Hazard Communications & Hazardous Waste Regulations for Dental Offices

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Continuing Education Units: 3 hours


Disclaimer: Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

Chemical agents are used every day in health care settings throughout the United States. Dental offices rely on chemicals to disinfect contaminated surfaces, etch teeth before application of resin restorations, disinfect canals during root canal treatment, and for countless other purposes.

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Overview
Chemical agents are used every day in health care settings throughout the United States. Dental offices rely on chemicals to disinfect contaminated surfaces, etch teeth before application of resin restorations, disinfect canals during root canal treatment, and for countless other purposes.

These benefits do not come without some risks. Inappropriate handling, use, and disposal of chemicals have been responsible for injuries, illnesses, and environmental pollution. In response to concerns about exposure to hazardous chemicals in the workplace, the U.S. Occupational Safety and Health Administration (OSHA) issued the Hazard Communication Standard in 1983. The latest update was published in 2012. This broad regulation applies to all workplaces that have at least one employee. Because the same rule applies to industrial and professional settings, a thorough review of the regulation as it relates to the practice of dentistry is necessary. At first glance, the regulation would seem to apply to those workplaces that have large amounts of hazardous chemicals in use on a regular basis. However, the Hazard Communication Standard applies to all workplaces that have at least one employee that is exposed to potentially hazardous chemicals on the job. Additional rules for hazardous waste complete the cycle of responsibility for hazardous materials in the workplace.

MSDS (Material Safety Data Sheets) are now known as SDS (Safety Data Sheets) and will improve worker understanding of hazards. Manufacturers have until June 1, 2016 to comply with this regulation.

Learning Objectives
Upon completion of this course, the dental professional should be able to:
• Understand the role of OSHA in regulating safe use of chemicals in the workplace.
• Describe the required components of a written Hazard Communication Program.
• Differentiate between toxic, corrosive, ignitable, and reactive hazardous wastes.
• Understand the role of the Safety Data Sheet in identifying hazards associated with specific chemicals or chemical compounds.
• Identify the training requirements of the Hazard Communication Standard.
• Ensure proper labeling of chemicals in the dental office.
• Assist the dentist in ensuring compliance with hazardous waste and hazard communication regulations.
• Understand and comply with recordkeeping requirements for various hazardous waste and hazard communication regulations.
• Define the roles of the manufacturer, employer, and employee in relation to these regulations.
• Understand the roles of OSHA and EPA in hazardous materials management.

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Glossary

ACGIH - (American Conference of Governmental Industrial Hygienists) - an organization of professional personnel in governmental agencies or educational institutions engaged in occupational safety and health programs; establishes recommended occupational exposure limits to chemical substances and physical agents

acid - any chemical that undergoes dissociation in water with the formation of hydrogen ions; have a sour taste and may cause severe skin burns; turns litmus paper red and have pH values of 0 to 6

acute effect - adverse effect on a human or animal that has severe symptoms developing rapidly and coming quickly to a crisis

acute toxicity - acute effects resulting from a single dose of, or exposure to, a substance; ordinarily used to denote effects in experimental animals

adenocarcinoma - tumor with glandular (secreting) elements

adenosis - any disease of a gland

aerosol - fine aerial suspension of particles sufficiently small in size to confer some degree of stability from sediment (e.g., smoke or fog)

alkali - chemical substance that forms soluble soaps with fatty acids; also referred to as bases; may cause severe burns to the skin; turns litmus paper blue and have pH values from 8 to 14

allergic reaction - abnormal physiological response to chemical or physical stimuli

anesthetic - a chemical that causes a total or partial loss of sensation; overexposure to can cause impaired judgement, dizziness, drowsiness, headache, unconsciousness, and even death; examples include alcohol, paint remover, and degreasers

ANSI - (American National Standards Institute) a privately funded, voluntary membership organization that identifies industrial and public needs for national consensus standards and coordinates development of such standardize

aquatic toxicity - adverse effects to marine life that result from being exposed to a toxic substance

ASTM - (American Society for Testing and Materials) the world’s largest source of voluntary consensus standards for materials, products, systems, and services; a resource for sampling and testing methods, health and safety aspects of materials, safe performance guidelines, effects of physical and biological agents and chemicals

ceiling limit (PEL or TLV) - maximum human exposure limit for an airborne substance that is not to be exceeded even momentarily

CAA - (Clean Air Act) enacted to regulate/reduce air pollution; The U.S. Environmental Protection Agency administers CAA

carcinogen - substance or agent capable of causing or producing cancer in mammals, including humans

CAS - (Chemical Abstract Service) an organization under the American Chemical Society; abstracts and indexes chemical literature from all over the world in “Chemical Abstracts;” CAS Numbers are used to identify specific chemicals or mixtures

CFR - (Code of Federal Regulations) a collection of the regulations that have been promulgated under United States Law

chronic effect - adverse effect on a human or animal body, with symptoms that develop slowly over a long period or that recur frequently

chronic toxicity - adverse (chronic) effects resulting from repeated doses of or exposure to a substance over a relatively prolonged period; used to denote effects in experimental animals

combustible - term used to classify certain liquids that will burn, on the basis of flash points common name - means used to identify a chemical other than its chemical name (e.g., brand name or generic name)

