Regulatory Overview

Reference for Water Treatment Companies

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Introduction

AWT has become a leader in providing its members with the tools necessary for success. Along with the Certified Water Technologist (CWT) program, Technical Training seminars, and the ***Technical Reference and Training Manual,*** AWT also offers the ***Regulatory Overview.***

Developed over three years from 2004-2007 by James E. Kuhn, CWT and the Legislative and Regulatory Committee, the ***Regulatory Overview*** is specifically designed to be a **reference for water treatment companies**. In 2013, Jim Kuhn, CWT and Eric Fraser, CWT reviewed the entire document, and necessary changes have been made for accuracy. Members of the Committee who contributed to the original document and subsequent versions include Jim Kuhn, Lee Cavano, Eric Fraser, CWT, Earl Martens, Fred Hopkins, Kay Taylor, Scott Olson, CWT, and Mark Nieber.

From this single source, AWT members can obtain information regarding the regulatory requirements enforced by seven primary federal agencies—the Departments of Agriculture (USDA), Commerce (DOC), Labor (DOL), Transportation (DOT), and the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA) and the Occupational Safety and Health Administration (OSHA). Also included is information on state and local regulations that may apply, along with consensus standards from organizations such as ANSI, ASTM, NFPA and JCAHO and DNV.

Each user will be able to readily locate general information on an agency or specific regulations. Included are website links and other locations where more comprehensive information is available.

Since the regulatory environment is changing constantly, the ***Regulatory Overview*** will not be published in printed format. It will be updated regularly by the Legislative and Regulatory Committee and available only to AWT members in electronic format on the AWT website.

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I. Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS)

A. USDA Food Safety and Inspection Service (FSIS) White Book Discontinuance and Alternatives

Overview: The USDA, FSIS used to issue letters of authorization prior to October 20, 1999 for products, by specific product name, that could be used for specific purposes in facilities that were regulated and/or inspected (meat, poultry, shell egg grading, egg products, and seafood products) by the USDA FSIS inspectors. This product authorization program has been completely discontinued. The FSIS does not require that establishments make available any specific type of documentation. FSIS will not sanction any particular organization's certification as definitive evidence of compliance with FSIS requirements.

Reference(s): USDA, FSIS

Federal Register: Docket No. 96-037F; Sanitation Requirements for Official Meat and Poultry Establishments

Sanitation Performance Standards Compliance Guide

AWT Publication, December 11, 2003; AWT Legislative/Regulatory Committee: *Clarification of alternatives to the discontinued USDA "White Book".*

Question(s): USDA, FSIS

1. Do you sell products to customers who process food or food related products who are inspected by the USDA or previously required USDA Letters of Authorization?

If No…

- Does not apply

If Yes…

- The USDA does ***not sanction*** or require third party certification or listing. End users have an option to accept any of the following alternatives to the (defunct) USDA authorization program:

1. Letter of Assurance (from the manufacturer or supplier): Documentation (summarized in the Sanitation Performance Standards Compliance Guide) substantiating compound safety and efficacy are appropriate for all chemical compounds that are used in the areas of food processing, handling, and storage, and that do not otherwise require declaration on food labeling under Title 7 (part 59) and title 9 (parts 317 and 381). A letter of assurance should contain the following:
   a. Your company name and address.
   b. Brand name, code or other designation that uniquely identifies your product(s). Identification should ensure that the specific chemical ingredients of the product(s) are traceable in the event of food contamination.
   c. The letter shall state that the material will be safe and effective under the intended conditions of use and will not adulterate food product.
   d. The letter should specify the applicable limits, if appropriate, under intended conditions of use.
   e. Signature of an official of your company. Your *letter of assurance may* be limited to a specific shipment, in which case it would be attached to the invoice, or it may be a continuing letter of assurance that need not accompany each shipment. New letters of assurance should accompany new formulations or changes in labeling involving product identification or usage.
2. National Safety Foundation (NSF) Listing (a private, not for profit company that can provide, for a fee, third party accreditation).
3. Water Quality Association (WQA) Listing (a private, not for profit company that may be able to provide, for a fee, third party accreditation).
4. Customer's own, in-house Hazard Analysis and Critical Control Points (HACCP) program can accept products for use based on FDA regulations and their own judgment.
5. Provide evidence of previous USDA authorization (such as a copy of the original USDA authorization letter).

B. National Organic Program, The (NOP)

Overview: Congress passed the Organic Foods Production Act (OFPA) of 1990. The OFPA required the U.S. Department of Agriculture (USDA) to develop national standards for organically produced agricultural products to assure consumers that agricultural products marketed as organic meet consistent, uniform standards. The OFPA and the National Organic Program (NOP) regulations require that agricultural products labeled as organic originate from farms or handling operations certified by a State or private entity that has been accredited by USDA.

The NOP is a marketing program housed within the USDA Agricultural Marketing Service. Neither the OFPA nor the NOP regulations address food safety or nutrition.

The NOP developed national organic standards and established an organic certification program based on recommendations of the 15-member National Organic Standards Board (NOSB). The NOSB is appointed by the Secretary of Agriculture and is comprised of representatives from the following categories: farmer/grower; handler/processor; retailer; consumer/public interest; environmentalist; scientist; and certifying agent.

In addition to considering NOSB recommendations, USDA reviewed State, private and foreign organic certification programs to help formulate these regulations. The NOP regulations are flexible enough to accommodate the wide range of operations and products grown and raised in every region of the United States.

The regulations prohibit the use of genetic engineering, ionizing radiation, and sewage sludge in organic production and handling. As a general rule, all natural (non-synthetic) substances are allowed in organic production and all synthetic substances are prohibited. The National List of Allowed Synthetic and Prohibited

Non-Synthetic Substances, a section in the regulations, contains the specific exceptions to the rule.

Reference(s): USDA, AMS
http://www.ams.usda.gov/nop/indexIE.htm

II. Department of Homeland Security

A. Critical Infrastructure: Chemical Security

Overview: Responsibility for chemical security is shared among federal, state, and local governments, as well as the private sector. The Department of Homeland Security has issued "Chemical Facility Anti-Terrorism Standards" for any facility that manufactures, uses, stores, or distributes certain chemicals above a specified quantity.

Impact: There is a list of DHS Chemicals of Interest, about 10 of which are used by water treatment companies. At this time, the effect or impact on water treatment companies is unclear.

References: DHS Chemicals of Interest:
http://www.gpo.gov/fdsys/pkg/FR-2007-04-09/html/E7-6363.htm

III. Department of Labor (Human Resources)

Overview: Many states have labor laws. When both a state and federal act apply, the law setting the strictest standards is to be observed.

All of the regulations below are required for employers of one (1) employee…

1. **Posters:** By law, your facility must post Federal and state labor law posters. If you're not meeting the posting requirements specific to your state, your company could face serious fines. Some of the Federal posters are...
   a. Minimum Wage; U.S. Dept of Labor, Wage and Hour Division (Most states have minimum wage posting requirements). The most recent Federal minimum wage poster can be found at: http://www.dol.gov/whd/regs/compliance/posters/flsa.htm
   b. It's the Law OSHA Notice (English and Spanish); U.S. Occupational Safety and Health Administration
   c. Equal Employment Opportunity (English and Spanish); U.S. Equal Employment Opportunity Commission
   d. Notice to Workers with Disabilities (English and Spanish): Required for all employers of workers with disabilities; U.S. Dept of Labor, Employment Standards Administration
   e. Employee Polygraph Protection (English and Spanish); All employers subject to the Employee Polygraph Protection Act; U.S. Dept of Labor, Wage and Hour Division
   f. Family and Medical Leave Act (FMLA) See below
   g. Check Your Withholding (recommended, but not required for all employers);
   h. Internal Revenue Service
   i. Earned Income Credit (recommended, but not required for all employers);
   j. Internal Revenue Service
   k. Employment and Reemployment Rights of Members of the Uniformed Services (USERRA)
2. **Job Descriptions:** Job descriptions for each position. (Not Required by Law)
3. **IRS Form W-4 (Withholding):** W-4 form for each employee that is updated whenever there is a change in dependents or extra withholding. A pdf file is available at: http://www.irs.gov/pub/irs-pdf/fw4.pdf
4. **Form I-9 (Immigrants/Non-Citizens):** Requires you keep copies of at least two forms of I.D., i.e., Passport, Visa, Social Security number, drivers license, etc. These papers must be kept in a separate file from their employee records. For more information: http://www.uscis.gov
5. **Employee Agreement:** Protect proprietary information, and state that their employment is "at will" (this allows for firing for any reason). Use a non- compete agreement, if their job exposes them to customer lists, or trade secrets. Some states require some extra compensation (bonus, raise, promotion, etc) be given at signing a non-compete for it to even be valid in a court contest.
6. **Employee Policy Manual:** Consider hiring professional help when writing your manual. There are too many serious pitfalls to even mention here. At the very least have someone in your organization with training or access to employment law information review it before you publish anything.

