who will perform on-site evaluations to determine whether all OSHA standards have been met. These evaluations will not result in any citations and will not trigger OSHA inspections. (The consultants' phone numbers for each state are listed in Appendix 2, *see* p. 232.) Many insurance companies also have professional consultants who are an excellent source of information and will often perform inspections to help ensure OSHA compliance.

Copies of the complete OSHA Hazard Communication Standard (29 CFR 1910.1200) and other applicable OSHA regulations can be obtained from any OSHA regional office or the OSHA Publications Office, 200 Constitution Avenue NW, Room N3101, Washington, D.C. 20210; phone, (202) 219-4667. There is no charge for a single copy.

Discussion

Although the OSHA requirements for a Hazard Communication Program may initially appear overwhelming, optometrists have no option except to comply with them. Failure to do so can result in a significant fine. A checklist to help determine if the HCS requirements are being met is included in Appendix 3 (see p. 232).

Fortunately, most employees in optometric offices are not at high risk for exposure to hazardous chemicals. However, optometrists have an obligation to ensure their employees are provided with a healthy and safe workplace.

References

1. Department of Labor, Occupational Safety and Health Administration. Chemical hazard communication, OSHA 3084, 1992:1-13.
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7. Department of Labor, Occupational Safety and Health Administration. 29 CFR Part 1910.35-1910.38(a), Means of egress, employee emergency plans, 1989.
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9. Department of Labor, Occupational Safety and Health Administration. 29 CFR Part 1903, Inspections, citations, and proposed penalties, 1989.

Footnotes

- a** Private practice, Americus, Georgia.
b American Optometric Association, St. Louis, Missouri.

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Appendix 1. Sample Hazard Communication Program*

For the office of _____

Policy

In the course of conducting our practice, we use some materials that require specific precautions to protect our employees' health and safety. It is therefore the policy of _____ to communicate any potential hazards to which our employees may be exposed. Our policy is to minimize hazards by proper training, engineering controls, providing appropriate protective equipment, and other means necessary to make this office a safe and healthy environment in which to work.

The employees of _____ have the responsibility of following the safe job procedures as outlined in this policy.

Purpose

The purpose of the Hazard Communication Program is to transmit information concerning chemical hazards to employees in compliance with OSHA Hazard Communication Standard (HCS), Title 29 Code of Federal Regulations 1910.1200. The primary means of communication will be compiling a hazardous chemical list, using Material Safety Data Sheets (MSDSs), ensuring labeling of containers, and providing proper employee training.

Scope

This program applies to all employees of _____ that may be exposed to hazardous substances under normal working conditions or during a foreseeable emergency. All covered employees will be given a copy of the Hazard Communication Program and OSHA's Hazard Communication Standard and required to read them.

_____ is the program coordinator and will ensure that compliance of OSHA HCS is maintained. He/she will also review and update the program as necessary. Any information needed, including copies of the program, should be directed to the program coordinator.

Hazardous Chemical List

_____ will prepare a list of all hazardous chemicals and update the list as necessary. A list will be kept in each work area that contains a hazardous chemical.

_____ is responsible for recording the chemical name, the brand name, and the company name and address of any hazardous chemicals. He/she must also verify that a corresponding MSDS is available for each hazardous chemical. In this program, every chemical will be inspected and if it bears a hazardous warning, it will be listed. The only exception will be household products used in the same manner or quantity as for typical household use.

Material Safety Data Sheets (MSDSs)

MSDSs are prepared by manufacturers to communicate specific information about their products. MSDSs will be available on each hazardous chemical on our list.

_____ will ensure that each area dealing with a hazardous chemical will have MSDSs readily available. He/she will maintain a central binder of all MSDSs and be responsible for acquiring and updating the MSDSs. He/she will contact the chemical manufacturer if an MSDS is not supplied with the initial shipment and will keep records of these contacts. Inserts on drugs handled in this office by employees will also be maintained in a central location. Each employee is responsible for being familiar with the MSDS for each hazardous chemical used.

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Labels

_____ will ensure that all hazardous chemicals are labeled according to OSHA standards. The labels must contain the chemical identity, appropriate hazard warnings, and the name and address of the manufacturer. _____ will update the labels as necessary and verify the information with the corresponding MSDSs.

Manufactured products are required by OSHA to already be labeled and do not have to be re-labeled if the label is in good condition. Chemicals that are not in the original container must be labeled unless the container is temporary and transferred for immediate use. Employees shall not destroy, remove or deface a label unless immediately replaced with the required information. Any employee who receives hazardous chemicals shall check for appropriate labels and forward all MSDSs to _____.