CPSC - Consumer Product Safety Commission

CWA - (Clean Water Act) enacted to regulate/reduce water pollution
cytology - scientific study of cells

dermal toxicity - adverse effects resulting from skin exposure to a substance; used to denote effects in experimental animals

dysplasia - abnormality of development

dyspnea - sense of difficulty in breathing; shortness of breath

edema - abnormal accumulation of clear watery fluid in tissues

endocrine glands - glands that regulate body activity by secreting hormones

environmental toxicity - information obtained as a result of conducting environmental testing designed to study the effects on aquatic and plant life

epidemiology - science concerned with the study of disease in a general population

FDA - U.S. Food and Drug Administration

fibrosis - abnormal thickening of fibrous connective tissue, usually in the lungs

flashpoint - minimum temperature at which a liquid gives off a vapor of sufficient concentration to ignite when tested using standard methods

fume - solid condensation particle of extremely small diameter, commonly generated from molten metal as a metal fume

hematoma - blood clot under the skin

hepatotoxin - substance that causes injury to the liver

hyperplasia - increase in volume of a tissue or organ caused by the growth of new cells

mist - suspended liquid droplets generated by condensation from the gaseous to the liquid state, or by breaking up a liquid into a dispersed state, such as splashing, foaming or atomizing; formed when a finely divided liquid is suspended in air

mutagen - substance or agent capable of altering the genetic material of a living cell

narcosis - state of stupor, unconsciousness, or arrested activity produced by the influence of narcotics or other chemicals

neoplasia - condition characterized by the presence of new growths (tumors)

nephrotoxin - substance that causes injury to the kidneys

neurotoxin - material that affects the nerve cells and my produce emotional or behavioral abnormalities

NIOSH - (National Institute for Occupational Safety and Health) non-regulatory government agency

oxidizer - chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, causing fire either by itself or through the release of oxygen or other gases

pel - (Permissible Exposure Limit) an occupational exposure limit established by OSHA's regulatory authority

pneumoconiosis - condition of the lung in which there is permanent deposition of particulate matter and the tissue reaction to its presence; may range from relatively harmless forms of iron oxide deposition to destructive forms of silicosis.

ppm - (parts per million) the concentration of a gas or vapor in air

rel - (recommended exposure limit) maximum exposure limit to an airborne contaminant established by NIOSH; OSHA often subsequently adopts an REL as a PEL.

reproductive toxin - substances that affect either male or female reproductive systems and may impair the ability to have children

sensitizer - chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical
Silicosis - disease of the lungs (fibrosis) caused by the inhalation of silica dust

Transplacental - agent that causes physical defects in the developing embryo

TWA - (time-weighted average) exposure is the airborne concentration of a material to which a person is exposed, averaged over a total exposure time – generally the total workday (8 – 12 hours)

Vapor - gaseous form of a solid or liquid substance as it evaporates

Background
About 43 million American workers are exposed to chemicals in the workplace. Chemical exposures may cause or contribute to many serious health conditions such as organ damage, respiratory failure, illness, cancer, burns, sterility, and dermatitis. There are more than 600,000 existing chemical products, with hundreds more entering the marketplace every year. Often employers and employees are unaware of the potential adverse effects of these chemicals. Of occupational concern is proper usage, storage, handling, and first aid procedures associated with chemicals. In response to these issues, the Occupational Safety and Health Administration (OSHA), a division of the U.S. Department of Labor, issued the Hazard Communication Standard in 1983. This standard was revised in 1987 and again in 1988. In 2012, OSHA adopted major changes to align with the United Nations' Global Harmonized System of Classification and Labeling of Chemicals. The provisions of the revisions resulting from these changes must be phased in between December 1, 2013 and June 1, 2016. The standard addresses specific issues related to chemical hazards in the workplace and gives guidelines for developing a Hazard Communication Program. However, OSHA does not dictate how the provisions of the regulation must be met. It is the responsibility of each employer to assess the hazards present in the workplace and determine the appropriate level of training and precautionary measures.

Additional regulations that relate to hazardous chemicals in the workplace exist. Most notable are the requirements for hazardous waste storage and disposal. In this article, the requirements of the Hazard Communications Standard and hazardous waste regulations including means of compliance as they relate to the practice of dentistry will be discussed.

Hazardous Waste and Hazardous Materials Regulations
A matrix of regulations applies to hazardous chemicals and this may create confusion for those trying to meet regulatory requirements. Briefly stated these regulations fall into three general areas. Hazard Communication is an OSHA regulation, and as such, has provisions that are intended solely to protect the health of the working people of the United States. This regulation will be outlined in detail later in this article. Hazardous Materials Registration is required in many locations to provide emergency response personnel with access to information about chemicals that may pose a special hazard in the event of fire or other emergency. It is simply a list of all chemicals in the workplace that is submitted to the local health department upon their request. The registration may also require the employer develop a written hazard response plan and address additional issues such as proper storage and labeling of chemicals in the workplace. The third area of concern with chemicals is the storage, transportation, and disposal of chemical waste products that may pose a threat to the environment or to human health.