7. **Overtime Rules:** Be sure you are in compliance with the new overtime rules effective Aug. 23, 2004. Examples of a portion of the rules are as follows: Earn less than $23,660 – must pay overtime regardless of job title. Earn over $100,000 – not qualified for overtime. Outside sales representatives are exempt from overtime; however, there are some provisions, administrative and executive exemptions.
8. **Overtime Pay:** Overtime pay rates must be figured with any bonuses paid included in the hourly rate before overtime is figured. You can choose if it is included in the week earned or the week paid. YOU MUST CHOOSE AND ONCE CHOSEN, STICK TO IT! http://www.dol.gov/whd/overtime_pay.htm
9. **Workers Compensation:** You must have workers compensation coverage on all employees. States vary as to how that is accomplished. Check with your State Department of Labor.
10. **Young Workers (Minors):** If you have young workers, they must be 14 or older and different rules apply for each age range and job duties. Check with your state and federal agencies. Federal rules prohibit you from employing minors (<18) in hazardous occupations, which includes driving vehicles of any kind.
11. **HIPPA.** Know the new HIPPA laws regarding privacy and protection of medical information and privacy rights. http://www.hhs.gov/ocr/hipaa/
12. **Lay-Offs.** Know state and federal laws regarding notification of lay-off of employees.
13. **Equal Opportunity Employment/Affirmative Action:** Be sure you know and follow a question guideline during hiring interviews so you do not violate federal and state Equal Opportunity Employment laws. http://www.eeoc.gov/
14. **Independent Contractors.** Be very clear about IRS conditions to define Independent Contractors. http://www.irs.gov/pub/irs-pdf/p1779.pdf
15. **Promotion Policy:** Establish a promotion policy and do not deviate. Consistency is very often your best position in many regulations that leave openings for interpretation.
16. **Employee Benefits Security Administration (ERISA):** 401K Plans: If you offer a 401K plan, know all Department of Labor (DOL) rules about testing, record keeping and prompt transmission of funds to the individual accounts. DOL audits these plans on occasion and it hands out federal prison vacations if any fraud is detected. http://www.dol.gov/ebsa/publications/401kplans.html. All types of employee benefit plans are controlled by the Employee Benefits Security Administration (ERISA) and should be followed to the letter. http://www.dol.gov/ebsa/compliance_assistance.html
17. **Fair Credit Reporting Act (FCRA):** The Fair Credit Reporting Act regulates how you can perform background checks on job applicants or employees. There are times when background checks are mandated and specific requirements are listed for DOT drivers, certain health or security employees, obtaining an employer bond and others under the new Homeland Security Act. For a summary of rights under FCRA, go to: http://www.ftc.gov/bcp/edu/pubs/consumer/credit/cre35.pdf
18. **Civil Rights Act of 1964 (Title VII):** Under Title VII of the Civil Rights Act of 1964 (Title VII) and the Americans with Disabilities Act (ADA), employers are required to retain personnel records for at least one year from making the record or taking a personnel action. These records include such information as hiring, rehiring, employment tests, training selection, promotion, transfers, demotions, layoff, recall, terminations, or discharges. However, due to a Supreme Court case, personnel records should be kept for four years in case a claim is made involving the information in those records. It may be safest to retain such records for at least four years after employees have left your company in the event that the records must be presented as evidence in court.
19. **Social Security Number Privacy Act:** The Social Security Number Privacy Act (Public Act No. 454) was enacted March 1, 2005 and was effective January 1, 2006. Any Employer who obtains one or more social security numbers must have privacy policy in effect. This policy must be published in an employee handbook, procedures manual or any similar document.
    a. This act provides restrictions concerning the use of SS# for identification (can no longer be displayed on badges, insurance cards, time cards, etc. Employers can only use the last 4 numbers for any of this type of use.)
    b. Restricts the use of mailing documents that include SS#.
    c. Employers must take steps to protect against improper disclosure of an employee's SS#. Violation of the Act could result in criminal liability, including imprisonment and fines. In addition, a person may bring a civil action for damages.

If You Have 10 or More Employees:

20. **Form 300, 300A, 301 (Injuries and Illnesses):** Know OSHA required record keeping rules and definitions regarding workplace injuries and illnesses. Some states require you to record the same information on their forms also. The rules and forms were revised Jan. 2004, so be sure you use the correct forms: Form 300 Log of Work-Related Injuries and Illnesses; Form 300A Summary of Work- Related Injuries and Illnesses, and Form 301Injury and Illness Incident Report. These are available from:

    U.S. Dept. of Labor OSHA
    200 Constitution Ave. N.W.
    Washington D.C. 20210
    or in pdf format at http://www.osha.gov/recordkeeping/new-osha300form1-1-04.pdf

If You Have 15 or more employees

21. **American with Disabilities Act (ADA).** You must have someone in your organization educated and able to administrate the American with Disabilities Act. Office of American with Disabilities Office, U.S. Dept of Justice, P.O. Box 66738, Washington, D.C. 20035. http://www.ada.gov/cguide.htm

If you have 20 or more employees

22. **Consolidate Omnibus Budget Reconciliation Act (COBRA).** You must comply with regulations of the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) regarding continuing health insurance for departing employees up to 18 months. They must pay for it and you can add up to a small percentage to it for administration fees. http://www.dol.gov/dol/topic/health-plans/cobra.htm

If you have 50 or more employees

23. **Family Medical Leave Act (FMLA).** You are also not subject to the regulations of Family Medical Leave Act (FMLA). This is a very involved act and needs trained administration. Employees can take up to 12 weeks unpaid leave for their own illness or family emergencies and must be guaranteed their jobs when they return. http://www.dol.gov/whd/fmla/ Poster Required: Family and Medical Leave Act (English and Spanish); U.S. Dept of Labor, Wage and Hour Division. http://www.dol.gov/whd/regs/compliance/posters/fmla.htm

Reference(s):

1. To order Federal and State Required OSHA & Labor Law Posters, you can go to web site: http://www.osha-safety-training.net/POS/allinone.html
2. The Department of Labor (DOL) "Poster Advisor" is designed to help employers comply with the poster requirements of several laws administered by the DOL. These laws require employers to display official DOL posters where employees can readily observe them. DOL provides the posters at no cost to employers. http://www.dol.gov/elaws/posters.htm
3. State Department of Labor: List of contact information (address, phone number and web sites) for each state: http://www.dol.gov/dol/location.htm
4. State Department of Labor, Office of Small Business Programs: Poster Page: http://www.dol.gov/osbp/sbrefa/poster/main.htm
5. There are booklets with forms and instructions available from government agencies overseeing each regulation. Look these up on their (dot) gov websites.
6. Some other publications are available from private companies that will keep you updated on changes in present laws and release of new regulations.
   a. Compliance Focus by J.J. Keller: http://www.jjkeller.com
   b. Compliance Advisor by Business and Legal Reports, Inc.: http://www.blr.com

IV. Department of Transportation (DOT)

Overview: The Office of Hazardous Materials Safety, which is within the United States Department of Transportation's Pipeline and Hazardous Material Safety Administration (PHMSA), is responsible for coordinating a national safety program for the transportation of hazardous materials by air, rail, highway and water.

Reference(s): DOT

1) 49 CFR §100–185 (Hazardous Materials and Hazardous Materials Regulations).

   The most applicable areas of these regulations are contained in 49 CFR §170–185; Subchapter C, Hazardous Materials Regulations.

Question(s): DOT

1) Do you transport or ship products to your customers or use a toll blender to blend ship products to your customers?

If No...

- DOT regulations do not apply

If Yes...

- You must become familiar with regulations relating to transport of hazardous materials. There are a number of areas that are applicable...

A. Hazardous Materials (or Constituents); HAZMAT

Overview: The Hazardous Materials Table (Part 172.101) designates the materials or constituents considered to be hazardous for the purpose of transportation. For each listed material, the table identifies the hazard class or specifies that the material is forbidden in transportation, and gives the proper shipping name or directs the user to the preferred proper shipping name. In addition, the table specifies or references requirements pertaining to labeling, packaging, quantity limits aboard aircraft and stowage of hazardous materials aboard vessels.

Some states are also adopting procedures in addition to Federal regulations: National Conference of State Legislatures (NCSL) – *Alliance for Uniform Hazmat Transportation Procedures; also* referred to as "The Uniform Program". 7 states are involved at the present time: IL, MI, MN, NV, OH, OK and WV.

Reference(s): HAZMAT

1. AWT: OSHA Hazard Communications Guide: http://www.awtstore.org
2. 49 CFR §172.101, Hazardous Materials Table
3. NCSL Web Site: http://www.ncsl.org
4. Alliance for Uniform HAZMAT Transportation Procedures. https://www.hazmatalliance.org/
5. How to Comply with Federal Hazardous Materials Regulations: http://www.fmcsa.dot.gov/safety-security/hazmat/complyhmregs.htm

B. Registration

A National Registration Program, including an annual fee, is in place for persons who offer for transport or transport certain hazardous materials. The annual fee funds a nation-wide emergency response training and planning grant program for states, Indian tribes and communities.

Who Must Register

Any person who offers for transport, or transports in foreign, interstate or intrastate commerce, any of the following, is subject to the Pipeline and Hazardous Materials Safety Administration's (PHMSA) hazardous materials registration and fee requirements:

- Any highway route-controlled quantity of a Class 7 (radioactive) material;
- More than 25 kg (55 pounds) of a Division 1.1, 1.2, 1.3 (explosive) material;
- More than one L (1.06 quarts) per package of a material extremely toxic by inhalation (i.e., "material poisonous by inhalation," as defined in §171.8, that meets the criteria for "hazard zone A," as specified in §§173.116(a) or 173.133(a)):
- A hazardous material in a bulk packaging having a capacity equal to greater than 13,248 L (3,500 gallons) for liquids or gases, or more than 13.24 cubic meters (468 cubic feet) for solids;
- A shipment in other than a bulk packaging (being offered or loaded at one loading facility using one transport vehicle) of 2,268 kg (5,000 pounds) gross weight or more of one class of hazardous materials for which placarding is required; or
- A quantity of hazardous material that requires placarding, Except farmers in direct support of farming operations. *(107.601)*

Exceptions

The following are excerpted from the registration and fee requirements:

- An agency of the federal government
- A state agency;
- An agency of a political subdivision of a state;
- An employee of any of the above agencies;
- A hazmat employee – including the owner/ operator of a motor vehicle that transports hazardous materials and is leased to a registered motor carrier under a 30-day or longer lease (or an equivalent contractual relationship);
- A person domiciled outside the U.S., who offers from locations outside the U.S., hazardous materials for transportation in commerce, provided the country in which the person is domiciled does not require U.S. persons to register or pay a fee. (107.606)

Registration Form

Each person subject to the program must submit a complete and accurate "Hazardous Materials Registration Statement" on DOT Form 5800.2 and the required fee to PHMSA by June 30 of each year. A registration year begins on July 1 and ends on June 30 of the following year. (107.608)

Fee

Each person must pay an annual registration fee. The amount of the fee will vary, depending on the person's business classification (small business, not-for-profit, or other than small business and not-for-profit) and the registration year. See §107.612 for fee specifics.

C. Incident Reporting

Whenever there is a spillage, discharge of leakage of hazardous materials, including hazardous wastes and hazardous substances or there is direct involvement of the hazardous material arising out of an accident, special reports must be made in accordance with the following:

Immediate Notice of Certain Hazardous Materials Incidents

A telephone call to the National Response Center must be made as soon as practical, but no later than 12-hours after the occurrence of any hazardous material incident. The call must be made by the person in physical possession of the hazardous material. A telephone report is required whenever any of the following occur during transportation in commerce. This includes loading, unloading, and temporary storage.