For added safety it is the policy of this practice to label all containers in this office regardless of whether or not they are considered hazardous.

Training

Every employee who works with or is potentially exposed to a hazardous chemical will receive training on the HCS and safe use of the hazardous chemicals by _____. The training will occur at the time of the initial assignment and whenever a new hazard is introduced or when new information is available. There will be yearly refresher training and records will be kept of each training session. The record will include the name of the employee, date of training, and checklist of information covered. The employee will be given a written and verbal quiz to assure complete understanding. The training will include:

- A summary of this program and the HCS;
- Chemical and physical properties of the hazardous chemicals listed;
- Methods for detecting the presence of chemicals, such as visual appearance or smell;
- Physical hazards of chemicals, such as potential for fire;
- Health hazards of chemicals including signs and symptoms if exposure occurs, any medical condition that may be aggravated, and target organs;
- Procedures to protect against hazards including proper use and maintenance of PPE, proper methods of handling chemicals, emergency procedures, engineering controls;
- Safe procedures for cleaning hazardous chemical spills or leaks; and
- How to read and interpret information on labels and MSDSs.

Special training will be provided for those required to perform non-routine tasks such as cleaning containers and equipment which may involve contact with concentrations of hazardous chemicals.

On-Site Contractors

_____ will inform contractors, such as cleaning services, electricians, and painters, in person of any chemical hazards they may encounter in their normal work course. The location of the MSDSs and the office hazardous chemical list will be communicated to the contractor. Contractors will be informed of the labeling system used, protective measures to be taken and safe handling procedures to be used. There will be a clear understanding of who is to furnish any PPE that may be needed. Contractors will be required to provide hazard information including the labeling system used and precautionary measures to be taken on any hazardous chemicals being brought into this office by the contractor. The contractors are responsible for the protection of their employees.

**This document is an example only.* Consult the complete OSHA Hazard Communication Standard to assure compliance.

Appendix 2. OSHA consultation project directory

State	Telephone	State	Telephone
Alabama	(205) 348-3033	Montana	(406) 444-6401
Alaska	(907) 269-4939	Nebraska	(402) 471-4717
Arizona	(602) 542-5795	Nevada	(702) 486-5016
Arkansas	(501) 682-4522	New Hampshire	(603) 271-2024
California	(415) 703-4441	New Jersey	(609) 292-3923
Colorado	(303) 491-6151	New Mexico	(505) 827-2877
Connecticut	(203) 566-4550	New York	(518) 457-2481
Delaware	(302) 577-3908	North Carolina	(919) 662-4651
District of Columbia	(202) 576-6339	North Dakota	(701) 328-5188
Florida	(904) 488-3044	Ohio	(614) 644-2631
Georgia	(404) 894-2646	Oklahoma	(405) 528-1500
Guam	(671) 647-4202	Oregon	(503) 378-3272
Hawaii	(808) 586-9116	Pennsylvania	(412) 357-2396
Idaho	(208) 385-3283	Puerto Rico	(809) 754-2171
Illinois	(312) 814-2337	Rhode Island	(401) 277-2438
Indiana	(317) 232-2688	South Carolina	(803) 734-9599
Iowa	(515) 281-5352	South Dakota	(605) 688-4101
Kansas	(913) 296-4386	Tennessee	(615) 741-7036
Kentucky	(502) 564-6895	Texas	(512) 440-3834
Louisiana	(504) 342-9601	Utah	(801) 530-6868
Maine	(207) 624-6460	Vermont	(802) 828-2765
Maryland	(410) 333-4218	Virginia	(804) 786-8707
Massachusetts	(617) 969-7177	Virgin Islands	(809) 772-1315
Michigan (H)	(517) 332-8250	Washington	(206) 956-5443
(S)	(517) 322-1809	West Virginia	(304) 558-7890
Minnesota	(612) 297-2393	Wisconsin (H)	(608) 266-8579
Mississippi	(601) 987-6981	(S)	(414) 521-5188
Missouri	(314) 751-3403	Wyoming	(307) 777-7786

(H) = Health; (S) = Safety.

Appendix 3. Hazard communication standard compliance checklist

The following steps should be followed in the development of a Hazard Communication Program:

- Designate a person who will be responsible for the Hazard Communication Program;
- Prepare a written Hazard Communication Program;
- Prepare a hazardous chemicals list;
- Provide a copy of the written Hazard Communication Program to each employee;
- Obtain MSDS for each chemical and make them available to employees;
- Conduct training of employees; and
- Ensure all chemical containers are properly labeled;
- Establish procedures to maintain the Hazard Communication Program and evaluate its effectiveness.