Hazardous Waste
The Environmental Protection Agency (EPA) regulates chemicals as they relate to the environment. A hazardous waste is a waste, or combination of wastes which because of its quantity, concentration, or physical or chemical properties may:

1. Cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness, or
2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed.

A discharge to the water, land or air of chemicals that may be hazardous is under the jurisdiction of the EPA. The EPA classifies hazardous chemicals...
into four major categories. The categories include chemicals that are flammable, corrosive, toxic, or reactive. Specific guidelines for classification of hazardous waste exist and may vary from state to state. In general, the classification definitions are as follows:

**Corrosive**
- It is not aqueous and when mixed with an equivalent weight of water, produces a solution having a pH less than or equal to 2, or greater than or equal to 12.5.
- It is not a liquid and when mixed with an equivalent weight of water produces a liquid that corrodes steel at a rate greater than .250 inch per year at a temperature of 130°F.

**Reactive**
- Normally unstable and readily undergoes violent change without detonating.
- Reacts violently with water.
- Forms potentially explosive mixtures with water.
- When mixed with water, it generates toxic gases, vapors, or fumes of a quantity to sufficient to present a danger to human health or the environment.
- Contains enough cyanide or sulfide to react with a pH between 2 and 12.5 and generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.
- Is capable of detonation or explosive reaction if it is subjected to a strong initiating source or heated under confinement.
- Is readily capable of detonation or explosive decomposition or reaction at standard temperature or pressure.
- Is a forbidden explosive per 49 CFR Sec. 173.51, Class A explosive per 49 CFR Sec. 173.53 or Class B explosive per 40 CFR Sec. 173.88.

**Ignitable**
- A liquid other than an aqueous solution containing less than 24% alcohol and has a flash point less than 140°F.
- A liquid capable under standard temperature and pressure of causing a fire through friction, absorption of moisture or spontaneous chemical charges and when ignited burns so vigorously and persistently that it creates a hazard.
- Ignitable compressed gas.
- Oxidizer as defined in 49 CFR 173.151.

**Toxic**
- An acute injurious effect exhibited immediately or shortly after exposure.
- A chronic injurious effect exhibited later.

It is often difficult, if not impossible, for the dental team to determine what may be a hazardous waste. Fortunately, most counties have readily available resources to assist in making these determinations. The local Department of Toxic Substances Control or the Department of Public Health are commonly the local agencies responsible for administration of hazardous waste and hazardous materials regulations. Often, the companies that offer hazardous waste disposal services are able to provide dental offices with the necessary information to comply with the hazardous waste regulations. These companies often offer additional services such as labeling of wastes, proper containers, training, and inspection.

**Hazardous Waste Manifest**
Manifests are required tracking documents that must be completed for every hazardous waste. The exemption is for wastes that will be recycled such as amalgam. The manifests are provided by the hazardous waste hauler and provide the regulatory agencies with a means to calculate amounts of hazardous wastes from a single business, a specific location, or an industry. In some states, the dental office must submit a copy of the manifest to the EPA within thirty days of the date the waste was picked up. The waste hauler should not retain the copy that is to be mailed by the generator of the waste. Some companies will offer to mail in the required copy as a service to their customers. It is not a good practice to relinquish that responsibility.

Instructions for management of the manifest should appear on the back of the document. A copy of the manifest must be maintained and available for inspection for a minimum of three years. Because of “cradle to grave” laws that make every generator of hazardous waste responsible for the hazardous waste until it is destroyed, it is prudent to retain all manifests, keeping only those required for inspection.
accessible to the regulatory agencies. Manifests that are more than three years old should be boxed and stored with other important, but inactive, records. Hazardous waste regulations vary greatly from state to state and county to county. Some locations may require specific permits for any type of in-office treatment, such as silver recovery for recycling. Additionally, many locations provide exemptions for metal waste that can be recycled as scrap, including amalgam.

All hazardous waste must be labeled with the identity of the substance and the starting date for accumulation. Time limits for storage exist, and will vary depending on location. In general, small quantity generators such as dental offices may store hazardous waste up to one year.

Hazardous waste may not be placed with the regular trash, poured down the drain, or discharged to the environment in any manner. The local state or county toxics division of the public health department generally sets specific limits. These limits can vary greatly in different locations and may make the difference in how some products must be disposed. In some locations, the developer from x-ray processing units does not contain silver in amounts that exceed the discharge limits. In other locations, especially in counties where certain types of manufacturing take place, limits are strict enough to require all x-ray-processing chemicals be handled as a hazardous waste.

The dental team rarely has the resources to perform a hazardous waste determination. Local regulatory agencies, and in some cases, component dental societies, are a good resource for determining specific limits and requirements for a given area. Some commonly found dental products that are usually classified as regulated hazardous waste are glutaraldehyde, x-ray fixer, and scrap amalgam (unless recycled), among others (Table 1).