- A person is killed.
- A person receives an injury requiring hospitalization.
- An evacuation of the general public occurs lasting one or more hours.
- A major transportation artery or facility is closed or shut down for one hour or more.
- The operational flight pattern or routine of aircraft is altered.
- Fire, breakage, spillage or suspected radioactive contamination involving a shipment of radioactive materials.
- Fire, breakage, spillage or suspected contamination involving a shipment of infectious substances other than a diagnostic specimen or regulated medical waste. Note: Incidents involving infectious substances may be reported by phone to the Center for Disease Control, (800) 232-0124, instead of the National Response Center number.
- There has been a release of a marine pollutant in a quantity exceeding 450 L (119 gallons) for liquids or 400 kg (882 pounds) for solids.
- In the judgment of the person in possession of the material there exists a situation which should be reported even though it does not meet one of the specific criteria listed above. *(171.15)*

National Response Center Numbers
Toll-free: (800) 424-8802, Toll call: (202) 267-2675

In making a telephone report the following information must be provided:

- Name of reporter;
- Name and address of person represented by reporter;

- Phone number where reporter can be contacted;
- Date, time and location of incident;
- Extent of injuries, if any;
- Class of division, proper shipping name and quantity of hazardous materials involved, if such information is available, and
- Type of incident, nature of hazardous materials involvement, and whether or not there is a continuing danger to life at the scene. (171.15)

Detailed Hazardous Materials Incident Reports

Each person in physical possession of a hazardous material at the time of an incident must submit a Hazardous Material Incident Report. A written Hazardous Materials Report must be made within 30 days of discovery of an incident arising out of the transportation, loading, unloading or temporary storage of hazardous materials as follows:

- As a follow-up to any incident reported by phone (Immediate Notice of Hazmat Incident) required by §171.15.
- As the result of an unintentional release of hazardous material or any quantity of hazardous waste;
- A specification cargo tank (1,000 gallons or more) suffers structural damage of the lading retention system or damage that requires repair to a system intended to protect the lading retention system, even though there is no release of material; or
- An undeclared shipment is discovered.

Except when an immediate phone notice is required (§171.15), Hazardous Materials Incident Reports are not required for the following incidents:

1. A release of a minimal amount of material from –
   - A vent, for materials for which venting is authorized;
   - The routine operation of a seal, pump, compressor, or valve; or
   - Connection or disconnection of loading or unloading lines, provided that the release does not result in property damage.
2. An unintentional release of material when –
   - The material is properly classed as ORM-D or is a Packing Group III material in Class of Division 3, 4, 5, 6.1, 8, or 9;
   - Each package has a capacity of less than 20 liters (5.2 gallons) for liquids or less than 30 kg (66 pounds) for solids;
   - The total aggregate release is less than 20 liters (5.2 gallons) for liquids or less than 30 kg (66 pounds) for solids; and
   - The material is not offered for transportation or transported by aircraft, is not a hazardous waste or is not an undeclared hazardous material.
3. An undeclared hazardous material discovered in an air passenger's checked or carry-on baggage during the airport screening process.

The incident report must be updated within one year of the date of occurrence of the incident whenever:

1. A death results from injury caused by the material;
2. There was a misidentification of the material or package information on a prior report;
3. Damage, loss or related cost changes by $25,000 or more, or 10% of the prior total estimate, whichever is greater.

The incident report shall be made on the prescribed from DOT F 5800.1 *(171.16)*

The written incident report should be sent to:
Information Systems Manager, PHH-63 Pipeline and Hazardous Materials Safety Administration
Department of Transportation
Washington, DC 20590-0001

In place of the written report an electronic incident report may be submitted: http://www.fmcsa.dot.gov/regulations/hazardous-materials/hazardous-materials-reports

In filing a Hazardous Materials Incident Report, you should endeavor to provide all of the information required to complete the report and to provide as much information as possible about the incident. These reports are analyzed by DOT to discover unsafe or inefficient packagings' of hazardous materials, and to make such changes in the hazardous materials regulations as experience indicates are necessary for safety.

D. Shipping Papers

Overview: A description of hazardous materials contained in each product is required. Each person who offers a hazardous material for transportation shall describe the hazardous material on the shipping paper in the manner required by this subpart.

Reference(s): Shipping Papers

1. 49 CFR §172.201, Preparation and retention of shipping papers.
2. 49 CFR §172.604, Emergency response telephone number

Question(s): Shipping Papers

1. Do shipments of hazardous and non-hazardous products, together, have the hazardous product(s) listed first, or highlighted in a contrasting color, or have an "X" or "RQ" in a column labeled "HM"?
2. Is the required shipping description on the shipping paper and all copies used for transportation purposes legible and printed (manually or mechanically) in English?
3. The shipping description may not contain any code or abbreviations (specifically authorized or required).

4. If the shipping paper consists of more than one page, is each page consecutively numbered, with the first page bearing a notation specifying the total number of pages (included in the shipping paper)? For example, ''Page 1 of 4 pages.''
5. Do the shipping papers have an emergency response telephone number?
6. Is a copy of the shipping paper(s) for hazardous materials retained for at least 375 days after the product is accepted by the initial carrier? A paper copy or an electronic image must be available, upon request, to an authorized official of a Federal, State, or local government agency at reasonable times and locations.
7. If the proper shipping name for a product that contains a hazardous ingredient does not identify the hazardous ingredient by name, the name of the hazardous ingredient or substance must be entered in parentheses in association with the basic product's description. If the material contains two or more hazardous ingredients, at least two hazardous ingredients, including the two with the lowest reportable quantities (RQs), must be identified.
8. A "Guide to Preparing Shipping Papers" can be downloaded at: http://www.wsp.wa.gov/traveler/docs/cvd/guide_for_preparing_shipping_papers_guide.pdf

E. Labeling on Non-Bulk Containers

Labels are printed on or affixed to packages containing hazardous materials. Labels are color- and symbol- coded to provide easy and immediate warning of the hazardous materials inside the package. The regulations have specific requirements for design, use, placement, prohibitions, and exceptions for labels.

Responsibility

The labeling of packages of hazardous materials is the responsibility of the shipper and packages must be properly labeled at the time they are offered for transport (*172.400). Although* the shipper is responsible for the actual labeling, the carrier also has labeling responsibilities. A carrier must only accept and transport packages that have been properly labeled (*177.801).*

Applicability

The labeling requirements apply primarily to non-bulk packagings. The following must also display labels if they are not placarded:

- Bulk packagings with a volumetric capacity of less than 18m3 (640 feet3), other than cargo tanks portable tanks or tank cars.
- Portable tanks of less than 3,785 L (1,000 gallon) capacity.
- DOT specification 106 or 110 multi-unit tank car tanks.
- Overpacks, freight containers, or unit load devices of less than 18m3 (640 feet3), which contain a package for which labels are required. (172.400)

Exceptions

Not all non-bulk packages of hazardous materials will require labels. Labels are not required on the following:

- A cylinder or Dewar flask (§173.320) containing Division 2.1, 2.2, or 2.3 gas that is not overpacked, and is durably and legibly marked in accordance with CGA Pamphlet C-7, Appendix A.
- A package or unit of military explosives – including ammunition – shipped by or on behalf of the U.S. Department of Defense (DOD) when:
  1. in freight container-load, car load or truck load shipments, if loaded and unloaded by the shipper or DOD; or
  2. in utilized or palletized break-bulk shipments by cargo vessel under charter to DOD, if at least one required label is displayed on each utilized or palletized load.
- A package of hazardous materials – other than ammunition – that is loaded and unloaded under the supervision of DOD personnel and is escorted by DOD personnel in a separate vehicle.
- A compressed gas cylinder which is permanently mounted in or on a transport vehicle.
- A freight container, aircraft unit load device, or portable tank which is placarded in accordance with the regulations or identified as provided in the ICAO Technical Instructions.
- An overpack or unit load device in or on which labels that represent the hazard(s) inside are visible.
- A package of low specific-activity radioactive material when being transported in a conveyance assigned for the exclusive use of the consignor under Section 173.427(a)(6).
- A package containing a material classed as ORM-D, provided the package does not contain any other material classed as a hazardous material that requires labeling.
- A package containing a combustible liquid. (172.400a)

Limited Quantities

There are also exceptions to labeling for limited quantities in the following sections:

- Section 173.150 – Exceptions for Class 3 (flammable and combustible liquids)
- Section 173.151 – Exceptions for Division 4.1 (flammable solids)
- Section 173.152 – Exceptions for Division 5.1 (oxidizers) and 5.2 (organic peroxides)
- Section 173.154 – Exceptions for Class 8 (corrosives)

- Section 173.155 – Exceptions for Class 9 (miscellaneous)

Prohibited Labeling

No package may be labeled with a label specified in the Hazardous Materials Regulations unless the package contains the hazardous material and the label represents the hazard of the material in the package. (172.401)

Packages may not be offered for transportation or transported with a marking or label that could be confused with or conflicts with the labels that are required unless the package is labeled in conformance with:

- A United Nations recommendation:
- The International Maritime Organization requirements;
- The International Civil Aviation Organization's Technical Instructions; or
- Canada's Transport Dangerous Goods Regulations (172.401)

General Requirements

Once a material has been classified and a proper shipping name has been selected, determining the appropriate labels is a fairly easy process.

1. Locate the selected proper shipping name in Column (2) of the Hazardous Materials Table (Section 172.101).
2. Refer to Column (6) of the Table for the appropriate label code(s).
3. The first label code listed indicates the material's primary hazard. Any additional label codes indicate subsidiary hazards (172.101).
4. Using the label codes from Column (6) in the Table, find the name of the label(s) required to be on the package in the label substitution table in Section 172.101(g).

   Except for the label code 6.1, the label codes are the same as the hazard classes or divisions and only one label is possible. For example, a 2.3 label code is a 2.3 (poison gas) label, a 3 label code is a Class 3 (flammable liquid) label, and a 5.1 label code is a 5.1 (oxidizer) label.

   For the label code 6.1, there are two possible labels. If the material has an inhalation hazard, Zone A or B, a Poison inhalation Hazard label is required. If the material does not have an inhalation hazard, Zone A or B, a Poison label is required.

   Each package containing a hazardous material must be labeled with the label(s) prescribed in Column (6) of the Hazardous Materials Table (172.400).

   If the material has more than one hazard, all applicable subsidiary labels may not be listed in the Table (such as generic or n.o.s, shipping names). If this is the case, subsidiary labels must be determined according to section 172.402. (172.101)

F. Placarding on Bulk Containers

Hazardous materials placards correspond very closely with the shape, color and design of the hazardous materials warning labels. However, placards are much larger than labels. Placards alert persons to the potential dangers associated with the particular hazardous material contained in a motor vehicle, rail car, freight, container, cargo tanks, and portable tanks.

Applicability

- The placarding requirements apply to each person who offers for transport or transports hazardous materials. The placarding requirements do not apply to the following materials:
- Infectious substances (Division 6.2).
- Materials classed as ORM-D.
- Materials authorized to be transported as "Limited Quantities" (when properly identified on the shipping papers).
- Materials packaged as "small quantities" (under the provisions of Section 173.4).
- Materials prepared in accordance with Section 173.13 (Exceptions for Classes 3, 8, 9, and Division 4.1, 4.2, 4.3, 5.1, 6.1).
- Combustible liquids in non-bulk packagings. *(172.500)*

Placards are used to identify the hazard of any quantity of materials contained in bulk packagings, freight containers, unit load devices, transport vehicles, or rail cars.