Overview of the Hazard Communication Standard
The Hazard Communication Standard is intended to ensure the evaluation of the hazards of all chemicals produced or imported, and the communication to employers and employees of appropriate handling and safe use of chemical products. This regulation is also called the employee “right-to-know” law. The responsibility for providing information is as follows:

- **Chemical manufactures and importers:** Determine the hazards of each chemical or product.
- **Chemical manufactures, importers, and distributors:** Communicate the hazard information and associated protective measures downstream to customers through labels and Safety Data Sheets (SDS).

### Table 1. Common dental products classified as regulated hazardous waste.

<table>
<thead>
<tr>
<th>Process/Activity</th>
<th>Hazardous Waste</th>
<th>Waste Code*</th>
<th>Hazard Class**</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-ray processing</td>
<td>Fixer</td>
<td>D011</td>
<td>T, T, C</td>
</tr>
<tr>
<td></td>
<td>Developer</td>
<td>D002</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lead foil</td>
<td>D008</td>
<td></td>
</tr>
<tr>
<td>Chemical Germicides</td>
<td>Glutaraldehyde</td>
<td>D001</td>
<td>T, I, T</td>
</tr>
<tr>
<td></td>
<td>Formaldehyde (in VapoSterile® solution)</td>
<td>D001</td>
<td>I, T</td>
</tr>
<tr>
<td></td>
<td>Phenyl/phenol</td>
<td>D001</td>
<td>I, T</td>
</tr>
<tr>
<td></td>
<td>Ethanol</td>
<td>D001</td>
<td>I, T</td>
</tr>
<tr>
<td>Restorative Dentistry</td>
<td>Amalgam</td>
<td>D001</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>Free mercury</td>
<td>D009</td>
<td></td>
</tr>
</tbody>
</table>

* Suggested EPA waste codes. There are many exceptions. Your hazardous waste hauler can provide additional assistance in determining the appropriate code.

** Hazard Classes: T = Toxic C = Corrosive I = Ignitable R = Reactive
• **Employers:** Identify and list hazardous chemicals in the workplace. Obtain Safety Data Sheets (SDS) and labels for each hazardous chemical. Develop and implement a hazard communication program including the items identified in this article.

This regulation is *performance oriented*, which means that the specific methods by which to comply are not dictated by the regulatory agency. Each employer must become familiar with the requirements of the Hazard Communication Standard and ensure compliance. It is permissible for the employer to delegate certain tasks to staff members, such as maintaining a current inventory and ensuring a SDS is available for each product. The employer cannot delegate responsibility for compliance and should maintain overall control of the program.

**Written Hazard Communication Program**

All employers must develop, implement, and maintain a written hazard communication program for the workplace. This written program must describe how the requirements for container labeling, SDS, and employee information and training will be met. The written program must contain a list of the hazardous chemicals in each work area, who is responsible for the program, how the criteria for labels, SDS and training will be met, and the means by which the employer will inform employees of hazards of non-routine tasks. If there are several dentists working in one clinic or practice, they must inform other employers of hazards and protective measures. Numerous resources are available from OSHA to assist with understanding and complying with the Hazard Communication Standard. These resources may be found at [www.osha.gov/dsg/hazcom/index.html](http://www.osha.gov/dsg/hazcom/index.html).

Self-evaluation is an important tool in ensuring compliance. The following checklist will help ensure compliance with the regulation.

1. ☐ Obtained a copy of the rule
2. ☐ Read and understood the requirements
3. ☐ Assigned responsibility for tasks
4. ☐ Prepared an inventory of chemicals
5. ☐ Ensured containers are labeled
6. ☐ Obtained SDS for each chemical
7. ☐ Prepared written program
8. ☐ Made SDS available to employees
9. ☐ Conducted training of workers
10. ☐ Established procedures to maintain current program
11. ☐ Established procedures to evaluate effectiveness

**Container Labeling**

All containers of hazardous chemicals must be labeled before shipment. The determination of what must be on the label is the responsibility of the manufacturer, distributor, or importer. This means that all containers entering the dental office have been properly labeled and do not require additional labels to be affixed. The information that is required includes:

- **Product Identifier** (may be name, code, batch, etc.)
- **Signal Word** (“Danger” or “Warning”)
- **Pictogram** (Figure 1)
- **Hazard Statement**
- **Precautionary Statement**
- **Name and address of the chemical manufacturer, importer, or other responsible party.**

Because it is the manufacturer’s responsibility to provide the appropriate label, dental office personnel do not need to add additional labels as items are received in the office. If a chemical product is to be removed from its original container and placed in another container for use by an employee, labeling of the secondary container is required. The one exception is if that product is intended for use by the employee placing it into the secondary container during that work period (i.e.: placing temporary resin material into a plastic cup for use at chairside). The containers requiring a label be applied by the dental staff would include containers such as spray bottles of disinfectant, small bottles used at chairside containing product poured from a larger container, containers of sterilant/disinfectant, x-ray processing baths and auto-processing units, ultrasonic units, containers of gauze soaked in disinfectant, etc. A simple method of determining if a product requires a warning label is to check the original container. If there is a warning label on that container, one must also appear on the secondary container.
Hazardous Chemical Inventory

It is important to conduct a complete inventory of the dental office to identify the hazardous materials that must be included in the Hazard Communication Program. It is best to methodically inventory all areas of each room in the office. All products that contain a hazard warning on the original label should be listed on the inventory. The name of each manufacturer should also appear on the inventory with the corresponding product. Exceptions to the rule do exist and are outlined in the following section.