Responsibility

The responsibility for affixing or supplying placards varies according to the mode of transport and the type of packaging used to transport the hazardous material.

Bulk Packagings

The person who offers a bulk packaging containing hazardous material for transportation is required to affix the required placards prior to or at the time the packaging is offered for transportation. *(172.514)*

Freight Containers and Aircraft Unit Load Devices

Each person who offers for transportation and each person who loads and transports a hazardous material in a freight container or aircraft unit load device is required to affix the placards specified. *(172.512)*

Transport Vehicles

When a hazardous material is offered for transport by highway, the individual offering the material must provide the carrier with the required placards—prior to, or at the same time, the material is offered for transport—unless the appropriate placards are already affixed to the vehicle. *(172.506)*

According to Section 177.823, the carrier may not move the vehicle until he or she has affixed

the required placards—unless it is an emergency situation and one of the following three conditions are met:

- The vehicle is escorted by a representative of state or local government.
- The carrier has received permission from DOT to move the vehicle.
- Movement of the vehicle is necessary to protect life and property.

Rail Cars

When a hazardous material is offered for transport by rail, the individual offering the material must affix the required placard(s) to the rail car—unless the car is already properly placarded. The rail carder may not accept a rail car for transport unless the required placards are affixed. *(172,508)*

G. Markings on Packages/Containers

Overview

Markings provide important information about the contents of a packaging, freight container or transport vehicle and help warn of the hazards posed by that material during transport. Markings give additional information, not provided by labels or placards, about the hazardous material in a package or vehicle.

Applicability

The marking requirements apply to non-bulk and bulk packagings transported by rail, air, vessel, and highway. Certain requirements specifically apply to transport vehicles and freight containers.

Responsibility

The individual who prepares non-bulk packages of hazardous material for transport is responsible for marking the package. This responsibility includes:

- Checking that any relevant markings already displayed are in the correct location and are in accordance with the regulations.
- Removing or obliterating any markings which are not applicable or which may reduce the effectiveness of the required markings.
- Applying any new markings in accordance with the regulations. *(172.300)*

In most cases, the responsibility for marking bulk packagings, freight containers, and transport vehicles rests with the individual initiating the shipment. The carrier is responsible for replacing identification number markings that are lost, damaged, or destroyed during transit.

Prohibited Markings

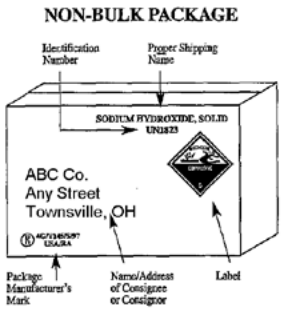
No packaging may be marked with a proper shipping name or identification number unless the packaging contains the identified material or its residue. *(172.303)*

Marking Specifications

To withstand the conditions normally encountered during transportation, all markings must be:

- Durable,
- In English, Printed on, or affixed to, the surface of a package, or on a label, tag, or sign,
- Displayed on a background of sharply-contrasting color,
- Unobscured by labels or attachments, and
- Located away from any other markings—such as advertising—which could substantially reduce the effectiveness. *(172.304, 172.308)*

Manufacturer/Specification Packaging Marking



In addition to the markings that will be covered in the remainder of this section, most authorized packaging for hazardous materials must be marked with a UN packaging marking (for non-bulk packaging) or a specification packaging marking (such as DOT 406). For more information on these markings see the plain language explanation Packaging.

Non-bulk Markings

Most non-bulk packagings must be “marked” with the following information:

Description/proper shipping name:

- Technical name(s),when required;’
- Identification number (preceded by “UN” or “NA”, as appropriate);
- Consignee’s or consignor’s name and address;
- DOT-E when required. *(172.301)*

Description/Proper Shipping Name

The description/proper shipping name as shown in Column (2) of the Hazardous Materials Table must be marked on the non-bulk package, *(172.301).*

Abbreviations are usually not allowed in a proper shipping name marking. Two specific exceptions include:

- “ORM” in place of “Other Regulated Material;” and
- Abbreviations which appear as part of the authorized description in Column (2) of the Hazardous Materials Table.

Technical Name(s)

Any package that contains hazardous materials described by a proper shipping name preceded by the symbol “G” in Column (I) of the Hazardous Materials Table must be marked with the technical name in parenthesis in association with the proper shipping name. *(172.301)*

Example: Flammable liquids, n.o.s. (ethanol)

Identification Number

The identification number shown in Column (3) of the Hazardous Materials Table, for the description/ proper shipping name being used must be marked on the package. The appropriate "UN" or "NA" prefix must be included. *(172.301)*

Examples: UN1263 NA1993

Identification numbers are not required on packages which contain only:

- limited quantities, or
- ORM-D materials.

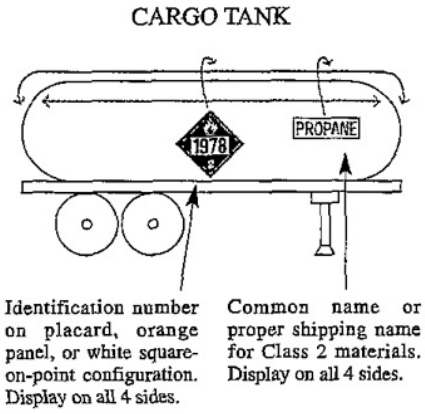
Name and Address

The consignee's or consignor's name and address must be marked on the package unless:

- The package is transported by highway only, and will not be transferred from one motor carrier to another; or
- The package is transported as part of a carload lot, truckload lot, or freight container load and the entire contents of the rail car, truck, or freight container are shipped from one consignor to one consignee. *(172.301)*

Exemption Packagings

DOT-E (followed by the exemption number) is required to be plainly and durably marked on the packaging if it is authorized for use under an exemption. *(172.302)*



Example: DOT-E 9168

Hazardous Substances

Non-bulk packagings which contain a reportable quantity of a hazardous substance must be marked with the letters "RQ" in association with the proper shipping name. *(172.324)*

Example: RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIAZINON), UN3077

Unless specifically excepted, all bulk packagings of hazardous materials must be marked with the UN or NA identification number(s) of the contents.

These numbers, unless otherwise provided, must be marked:

- On each end and each side of a packaging having a capacity of 3,785 L (1,000 gal) or more.
- On two opposite sides of a packaging with a capacity of less than 3,785 L (1,000 gal).
- On each end and each side of a tube-trailer motor vehicle. *(172.302)*

There are three ways in which identification numbers may be displayed: 1824

- On an orange panel 3077
- Across the center of a primary hazard placard 1942 5.1
- On a white square-on-point configuration (diamond-shaped)—with the same outside dimensions as a placard (If the material is in a class that does not allow or require placards)

  If the identification number markings on a portable tank or cargo tank are not visible, the transport vehicle or freight container used to transport the tank must also be marked with the numbers, on each side and each end. *(172.326, 172.328)*

  When a tank is permanently installed within an enclosed cargo body of a transport vehicle or freight container, the identification number marking need only be displayed on the sides and ends of the tank that are visible when the enclosed cargo body is opened or entered.

  Identification numbers are not required on the ends of portable tanks and cargo tanks having more than one compartment if hazardous materials having different identification number are transported in the compartments. The identification numbers on the sides of the tank must be displayed in the same sequence as the compartments containing the materials they identify.

Exemption Packagings

DOT-E (followed by the exemption number) is required to be marked on the packaging if it is authorized for use under an exemption. *(172.302)*

Portable Tanks

In addition to displaying the applicable UN or NA identification number (as described above), portable tanks must be marked with:

- Material's proper shipping name—on two opposite sides
- Owner or lessee's name *(172.326)*

Overview: Each person who offers a hazardous material for transportation in a non-bulk packaging must mark the package with the proper shipping name and identification number (preceded by "UN" or "NA," as appropriate) for the material as shown in the Hazardous Materials Table.

Reference(s): Marking

1. 49 CFR §172.301 General marking requirements for non-bulk packagings.
2. 49 CFR §172.302 General marking requirements for bulk packagings.
3. 49 CFR §172.312 Liquid hazardous materials in non-bulk packagings.

Question(s): Marking

1. Do labels for all products that contain one or more hazardous ingredients contain the proper shipping name and identification number (preceded by "NA" or "UN")?
2. Is the technical name for the hazardous ingredient included, in parentheses, after any proper shipping names that are n.o.s. (not otherwise specified)?
3. If 4000 kg or more of the same product are loaded at one facility, the identification number must be displayed on each end, and on each side, on orange panels or placards, or on white square-on-point configurations, as prescribed in 49 CFR §172.336(b).

H. Approved Packagings

Overview: General requirements are found at 49CFR173.24 a. and b. Regulations regarding bulk container specifications for motor vehicle transport can be found in 49 CFR Subpart J, 178.318 – 348. Non-bulk Packaging standards are found at 49 CFR Subpart L. 178.500 – 523.

General Requirements

General standards for packaging can be found in Sections 173.24a and b. Included are specifics on compatibly (between package and contents, different chemicals in same package), closures, outage for liquids cushioning for inner packaging and filing limits.

Prior to transporting, one must determine whether a material is hazardous, then classify it (Class 1 thru 9, see Part 173) before proper packaging can be selected. Once the Shipping Description (proper Shipping name, Hazard class, Identification number and the Packing group) has been determined, Columns 8A and 8B on the Hazardous Materials Table (§ I72.101) will provide the exceptions (8A), as well as non-bulk packaging requirements (8B). Additional quantity and limitation for air transport can be found in Columns 9A and 9B.

Understanding Packaging Groups

With the exception of Class 2 compressed gases, Class 7 radioactive materials, and Division 6.2 infectious materials, there are three packing groups associated with hazardous materials. Packaging groups are related to the degree of danger presented by the hazardous materials: PG I indicates great danger; PG II, a medium danger; and PG III, minor danger. Eventually, the packaging standard of the hazardous materials will be based on these packing groups, sometimes called "performance packaging."

For example, if Column 5 (§ 172.101 Table) includes a "III," it implies the contents (liquid or solid) require a minimum packaging standard (PG III, Z-performance). "I," on the other hand, indicates the maximum quality standard (PG I, X-performance) for most-dangerous contents. While performance level Z applies to PG III only, performance level Y can use PG II or III, and performance level X can use PG I, II or III packaging groups. When in doubt, it makes sense to err on the side of safety.