Safety Data Sheet

Safety Data Sheets (SDS) are to be provided by the manufacturer, importer, or distributor for...
The products which are exempt and may be found in a dental office include hazardous wastes (regulated by EPA), food, food additive, drugs, cosmetics, medical devices, alcoholic beverages, and consumer products unless employee exposure is greater than exposure to an ordinary consumer. Products such as sodium hypochlorite used for root canal irrigation and disinfection are subject to the regulation. Products such as abrasive cleaners used to clean non-contaminated surfaces in the same manner they would be used in a household are not subject to the regulation. The amount and use of the consumer product will determine whether or not it must be listed on the inventory sheet and a SDS maintained.

Some potentially hazardous materials are exempt from the hazard communication standard and do not need to be included in your written program.

Additionally, the manufacturer or distributor must provide updated SDS when appropriate. Employers must have a SDS for every hazardous chemical that they use, and the SDS for each product must be available to employees in the workplace. In order to determine if all needed SDS have been obtained, a list of chemicals needs to be compiled. Conducting an inventory as described above will do this. Only items that contain a hazard warning on the original label need be included on the inventory list. A sample inventory form is provided in Figure 2.

Figure 2. Sample Inventory Form.
Once the inventory has been completed, a SDS for each item listed must be collected and provided in an accessible area for the employees using the listed products. It is generally easiest to compile a binder with the SDS collected in alphabetical order, by common name. For very large clinics or dental practices, it may be necessary to provide separate binders for different areas. The key to determining if separate files are needed is to determine if the SDS for products being used by employees are easily accessible to those employees during their use of the products. If first aid information is needed due to accidental exposure to a hazardous substance, the employee should not have to spend time searching for the SDS binder. Placing SDS in a binder and placing it on a shelf does not comply with the Hazard Communication Standard. Employees must receive training in how to safety handle, store, and dispose of hazardous materials, and must understand the health hazards associated with each material. Employees must also know how to recognize an accidental release, perform proper cleanup procedures, and the first aid requirements in case of accidental exposure through contact, ingestion, or inhalation.

The SDS must be in English, reference the common name of the product, and contain information regarding the specific chemical identity. There are commercial programs, both written and computer software, available which provide numerous SDS with chemical generic names. This would not meet the requirements for the dental office of referencing the common name (i.e.: the specific brand of disinfectant used). The manufacturer or distributor must provide the SDS. If the SDS for a particular product is not provided, the employer must request it. This request should be in writing. If the requested SDS is not received within 25 working days, it is required that the employers notify the local OSHA office regarding the distributor or manufacturer’s failure to comply. The manufacturer has a responsibility to prepare and supply the SDS, but it is the employer’s responsibility to ensure the information is available.

Maintaining and Updating the Inventory and SDS File

When receiving a shipment of supplies, the inventory list should be checked to ensure an SDS is on file for that product. If a new brand of product is being used, or a distributor provides an updated SDS, the new SDS should be placed in the SDS file, and the old one discarded. Training on proper handling, storage, personal protection, and accidental release detection is required before a new chemical product may be used. It should be clearly stated in the written Hazard Communication Program who will be responsible for maintaining the SDS file and inventory. Additionally, all training should be well documented by outlining the content of the training session, who conducted the training, and who attended.

All SDS must contain at least the following information:

- Identification, including product identifier, manufacturer or distributor contact information, recommended use, restriction on use;
- Hazard(s) identification;
- Composition/information on ingredients;
- First-aid measures;
- Fire-fighting measures;
- Accidental release measures;
- Handling and storage;
- Exposure controls/personal protection;
- Physical and chemical properties;
- Stability and reactivity;
- Toxicological information;
- Ecological information;
- Disposal considerations;
- Transport information;
- Regulatory information; and,
- Other information.

Employee Information and Training

Hazard communication training must be provided to employees who may be exposed to hazardous chemicals in the workplace. In addition, training of all employees of the requirements adopted in 2012 must take place by December 1, 2013. This training must be provided at the time of initial assignment, whenever a new hazard is introduced into the workplace, or if the employee is reassigned. There are minimum requirements for employee information and training that must be met. At a minimum, the discussion topics must include:

- The existence of the hazard communication standard and the requirements of the standard;
• The components of the individual hazard communication program;
• Operations in work areas where hazardous chemicals are present;
• Where the employer will keep the written hazard evaluation procedures, written program, and SDS forms.

A formal training program is required. A summary of the training contents should be provided along with a list of employees attending the training session, the name of the person conducting the training, and the date of training. These records should be kept for a minimum of three years. OSHA has identified the minimum requirements for the content of a hazard communication training program as follows:

• How the hazard communication program is implemented in the office, how to read and interpret information on the SDS, how employees can obtain and use available hazard information;
• The hazards of chemicals in the work area;
• Protective measures to prevent exposure;
• Specific procedures to provide protection such as personal protective equipment, work practice and engineering controls; and
• How to detect the presence of a hazardous chemical (smell, appearance, etc.).

Summary
The Hazard Communication Program applies to all dental offices. It is possible to have a simple program, which can easily be updated as needed. The most important considerations are appointing a person who will be responsible for maintaining the inventory and ensuring employee training be conducted and documented. Once a program is in place, annual retraining and periodic discussion at staff meetings should keep everyone up to date on the safe handling of chemical products.
December 1st, 2013 Training Requirements for the Revised Hazard Communication Standard

OSHA revised its Hazard Communication Standard (HCS) to align with the United Nations’ Globally Harmonized System of Classification and Labeling of Chemicals (GHS) and published it in the Federal Register in March 2012 (77 FR 17574). Two significant changes contained in the revised standard require the use of new labeling elements and a standardized format for Safety Data Sheets (SDSs), formerly known as, Material Safety Data Sheets (MSDSs). The new label elements and SDS requirements will improve worker understanding of the hazards associated with the chemicals in their workplace. To help companies comply with the revised standard, OSHA is phasing in the specific requirements over several years (December 1, 2013 to June 1, 2016).

The first compliance date of the revised HCS is December 1, 2013. By that time employers must have trained their workers on the new label elements and the SDS format. This training is needed early in the transition process since workers are already beginning to see the new labels and SDSs on the chemicals in their workplace. To ensure employees have the information they need to better protect themselves from chemical hazards in the workplace during the transition period, it is critical that employees understand the new label and SDS formats.

The list below contains the minimum required topics for the training that must be completed by December 1, 2013.

- **Training on label elements must include information on:**
  - Type of information the employee would expect to see on the new labels, including the
  - **Product identifier:** how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in Section 1 of the SDS (Identification).
  - **Signal word:** used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. There are only two signal words, “Danger” and “Warning.” Within a specific hazard class, “Danger” is used for the more severe hazards and “Warning” is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a “Danger” signal word and another warrants the signal word “Warning,” then only “Danger” should appear on the label.
  - **Pictogram:** OSHA’s required pictograms must be in the shape of a square set at a point and include a black hazard symbol on a white background with a red frame sufficiently wide enough to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label. OSHA has designated eight pictograms under this standard for application to a hazard category.
  - **Hazard statement(s):** describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: “Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin.” All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard
Appendix A (continued)

classification categories, and chemical users should always see the same statement for the same hazards, no matter what the chemical is or who produces it.
✓ **Precautionary statement(s):** means a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling.
✓ **Name, address and phone number of the chemical manufacturer, distributor, or importer**
  • How an employee might use the labels in the workplace. For example,
  ✓ Explain how information on the label can be used to ensure proper storage of hazardous chemicals.
  ✓ Explain how the information on the label might be used to quickly locate information on first aid when needed by employees or emergency personnel.
  • General understanding of how the elements work together on a label. For example,
  ✓ Explain that where a chemical has multiple hazards, different pictograms are used to identify the various hazards. The employee should expect to see the appropriate pictogram for the corresponding hazard class.
  ✓ Explain that when there are similar precautionary statements, the one providing the most protective information will be included on the label.

✓ Training on the format of the SDS must include information on:
  • Standardized 16-section format, including the type of information found in the various sections

✓ For example, the employee should be instructed that with the new format, Section 8 (Exposure Controls/Personal Protection) will always contain information about exposure limits, engineering controls and ways to protect yourself, including personal protective equipment.
  • How the information on the label is related to the SDS
  ✓ For example, explain that the precautionary statements would be the same on the label and on the SDS.

As referenced in Dr. Michaels’ OSHA Training Standards Policy Statement (April 28, 2010) – with all training, OSHA requires employers to present information in a manner and language that their employees can understand. If employers customarily need to communicate work instructions or other workplace information to employees in a language other than English, they will also need to provide safety and health training to employees in the same manner. Similarly, if the employee’s vocabulary is limited, the training must account for that limitation. By the same token, if employees are not literate, telling them to read training materials will not satisfy the employer’s training obligation.

OSHA’s Hazard Communication website (http://www.osha.gov/dsg/hazcom/index.html) has the following QuickCards and OSHA Briefs to assist employers with the required training.
• Label QuickCard (English/Spanish)
• Pictogram QuickCard (English/Spanish)
• Safety Data Sheet QuickCard (English) (Spanish)
• Safety Data Sheet OSHA Brief
• Label/Pictogram OSHA Brief (to come)
New changes to the Occupational Safety and Health Administration’s (OSHA) Hazard Communication Standard are bringing the United States into alignment with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), further improving safety and health protections for American workers. Building on the success of OSHA’s current Hazard Communication Standard, the GHS is expected to prevent injuries and diseases, save lives and reduce costs, and improve workforce productivity.