Packaging Types

Non-bulk packaging includes various types of UN performance-tested containment (§173.202):

- Single packaging encompasses a variety of drums (e.g., steel, coded 1A1, 1A2), jerricans (e.g., plastic, coded 3H1, 3H2), wooden barrels (coded 2C1), and cylinders (metal, for compressed gas), which usually require no additional containment.
  - » Composite packaging "means a packaging consisting of an outer packaging and an inner receptacle, so constructed that the inner receptacle and the outer packaging form an integral packaging. Once assembled, it remains thereafter an integrated single unit; it is filled, stored, shipped and emptied as such" (§171.8).
- Combination packaging means a combination of packaging, for transport purposes, consisting of one (or more) inner packaging secured in an outer packaging. It does not include a composite packaging.
  - » Outer packaging refers to the outer packaging component in which an inner package resides (e.g., a 4G fiberboard box that contains four plastic bottles).
  - » Inner packaging (aka "inner pack") means a packaging for which an outer packaging is required to transport it.
  - » Overpacks (aka "salvage packs") are used by a single consignor to ensure one or more complete packages, usually for convenience and/or extra protection. Overpacks must be labeled "Overpack used" and are not required to meet UN specifications (§171.8 and 173.25).
- Variation packages, also known as "V-boxes," are outer packaging (fiberboard, drums, boxes) allowed without testing inner packaging if certain criteria are met [§178.601(g)(2)]. Variation packaging must contain this outside marking (V):
- Exemption packaging is excused from specific packaging HMR requirements [e.g., hazmat label(s)], such as packaging requirements, per a DOT Exemption letter. Packages must be marked with "DOT-E _ _ _ _" and exempted for only a specific period of time.
- Limited quantities require "strong outer packaging" and permit small sizes of inner containers, vary by class, and cannot exceed 66 pounds gross weight (completed carton). For

example, flammable liquids (Class 3, PGI) allow inner containers of 0.5 liters or less (§173.150).

Note: Above packaging types were intentionally selected and are not all-inclusive.

Non-bulk Package Testing

Hazmat-labeled cardboard boxes are not the same as a plain cardboard box. A good portion of hazardous materials are shipped in performance-oriented fiberboard boxes, either as composite or combination packaging. These packages must undergo a series of design-qualifications and testing procedures by manufacturers, reflected by a "UN mark." The same is true for steel drums, paint cans, F-cans, and others, with markings on the bottom.

Design qualification testing includes vibration, drop, stacking, Cobb sizing (determines the absorption of water by paper), hydrostatic, leak-proof, and cooperage test for bung-type wooden barrels (see Subpart M). Periodically, a packaging specialist needs to perform drop testing according to UN protocol. Drop tests simulate (well beyond) what a normal package would encounter during shipping. The following depicts a typical procedure for the drop test:

After filling six glass bottles with water, tightening plastic lids, placing in inner packaging and taping the outside, the packing specialist knows the completed package, as demonstrated by prototype testing, must be capable of sustaining each of the following drop tests from a height of 1.8 meters (5.9 feet) for PG 1 materials. They must be dropped "directly onto a solid unyielding surface without breakage or leakage from any inner receptacle and without substantial reduction in the effectiveness of the package" (§178.603):

- One drop, flat on bottom;
- One drop, fiat on top;
- One drop, fiat on the long side;
- One drop, flat on the short side; and
- One drop on a corner at the junction of three intersecting edges.

Package Selection and Proper Assembly

Here's a brief checklist to help mitigate packaging incidents:

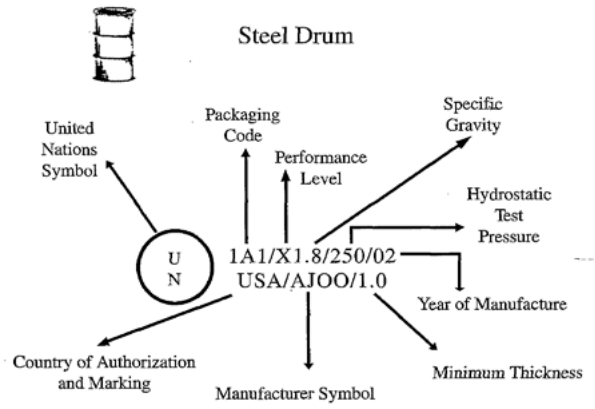
- Always check packaging authorizations (§173.202 and §173.242) for allowed types. Use the Hazardous Materials Table (§172.101), with particular attention to Columns 5, 8a, 8b, for ground shipments. If' shipping via air, note Column 9. Via sea, refer to vessel stowage limitations in Column 10.
- Next, make sure packaging is compatible with contents. For example, certain Class 8 solvents will corrode unlined metal cans.
- Be sure packaging is suitable for product's packing group (Column 5). Using a wrong packing type may result in a $1,200 fine (§172.202) and much more during litigation.
- Follow the packaging regulations! Chemical producers and packaging suppliers have spent much time and money to assure clarity and simplicity.

Codes for Performance Oriented Packagings

All new containers must be "performance oriented packaging" suitable for the materials to be contained. Markings should be clearly marked on the containers by the container manufacturer. On plastic drums these markings will be embossed on the bottom of the drum. These markings are as follows:

UN should be in a circle, usually with the U above the N.

A. 1A1 = tight head steel drum 1A2 = open head steel drum 1H1 = tight head plastic drum 1H2 = open head plastic drum
B. X = suitable for packing group I, II and III. Y = suitable for packing group II and III. Z = suitable for packing group III.
C. The specific gravity the container was tested with.
D. Total pressure in kilopascals rounded to the nearest 10 KPA of the hydrostatic pressure test.
E. The year of manufacture (usually only the last two numbers) i.e. 2004 would be marked as 04



I. Employee Training

Overview: Hazardous Materials Regulations to enhance training requirements for persons involved in the transportation of hazardous materials were issued May 15, 1992. New employees must complete training within 90 days of hire, and refresher training every three years.

The purpose of this rulemaking was to ensure that each hazmat employer trains its hazmat employees regarding safe loading, unloading, handling, storing, and transporting of hazardous materials and emergency preparedness for responding to accidents or incidents involving the transportation of hazardous materials.

In this final rule the following definitions were added to the regulations:

HAZMAT EMPLOYER means one that uses one or more of its employees in connection with:

- transporting hazardous materials in commerce;
- causing hazardous materials to be transported or shipped in commerce; or
- representing, marking, certifying, selling, offering, reconditioning, testing, repairing, or modifying containers, drums, or packagings as qualified for use in the transportation of hazardous materials.

This term includes an owner-operator of a motor vehicle who transports hazardous materials in commerce. This term also includes any department, agency or instrumentality of the United States, a State, a political subdivision of a State, or an Indian tribe engaged in an activity described above.

HAZMAT EMPLOYEE means a person who is employed by a hazmat employer and who in the course of employment directly affects hazardous materials transportation safety. The term includes an owner-operator of a motor vehicle which transports hazardous materials in commerce. This term refers to an individual, including a self-employed individual who, during the course of employment:

- loads, unloads, or handles hazardous materials;
- tests, reconditions, repairs, modifies, marks, or otherwise represents containers, drums or packagings as qualified for use in the transportation of hazardous materials;
- prepares hazardous materials for transportation
- is responsible for safety of transporting hazardous materials; or
- operates a vehicle used to transport hazardous materials.

Some examples of who will be required to be trained are:

- a person determining if a material is a hazardous material;
- a person who designs, produces and/or sells a packaging for hazardous material;
- a person determining proper packaging for a hazardous material;
- a person who put the hazardous material in the packaging;
- a person who marks and labels the package;
- a person who fills out shipping papers;
- a person who loads or unloads the hazardous material;
- a person who moves the packaging in a warehouse during the course of transportation; or
- a person who operates a vehicles transporting hazardous material; A hazmat employer must test each hazmat employee on each topic or
- function to ensure that the training received is effective.

Training Content

A Hazmat employee training must include the following types of training.

1. **General awareness/familiarization:** This training must provide familiarity with the regulations and exemptions that are applicable to the functions performed by the employee.
2. **Function-specific:** This training must provide specific information on the regulations and exemptions that are applicable to the functions performed by the employee.
3. **Safety:** This training must provide info9rmation on hazmat emergency response information; measures to protect the employee from hazards to which they may be exposed, including measures implemented to protect the employee from exposure; and methods and procedures for avoiding accidents.
   Employees who repair, modify, recondition, or test packagings may be excepted from safety training. (172.704(e))
4. **Security awareness:** This training must provide an awareness of security risks associated with hazardous materials transportation and methods designed to enhance transportation security. This training must also include a component covering how to recognize and respond to possible security threats.
   Security awareness training must be provided to current hazmat employees at their first scheduled recurrent training after March 25, 3003. In no case should this occur later than March 24, 3006.
5. **In-depth security:** Each hazmat employee of a person/company that is required to have a security plan must be trained on the security plan and its implementation. This training must include company security objectives, specific security rocedures, employee responsibilities, actions to be taken in the event of a security breach, and the organizational security structure. (172.704)
6. **Modal specific:** In addition to the above five types of training, modal specific training requirements may be required for the individual modes of transportation (air, rail, highway, or vessel). (172.700(c))

   For example, by highway, drivers must also be trained on the safe operation of the motor-vehicle in which they operate, or intend to operate, and the applicable requirements of the Federal Motor Carrier Safety Regulations. (177.816)

Training Record

Hazmat training for each hazmat employee must be documented by the employer. A record of current hazmat training, include the preceding three years, must be created and retained by the hazmat employer for each hazmat employee. The hazmat employee's training record must include:

- The employee's name;
- The most recent completion date of the employee's training;
- A description, copy, or location of the training materials used;
- The name and address of the person providing the training; and
- Certification that the employee has been trained and tested.

Their record must be retained for as long as the hazmat employee is employed by the hazmat employer and for 90 days thereafter. (172.704)

The ***Emergency Response Guidebook (ERG2004)*** was developed jointly by the U.S. Department of Transportation, Transport Canada, and the Secretariat of Communications and Transportation of Mexico (SCT) for use by firefighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving a hazardous material. It is primarily a guide to aid first responders in (1) quickly identifying the specific or generic classification of the material(s) involved in the incident, and (2) protecting themselves and the general public during this initial response phase of the incident. The ERG is updated every three to four years to accommodate new products and technology. The next version is scheduled for 2008.

DOT's goal is to place one ERG2004 in each emergency service vehicle, nationwide, through distribution to state and local public safety authorities. Copies are made available free of charge to public emergency responders through the **state coordinator** (U.S. only) nearest you. In Canada, contact CANUTEC at 613-992-4624 or via Internet at canutec@tc.gc.ca for information. In Mexico, call SCT at 52-5-684-1275.

Reference(s): Employee Training

1. AWT: DOT Regulations Hazardous Materials Guide http://www.awtstore.org
2. 49 CFR 172.700 – 704: Purpose and Scope, Federal – State Relationship, Applicability and responsibility for training and testing, and training requirements: http://www.phmsa.dot.gov
3. Emergency Response Guidebook (pdf): http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Hazmat/ERG2012.pdf
4. U.S. Department of Transportation Pipeline and Hazardous Materials Administration, Training Requirements: http://www.phmsa.dot.gov/hazmat/training/requirements

J. Security Plan and Training

Overview: Regulations regarding Security Plan can be found in 49CFR Subpart I, 172.800 – 904.

New Security Requirements for Hazmat Transportation

Changes effective March 23, 2003, impose new security requirements for hazardous material shippers and carriers that include mandatory security awareness training and written security plans. These new security requirements are designed to increase awareness of terrorist threats to the carriers of any hazardous material.

The new DOT security requirements are considerably more demanding on hazmat shippers and carriers that offer to transport large quantities of hazmats, as well as those that handle chemicals that are usually dangerous if misused.

The DOT security awareness training at 49 CFR 172.704 affects every shipper of hazardous materials without exception. DOT has released a free training module CD that meets this security training requirement. The module reviews vulnerabilities and preventive safety measures to help ensure a safe shipment. The training focuses on helping employees recognize possible threats involving hazmats that could be used as weapons: Flammable fuels, chlorine gas, and ammonium nitrate are used as examples. While this module has been approved by DOT to satisfy the training requirements for hazmat security, all hazmat employers are still required to ensure hazmat security risks not covered in the module have been addressed in their employee training.

Details of the Security Plan

DOT says a written plan for registered hazardous material carriers and offerors must be in place by December 22, 2003. In accordance with 49 CFR 172.800, anyone who offers or transports hazardous materials must develop and adhere to a security plan that includes placarded loads with triggering quantities of: radioactives; class 7 materials; explosive material; material poisonous by inhalation; bulk hazmat shipments; agents or toxins regulated by the CDC; or any other placarded load.

The plan must include employer security objectives, employee security procedures, documented actions of a security emergency; and organization of a security site. The requirements are subdivided into four parts:

The first part will increase personnel security by confirming information provided by hazardous material driver job applicants and performing background checks. Some of the items to be reviewed include criminal history, personal references, citizenship, and gaps in employment.

The next step in the plan is accessing the level of risk based on the damage potential of hazardous materials the shipper or carrier stores or ships. One tool for performing these evaluations is a hazard and exposure ranking of your material's vulnerability and threat assessment for each material. A copy of the chemical inventory classified for transportation would demonstrate the shipping hazards for each material that is shipped. Along with this classification is a ranking system for each material for the potential threat based on hazard, quantity, route, and past history of misuse. This will provide a better understanding of the potential threat.

The third step of the plan addresses in-route security risks based on high population areas or areas where hijacking is a high risk. Tunnels provide an isolated area that may or may not be well lit where a potential hijacker can await a hazardous material driver.

Route selection is an important security measure. Knowing the potential risk areas may prompt drivers to choose an alternative route. Along with route selection, driver communication is an additional proactive security measure.

The fourth provision is the development of a written and up-to-date security plan. The plan must include but is not limited to: security objectives, security procedures, employee responsibilities, actions to be taken during a security emergency; organization of site, a list of what is being shipped, and the level of threat of each item. Emergency procedures may include communication of special emergency contact numbers, satellite tracking, or automatic emergency engine kill switches to prevent hijacking.

Motor carriers registered with DOT that carry hazardous materials must have a copy of their current registration certificate on each motor vehicle. RSPA, an agency within DOT, has proposed that the name and address of the consignor and consignee, along with the shipper's DOT hazmat registration number when applicable, be required on all shipping papers.

DOT also has made it harder to renew or acquire a hazmat-endorsed commercial driver's license. The agency is requiring a fingerprint-based criminal history record check for each Commercial Driver's License (CDL) with a Hazardous Materials Endorsement. There is also a pending Federal Motor Carrier Safety Administration rule that will require hazardous material drivers to renew their license every five years. In addition to the back-group checks required to be conducted by the employer, employees seeking an H- endorsement on their CDL soon will need to be screened by TSA.

K. Federal Motor Carrier Safety Regulations (FMCSR)

Overview: The Federal Motor Carrier Safety Administration (FMCSA) was established as a separate administration within the U.S. Department of Transportation on January 1, 2000, pursuant to the Motor Carrier Safety Improvement Act of 1999. Their primary mission is to reduce accidents, injuries, and fatalities involving large trucks and buses.

The FMCSA develops and enforces regulations, Federal Motor Carrier Safety Regulations (FMCSRs) that may apply to your organization.

Two key programs that may pertain to your organization are:

FEDERAL MOTOR CARRIER SAFETY REGULATIONS (FMCSRs). FMCSA develops, maintains, and enforces federal regulations that promote carrier safety, industry productivity, and new technologies. FMCSRs establish safe operating requirements for commercial vehicle drivers, carriers, vehicles, and vehicle equipment.

HAZARDOUS MATERIALS REGULATIONS (HMRs). FMCSA enforces HMRs, which are designed to ensure the safe and secure transportation of hazardous materials. These rules address the classification of hazardous materials, proper packaging, employee training, hazard communication, and operational requirements.

Reference(s): FMCSR

1. Federal Hazardous Materials Regulations - 49 CFR Parts 100 – 185
2. Federal Motor Carrier Safety Regulations, interpretations of the regulations, and helpful compliance guidance. http://www.fmcsa.dot.gov/mission/about-us
3. Guide To Developing An Effective Security Plan for the Highway Transportation of Hazardous Materials: http://www.dotsafety.net

L. Tote Tracking for Testing and Recertification

Overview: Manufacturers of hazardous materials are responsible for tracking bulk containers through the supply chain and assuring that all chemicals contained therein are safely disposed of, either by use or properly- disposed waste and cleanout. There are numerous suppliers of tote storage who can provide tracking services. Very little information is available on the details of these systems.

M. Reconditioned Drums

Reference(s): Reconditioned Drums

1. 49 CFR 173.28 Reuse, reconditioning, and remanufacture of packaging.
2. 49 CFR 173.29 Empty packaging.
3. 40 CFR 261.7 Residue of hazardous waste in empty containers.
4. 22 CCR 66261.7 California rules on hazardous waste in empty drums.
5. 40 CFR. 165.88 and 165.89 EPA guidelines on disposal of FIFRA registered products and their containers.
6. AWT Analyst article, Winter 2004, Volume xi, Number 1: Drum Reuses – How I Turned a $25 Savings Into a $2,500 Fine. Author: John Krenson, Besway Systems. Go to the AWT website, www.awt.org. Log in under Members Only. Go to Analyst, Past Articles. Click on Winter 2004 article.

Question(s): Reconditioned Drums

1. Do you sell products in reconditioned drums?

If No

- Does not apply

If Yes

- The DOT regulations for reconditioned packaging in 49 CFR 173.28 applies.

2. Do you or your customers handle or transport empty drums?

If No

- Does not apply

If Yes

The EPA regulations regarding the handling of empty containers of hazardous waste and or FIFRA registered products may apply. (See references above.) Empty drums of certain hazardous chemicals and FIFRA registered products should be triple rinsed to be considered "RCRA empty". Other waste containers should be empty per RCRA requirements (Less than 3.0% or 2.5 cm left in the drum). California has special rules regarding empty drums of hazardous materials. Removing the label or crossing out the label of an empty container and reinstalling both bungs is also required for proper handling of empty containers.

N. Segregation of Incompatible HazMats in Transport

Overview: The Department of Transportation has requirements regarding the way hazardous materials may be situated during transport via highway. Some materials require special segregation and separation from other materials. The guidance and rules for these requirements are outlined in 49 CFR §177.848. The segregation requirements apply to materials that are in:

1. Packages that must be labeled under 49 CFR §172; or
2. A compartment of a multi-compartmented cargo tank subject to 49 CFR §173.33; or
3. Portable tanks loaded in a transport vehicle or freight container.

A Segregation Table for Hazardous Materials is available as a reference guide in 49 CFR §177.848 (e). Instructions for using the segregation table is included as well as an adjunct Compatibility Table for Class 1 (Explosive) Materials.

Reference(s): Segregation of Hazard Classes

1. 49 CFR §177.848 Segregation and Separation by Highway
2. 49 CFR §176.83 Transport Vehicle Onboard a Vessel
3. 49 CFR §177.841 Do the Hazardous Materials Regulations forbid the transportation of food with hazardous materials?

V. Environmental Protection Agency (EPA)

A. Superfund Amendments and Reauthorization Act (SARA)

Overview: The U.S. Superfund Amendments and Reauthorization Act, SARA is an amendment and reauthorization of *CERCLA, the Comprehensive Environmental Response, Compensation & Liability Act (CERCLA) of 1980*, better known as the Super Fund Act. Both CERCLA and SARA have the goals of identifying, remediating and preventing the release of *hazardous* substances to the environment. SARA not only extended the life of CERCLA, but made several important changes to provide new tools for enforcement, remedies, funding, and both state and individual input. SARA also resulted in a revision of the U.S. EPA's *Hazard Ranking System* to assess the degree of hazard to humans and the environment.

The *Emergency Planning and Community Right-To-Know Act (EPCRA)*, also known as the Community Right-To-Know Law, is also known as Title III of SARA. This provides specific plans for preparing for, preventing, and responding to the release of over 600 chemicals listed in the *Toxics Release Inventory* (TRI).

Any release of one or more of the roughly 800 CERCLA or 360 EPCRA hazardous substances that equals or exceeds a reportable quantity (RQ) must be reported to the *EPA National Response Center (NRC).*

RQs are adjusted to one of five levels: 1, 10, 100, 1,000, or 5,000 pounds. EPA bases adjustments to the RQs on the intrinsic characteristics of each hazardous substance, such as the aquatic toxicity, acute and chronic toxicity, ignitability, reactivity, and potential carcinogenicity. An RQ value is established for each of these characteristics of a hazardous substance, with the most stringent RQ value (i.e., the lowest quantity) becoming the final RQ or reporting trigger for that hazardous substance.