The new hazard communication standard still requires chemical manufacturers and importers to evaluate the chemicals they produce or import and provide hazard information to employees and workers by putting labels on containers and preparing safety data sheets. However, the old standard allowed chemical manufacturers and importers to convey hazard information on labels and material safety data sheets in whatever format they chose. The modified standard provides a single set of harmonized criteria for classifying chemicals according to their health and physical hazards and specifies hazard communication elements for labeling and safety data sheets.

Benefits: The new standard covers over 45 million workers who produce or handle hazardous chemicals in more than five million workplaces across the country. The modification is expected to prevent over $300 workplace injuries and illnesses and $450 million annually. Once fully implemented, it will:
- Enhance worker comprehension of hazards, especially for low and limited-literacy workers, reduce confusion in the workplace, facilitate safety training, and result in safer handling and use of chemicals;
- Provide workers updated and more efficient access to information on the safety data sheets;
- Reduce training burdens by harmonizing with systems around the world.


Major changes to the Hazard Communication Standard:
- Hazard classification: Chemical manufacturers and importers are required to determine the hazards of the chemicals they produce or import. Hazard classification under the new, updated standard provides specific criteria for addressing health and physical hazards as well as classification of chemical hazards.
- Information and training: To facilitate understanding of the new system, the new standard requires that workers be trained by December 1, 2013 on the new label elements and safety data sheet format, in addition to the current training requirements.
- Change from the Proposed to the Final Rule: OSHA reviewed the record and revised the Final Rule in response to the comments submitted. Major changes include:
  - Maintaining the disclosure of exposure limits (Threshold Limit Values [TLVs]) established by the American Conference of Governmental Industrial Hygienists (ACGIH) and carcinogen status from nationally and internationally recognized lists of carcinogens on the safety data sheets;
  - Certification that the borders of pictograms must be red on the label;
  - Flexibility regarding the required precautionary and hazard statements to allow label preparers to consolidate and/or eliminate inappropriate or redundant statements; and
  - Longer deadlines for full implementation of the standard (see chart below).

What you need to do and when:
- Chemical users: Continue to update safety data sheets when new ones become available, provide training on the new label elements and update hazard communication programs if new hazards are identified.
- Chemical Manufacturers: To maximize compatibility with other users of chemicals and with the requirements of the GHS, chemical manufacturers are required to determine the hazards of the chemicals they produce or import and provide hazard information to employers and workers by putting labels on containers and preparing safety data sheets. However, chemical manufacturers and importers are required to determine the hazards of the chemicals they produce or import. Hazard classification under the new, updated standard provides specific criteria for addressing health and physical hazards as well as classification of chemical hazards.
- Other U.S. Agencies: The Department of Transportation (DOT), Environmental Protection Agency, and the Consumer Product Safety Commission actively participated in developing the GHS. DOT has already modified its requirements for classifying and labeling to make them consistent with United Nations transport requirements and the new globally harmonized system.

Global implementation: The new system is being implemented throughout the world by countries including Canada, the European Union, China, Australia, and Japan.

Additional information: More information on the hazard communication standard, including the link to the Federal Register notice, can be found on OSHA’s hazard communication safety and health topics page: [www.osha.gov/dsg/hazcom/index.html](http://www.osha.gov/dsg/hazcom/index.html)

* This date coincides with the European Union implementation date for classification of mixtures.

<table>
<thead>
<tr>
<th>Effective Completion Date</th>
<th>Requirement(s)</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1, 2013*</td>
<td>Train employees on the new label elements and SDS format</td>
<td>Employers</td>
</tr>
<tr>
<td>December 1, 2015</td>
<td>Canopy with all modified provisions of the final rule, except:</td>
<td>Chemical manufacturers, importers, distributors and employers</td>
</tr>
<tr>
<td></td>
<td>Distributors may also products labeled by manufacturers under the old system until December 1, 2015.</td>
<td></td>
</tr>
<tr>
<td>June 1, 2016</td>
<td>Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.</td>
<td>Distributors</td>
</tr>
<tr>
<td>Transition Period</td>
<td>Canopy with either OSHA 160.130B (the final standard), or the current standard, or both.</td>
<td>All chemical manufacturers, importers, distributors and employers</td>
</tr>
</tbody>
</table>

www.osha.gov/dsg/hazcom/HCSFactSheet.html
Course Test Preview
To receive Continuing Education credit for this course, you must complete the online test. Please go to:

1. The Hazard Communication Standard applies to _____________________.
   a. all potentially hazardous chemicals in the workplace except those that are for household-type use
   b. only those chemicals that would be classified as a hazardous waste
   c. all chemicals that arrive with a SDS from the supplier
   d. all chemicals listed by the EPA

2. The number of American workers exposed to chemicals in the workplace is about ________ million.
   a. 43
   b. 21
   c. 10
   d. 8

3. A hazardous waste is defined as _______________________.
   a. any chemical or chemical compound that will be disposed
   b. a waste, or combination of wastes which may present a substantial hazard to human health or the environment
   c. any waste classified by OSHA as a hazardous waste
   d. all of the above

4. A hazardous waste manifest is the ____________.
   a. inventory of hazardous materials required by OSHA
   b. label used to identify a hazardous waste
   c. required tracking document that must be completed for each hazardous waste
   d. receipt provided by the hazardous waste hauler to certify proper waste disposal

5. The generator of a hazardous waste ________________.
   a. is responsible for the waste only during storage in the dental office
   b. is responsible for the manner in which the waste is transported, stored and disposed
   c. is not responsible if the waste company negligently disposes of the waste
   d. may sign over all responsibility by mailing the manifest to the EPA

6. The Hazard Communication Standard is also known as ____________.
   a. the community right-to-know law
   b. the Hazardous Materials Registration Law
   c. the Hazardous Materials Program
   d. the employee right-to-know law

7. The responsibility to determine the hazards of each chemical or product belongs to _________________.
   a. the manufacturer or importer
   b. the employer
   c. the employee
   d. OSHA
8. **A regulation which is performance oriented**
   a. requires the employer perform to the standards dictated in the regulation
   b. requires documentation of all efforts by the employer to comply
   c. is a regulation in which the specific methods of compliance are not dictated by the regulatory agency
   d. does not require a written plan, but requires the employer demonstrate compliance in other ways

9. **The written hazard communication program must**
   a. describe how the requirements for container labeling, SDS, and employee information and training will be met
   b. contain a list of the hazardous chemicals in each area, describe who is responsible for each aspect of the program, and describe the methods of communicating hazards to employees
   c. be made available to all contractors and other employers that may come into contact with the hazardous materials
   d. all of the above

10. **Proper labeling of hazardous chemicals entering the dental office is the responsibility of**
    a. the manufacturer or importer
    b. the employer
    c. the employee
    d. all of the above

11. **Products entering the office**
    a. must have new labels affixed before they may be used
    b. only require new labels if they will be stored longer than one day
    c. must be color-coded to identify hazard classification
    d. require no new label if the existing label is kept intact

12. **If a product is removed from its original container and placed in a secondary container (e.g., surface disinfectant placed in a spray bottle), it must be labeled with**
    a. the identity of the product, the hazard warning statement and the name and address of the manufacturer
    b. the identity of the product and the hazard warning statement
    c. the identity of the product only
    d. all information contained on the SDSs

13. **Consumer products are included in the Hazard Communication Standard when**
    a. use results in exposure to the employee that is different or greater than the exposure to an ordinary consumer
    b. used in a setting other than the home
    c. OSHA has listed them in the Hazard Communication Standard
    d. a manufacturer notifies the employer that the product is a hazardous material by sending a SDS

14. **If a SDS is not received by the supplier of a hazardous material**
    a. the employer must notify OSHA within 25 days
    b. the employer must request a SDS in writing from the manufacturer
    c. the employer must request a SDS copy from OSHA in writing
    d. it indicates that no SDS is required for that product
15. **Employee training for compliance with the Hazard Communication Standard**
   a. must be provided at initial assignment
   b. must be provided when an employee is reassigned
   c. must be provided when a new hazard is introduced
   d. all of the above

16. **The Occupation Safety and Health Administration is a division of the**
   a. U.S. Department of Labor (DOL)
   b. U.S. Environmental Protection Agency (EPA)
   c. U.S. Department of Health and Human Services (HHS)
   d. National Institute for Occupational Safety and Health (NIOSH)

17. **In-office treatment of hazardous waste**
   a. is always permitted as a safe and effective alternative to hazardous waste disposal
   b. may require a specific permit
   c. is a violation of OSHA regulations
   d. none of the above

18. **The hazardous material inventory and collection of SDS should be kept**
   a. in a safe location such as the business office
   b. in a location near the area where the chemicals will be used
   c. in the sterilization area
   d. at the receptionist's desk

19. **A hazardous waste is any waste which may fall into the**
   a. toxic, flammable, corrosive, explosive
   b. flammable, corrosive, reactive, explosive
   c. toxic, flammable, corrosive, reactive
   d. toxic, reactive, explosive, corrosive

20. **Manifests used to document and track the disposal of hazardous waste are required to be maintained for**
   a. five
   b. thirty
   c. ten
   d. three
References
1. OSHA maintains a website with information related to the Hazard Communication Standard, including copies of the regulation, links to state OSHA programs, fact sheets, sample pictograms and numerous other resources to assist in compliance. The materials may be accessed at: www.osha.gov/dsg/hazcom/index.html

About the Author

Eve Cuny, MS

Eve Cuny is the Director of Environmental Health and Safety and Associate Professor at Pacific Dugoni School of Dentistry. Ms. Cuny is a consultant to the ADA Council on Scientific Affairs and the FDI Education Committee. She has served as an expert reviewer and advisor to the Centers for Disease Control and Prevention and is past chairperson of the Organization for Safety, Asepsis and Prevention (OSAP). She is the primary author of the World Health Organization's guide to infection control in oral health care and has published numerous articles and textbook chapters on safety and infection control. She has lectured widely on infection control and patient safety throughout the world.

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