Reference(s): A. SARA

i. AWT Book Store: EPA SARA Title III: Community Right-To-Know: How does the SARA Title II affect you in the water treatment industry? This manual explains water treatment industry implications, emergency planning and notification, reporting requirements and also covers general provisions. A 'Frequently Asked Questions' section is also provided. Recent additions/updates: http://www.epa.gov/superfund/additions/index.htm
ii. Environmental Update #9; Understanding the Emergency Planning and Community Right-to-Know Act (EPCRA); April 2002. Published by the Hazardous Substance Research Centers/South & Southwest Outreach Program. Web site: http://www.hsrc.org
iii. EPCRA regulations, 40 CFR: http://www.epa.gov/lawsregs/laws/epcra.html
iv. EPA's "RCRA, Superfund, & EPCRA Hotline Training Manual" http://www2.epa.gov/laws-regulations
v. Information: EPCRA Hotline: (800) 424-9346 or (703) 412-9810
vi. The Right-to-Know Network, a service provided by OMB Watch, provides free access to numerous databases, text files, and conferences on the environment. http://www.rtk.net/

A.1 SARA: EPCRA Section 302, Emergency Planning Notification Question(s): SARA, EPCRA Section 302

Does you facility have, at any one time, any Extremely Hazardous Substance (EHS) in excess of a Threshold Planning Quantity (TPQ) as listed in SARA Title III "List of Lists"?

If No...

- EPCRA Section 302 and 304 are not applicable. No reporting required.

If Yes...

- You must submit a facility profile form to the State Emergency Response Commission (SERC).

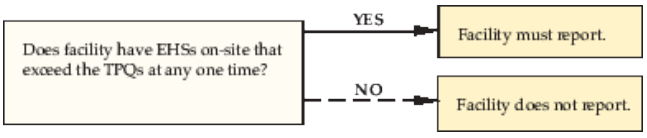
Do you have a Local Emergency Planning Committee (LEPC)?

If No...

- No action is necessary.

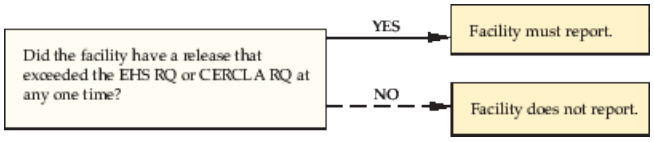
If Yes...

- Have you submitted a facility profile form to the LEPC?



A.2 SARA: EPCRA Section 304, Emergency Release Notification Question(s): SARA, EPCRA Section 304

1. Have appropriate personnel been instructed as to what is required in the event of a release of an EHS that exceeds its Threshold Planning Quantity (TPQ) or CERCLA Reportable Quantity (RQ)?
2. Do they know the phone number to call to verbally notify the State Emergency Response Commission (SERC)?
3. Do they know a written follow-up report must be submitted to the SERC and the Environmental Protection Agency (EPA)?



A.3 SARA: EPCRA Section 311 & 312, Hazardous Chemical Inventory Reporting

Question(s): SARA, EPCRA Section 311 & 312

Does your facility have, at any one time, a chemical that is required to have a Safety Data Sheet (SDS) by the Occupational Safety and Health Commission (OSHA) Hazard Communication Standard (HCS)?

If No...

- EPCRA Sections 311 and 312 are not applicable. No reporting required.

If Yes...

- Is the chemical an Extremely Hazardous Substance (EHS)?

If No...

- Are there 10,000 pounds or more of an EHS on site at any one time?

If No...

- EPCRA Sections 311 and 312 are not applicable. No reporting required.

If Yes...

- Do any exemptions apply?

If No...

- Your facility must report...

1. Has a one-time notification, per Section 311, been made to SERC, LEPC, and the local fire department (LFD)?
2. Has SERC, LEPC and LFD been provided an SDS for each hazardous chemical, or a list of the hazardous chemicals on site?
3. Has an annual Tier II form, including chemical-specific information, been submitted to the SERC, LEPC, and LFD?
4. Is electronic submittal the Tier II form allowed in your state?

If Yes...

- EPCRA Sections 311 and 312 are not applicable. No reporting required.

If Yes...

- Is either the EHS or Threshold Planning Quantity (TPQ) 500 pounds or greater, on site, at any one time?

If No...

- EPCRA Sections 311 and 312 are not applicable. No reporting required.

If Yes...

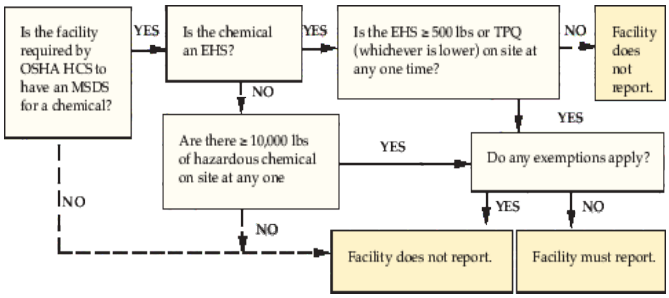
- Do any exemptions apply?

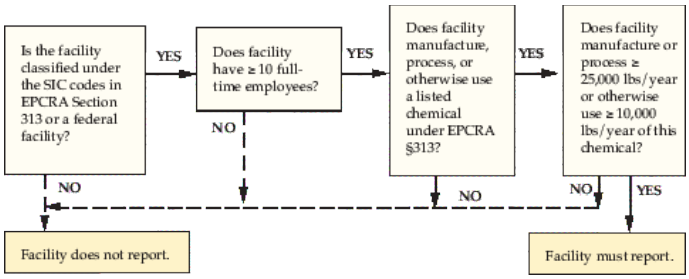
If No...

1. Has a one-time notification, per Section 311, been made to SERC, LEPC, and the local fire department (LFD)?
2. Has SERC, LEPC and LFD been provided an SDS for each hazardous chemical, or a list of the hazardous chemicals on site?
3. Has an annual Tier II form, including chemical-specific information, been submitted to the SERC, LEPC, and LFD?
4. Is electronic submittal of the Tier II form allowed in your state?

If Yes...

- EPCRA Sections 311 and 312 are not applicable. No reporting required.





A.4 EPCRA Section 313, Toxic Chemical Release Inventory Question(s): SARA, EPCRA Section 313

Is your facility classified under the SIC codes in EPCRA Section 313 (or a federal facility)?

If No...

- EPCRA Section 313 is not applicable. No reporting required.

If Yes...

- Does your facility have 10 or more full time employees?

If No...

- EPCRA Section 313 is not applicable. No reporting required.

If Yes...

- Does your facility manufacture, process, or otherwise use a listed chemical under EPCRA Section 313?

If No...

- EPCRA Section 313 is not applicable. No reporting required.

If Yes...

- Does your facility manufacture or process 25,000 or more pounds per year or otherwise use 10,000 pounds or more of an EPCRA

Section 313 listed chemical?

If No...

- EPCRA Section 313 is not applicable. No reporting required.

If Yes...

- Has a Form R and/or Form A (depending on the annual reportable amount—a total of all releases, on and off site—of a chemical release) been submitted?

B. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Canada: Pest Management Regulatory Agency (PMRA)

B.1 Standards for Pesticide Containers and Containment

Overview: All products marketed as biocides in the United States must be registered with the U.S. EPA. FIFRA governs commercially produced pesticides intended for a single use. The requirements are largely federal, with little delegation of authority to the states. FIFRA was first passed in 1947. It was extensively amended in 1972, and has subsequently been amended several more times, most recently by the Food Quality Protection Act of 1996.

FIFRA requires that each manufacturer register each pesticide and its label with EPA before it can be manufactured for commercial use. Prospective pesticide manufacturers are required to submit a registration application to EPA, a proposed label, a statement of all claims to be made for the pesticide, directions for its use, a confidential statement of the formula, and a description of the tests that provide the basis for the manufacturer's claims. The proposed label must be written in such a way as to be understood by the ordinary individual under customary conditions of purchase and use. The manufacturer must avoid making false or misleading statements. Distribution of any pesticide that is not registered or that is improperly labeled is prohibited.

In determining whether to register a pesticide, EPA considers economic, social, and environmental costs and benefits of use of the pesticide. Registrations are for a five-year period. Reregistration is possible, but will be considered by EPA in light of current data regarding the pesticide.

All products marketed as biocides in Canada must be registered by the Pest Management Regulatory Agency (PMRA).

Reference(s): FIFRA

1. U.S. Pesticide registration regulations can be found in 40 CFR §152-186; and
2. U.S. Code, Title 7, Chapter 6, Subchapter II, Section 136a, Registration of pesticides: http://www4.law.cornell.edu/uscode/7/136a.html
3. For a list of State environmental regulatory

agencies, contact names, phone numbers, and/ or web sites for State registration fee information and for verification of possible biocide applicator licensing or training requirements; go to web site: http://npic.orst.edu/state1.htm

4. Canadian (PMRA) Pesticide registration information can be found at: http://www.pmra-arla.gc.ca/
5. Office of Pesticide Programs' Label Review Manual. EPA (1998, August 10), 18 Chapters. This manual provides guidance for pesticide labels. http://www.epa.gov/lawsregs/laws/epcra.html
6. Pesticide Registration Notices are issued by the Office of Pesticide Programs to inform pesticide registrants and other interested persons about important policies, procedures and regulatory decisions: http://www.epa.gov/PR_Notices/

Question(s): FIFRA

1. Do you market any EPA registered biocides in the under your company label?

If No…

FIFRA regulations do not apply.

If Yes…

- All microbiocides you purchase must be manufactured in an EPA approved establishment. Do all of your microbiocides have an EPA Establishment Number?
- An EPA issued distributor (or establishment) number is required in order to obtain supplemental registrations from the manufacturers, and must be shown on the label. Do you have your own EPA Establishment Number?
- Labels must be current. The manufacturer who issued that registration usually provides this information to the supplemental registrant. Do you have a process in place to check for recent label text updates, particularly before labels are printed?
- Each state requires a separate registration for each product. These registrations must be renewed on a regular basis (usually annually, but will vary from state to state). Certain manufacturers allow their biocides to be sold under the manufacturers' end use labels. Usually in these cases the manufacturer will administer and pay the state registrations, but this should be verified.
- Many states require commercial applicators of insecticides, fungicides or herbicide be licensed. Some states require end-users of microbiocides used in the water treatment business to be licensed as well. States known to require a formal training or license for such applications are: Georgia, Maine, Michigan, New York, Tennessee, and Vermont. It is highly recommended that you contact the appropriate State agency involved in regulatory oversight. See Reference 3) above for contact information for each state.

2. Do you blend, dilute, repackage, or re-label any biocides?

If No…

- FIFRA regulations do not apply.

If Yes…

- You are considered a manufacturer and must be an EPA approved establishment. Your establishment number will appear on the label for all biocides manufactured at your facility.
- All biocide manufacturing must be done in compliance with the P II Alternative (40 CFR §455). P II Alternative basically requires that all manufacturing be done in an enclosed process to insure that no rinsate, spills, residue, etc. can escape into sewers, waterways, etc. In situations where a closed process is not practical, P II Alternative also specifies the appropriate requirements for wastewater treatment, drum reconditioning, rinsate disposal, etc.
- EPA form 3540-16 "Pesticide Report for Pesticide-Producing and Device- Producing Establishments" must be filed by March 1 of each year. This form must include all biocides manufactured at a facility regardless as to whose registrations are involved.
- All manufactured biocide products should have batch numbers assigned that can be used to reference the date of manufacture, applicable Quality Control (QC) information, batch size, and where shipped. FIFRA does perform surprise inspections on EPA establishments to make sure this information is properly documented.

FIFRA Standards for Pesticide Containers and Containment

August 16, 2006: EPA is required by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) to promulgate regulations prescribing procedures and standards for container design and the removal of pesticides from containers prior to disposal. The following information applies to EPA microbiocide registrants, refillers, retailers, commercial applicators and custom blenders.

1. **Nonrefillable Containers:** This section addresses "one-way" or disposable containers and applies to pesticide registrants. The purpose of these standards is to ensure that containers are strong and durable, minimize human exposure during container handling and facilitate container disposal and recycling.
2. **Refillable Containers:** This section applies to containers that are intended to be refilled and reused more than once and applies to pesticide registrants. The purpose of these standards is to ensure that containers are strong and durable, minimize cross-contamination of pesticides distributed in refillable containers, and encourage the use of refillable containers to reduce container disposal problems.
3. **Repackaging:** Thi**s** section, which describes procedures and other safeguards for repackaging pesticide into refillable containers, applies to pesticide registrants and anyone who refills pesticide containers for sale (registrants,

formulators, distributors and dealers). These regulations are intended to minimize cross-contamination of pesticides distributed in refillable containers, codify safe refilling management practices and encourage the use of refillable containers to reduce container disposal problems.

4. **Labeling:** The labeling segment includes instructions for how to properly clean pesticide containers and a statement identifying the container as nonrefillable or refillable. Pesticide registrants are required to ensure that labels include the specified information. Pesticide users are required to comply with the instructions on the labels.
5. **Containment Structures:** This section establishes standards for secondary containment structures at certain bulk storage sites and for containment pads at certain pesticide dispensing operations. Pesticide dealers who repackage pesticides, commercial applicators and custom blenders have to comply with the requirements. The purpose of these standards is to protect the environment from leaks and spills at bulk storage areas and from contamination due to pesticide dispensing operations.

References: FIFRA Standards for Containers and Containment

1. http://www.epa.gov/pesticides/regulating/containers.htm
2. http://www.law.cornell.edu/uscode/text/7/136q
3. Federal Register Vol. 71, Number 158, pp. 47329 – 47437

C. Clean Air Act (CAA)

Overview: The Clean Air Act (CAA), passed in 1970, created a national program to control the damaging effects of air pollution. The Clean Air Act Amendments of 1990 went further to ensure that the air Americans breathe is safe. The CAA protects and enhances the quality of the nation's air by regulating stationary and mobile sources of air emissions.

The CAA requires major stationary sources to install pollution control equipment and to meet specific emissions limitations. In addition, for the first time under the 1990 CAA amendments, major stationary sources must obtain operating permits. Examples of stationary sources include manufacturers, processors, refiners, and utilities.

The CAA mandates controls on air pollution from mobile sources by regulating both the composition of fuels and emission-control components on motor vehicles and non-road engines. Vehicle fuel standards for gasoline and diesel are met by refiners/ importers, and by other parties in the fuel distribution system.

Regulation of vehicles includes vehicle emission limits for Hydrocarbons (HC), Carbon Monoxide (CO), and Nitrogen Oxides (NOx), and particulates in the case of diesel vehicles. These limits, which must be met by the vehicle manufacturers, apply to on-road vehicles, off-road vehicles, and non-road sources (e.g., marine engines, locomotives, and lawn & garden equipment). Under the 1990 CAA amendments, vehicle standards are being made more stringent, in stages, through 2005 or later.

C.1 Boiler Emissions (National Emission Standards for Hazardous Air Pollutants for Industrial/ Commercial/Institutional Boilers and Process Heaters)

Overview:

- Under the Clean Air Act, EPA is required to regulate emissions of 188 specific air toxics. On July 16, 1992, EPA published a list of industry groups, known as source categories, that emit one or more of these air toxics. For listed categories of major sources (those that have the potential to emit 10 tons per year or more of a single listed air toxic or 25 tons per year or more of a combination of air toxics), the Clean Air Act requires EPA to develop standards that restrict emissions to levels consistent with the lowest-emitting (also called best- performing) facilities. These standards are based on stringent air pollution reduction measures known as maximum achievable control technology (MACT).
- The EPAs published list of industry groups to be regulated includes Industrial Boilers, Commercial and Institutional Boilers, and Process Heaters. Standards for these source categories were jointly proposed on January 13, 2003 and promulgated on September 13, 2004.
- Boilers burn fossil fuel (coal, gas and oil) and/ or other biomass substances such as wood and agricultural residues to produce steam. The steam is used to produce electricity or provide heat. Process heaters heat raw or intermediate materials during an industrial process. Boilers and process heaters are used at facilities such as refineries, chemical and manufacturing plants, and paper mills. In addition, these boilers may stand alone to provide heat for shopping malls and university heating systems.
- The final rule included health-based compliance alternatives for threshold pollutants based on section 112(d)(4) of the Clean Air Act. Eligible sources that meet the rules health-based compliance alternatives are considered in compliance with the emission standards. Eligibility for the health-based compliance alternatives is determined under Appendix A of the final rule which is entitled Methodology and Criteria for Demonstrating Eligibility for the Health- Based Compliance Alternatives.
- The final rule provides two ways a facility may demonstrate that a boiler or process heater qualifies for the health-based compliance alternative.

1. Lookup tables—listed in the rule—allow facilities to use a limited number of site-specific input parameters to determine whether emissions from boilers or process heaters might cause a hazard index limit for non-carcinogens to be exceeded.
2. Facilities may demonstrate by modeling, using site-specific information, that emissions of threshold pollutants such as hydrochloric acid (HCl), chlorine, or manganese from the boiler or process heater under evaluation do not cause a hazard index limit to be exceeded.

- Facilities that demonstrate eligibility based on HCl and chlorine emissions may avoid the need to install scrubbers to control certain air toxics emissions. However, these boilers or process heaters may be required to install fabric filters to reduce particle emissions for a separate particle standard for boilers.
- Boilers or process heaters fueled by biomass may qualify to comply with an alternative emissions limitation based on their emissions of manganese. Particulate matter controls may not be needed to comply with this alternative limitation, but these units may still be required to install other emissions controls.
- Facilities that are eligible for compliance alternatives established by the final rule must assume federally enforceable emissions limitations. These limits ensure that their air toxics emissions do not exceed levels used to qualify for the compliance alternative.
- EPA continues to believe that the alternative compliance options will maintain low levels of emissions while providing flexibility for plant managers to meet the final emission limits by altering their work practices in ways that will reduce emissions, or they may install emissions control devices such as fabric filters and scrubbers to chemically or physically remove air toxics from the boiler or process heater emissions streams.
- EPA is still reviewing a petition, filed by the General Electric Corporation (GE) requesting reconsideration of the emission averaging provision in the final rule to address how this provision might apply in the context of affected boilers that vent to a common stack.

Reference(s): Boiler Emissions

1. http://www.epa.gov/ttn/atw/boiler/boilerpg.html
2. http://www.epa.gov/airquality/combustion/docs/20110221doefs.pdf

C.2 Other Air Emissions Requiring Permits

a. Title I - Non-attainment Provisions

If your county has been designated as non-attainment some industries within the area must, among other things, submit an emissions inventory.

b. Title III Hazardous Air Pollutants

This title identifies 189 Hazardous Air Pollutants (HAP's) that heretofore have been unregulated (see Appendix 5). Sources that emit 10 tons per year of any pollutant or 25 tons per year of any combination are defined as major sources. Sources determined to be major will have specific requirements which will be defined when the regulations are promulgated. These sources will have to comply with applicable Maximum Achievable Control Technology (MACT) standards. It is likely that a MACT standard will be developed for Halogenated Degreasers.

The U. S. Environmental Protection Agency ("EPA") has outlined an interim policy clarifying when a hazardous air pollutant ("HAP") source may limit its potential to emit for purposes of avoiding the application of maximum achievable control technology ("MACT") standards. This is important for industrial sources that want to avoid the MACT standards, as well as other requirements applicable to major sources of HAPs (e.g., Title V operating permits), because sources that fail to limit their potential to emit in a timely manner may be subject to applicable MACT standards and associated major source requirements permanently. Section 112 of the Clean Air Act requires "major sources" of HAPs to comply with MACT standards.

Under the new proposal, facilities could avoid major source requirements by agreeing to limit their emissions to 50% or less of the major source thresholds (5/12.5 tons per year). Facilities would be required to maintain emissions levels at or below the 50% threshold "for every consecutive 12- month period." The first 12 month period would begin with the 12 months preceding the issuance of the interim policy.

A source that exceeds the 50% threshold, without complying with major source requirements of the act (or without otherwise limiting its potential to emit), could be subject to enforcement action. EPA would require sources to maintain records on site that demonstrate compliance with the limitations. Sources would also have to obtain a permit that establishes the 50% threshold and limits the source's potential to emit.

Larger sources with emissions above the 50% threshold can treat restrictions contained in state permits as acceptable limits on their potential to emit if they meet the following criteria:

- The state permit must be "enforceable as a practical matter;"
- The source owner must submit a written certification to EPA assuring the agency that it will comply with the limit; and
- The source owner must accept the limits contained in the state permit as enforceable by EPA or by citizens.

c. Title V - Permits

This title initiates a National Permit-To-Operate system for industries in the United States.

Your state may have had a functioning PTI/PTO

program, but will have to participate in this National program.

The USEPA has proposed a new enhanced monitoring program which will significantly affect the type and degree of monitoring Title V permitees will be required to perform in order to maintain compliance with 1990 CAAA. The program will apply to the owners and operators of both major stationary sources of non-hazardous air pollutants and to sources subject to existing NESHAPs. The regulations will be designed to work in concert with individual state's Title V operating permits program as a means of reducing overall emissions through increased compliance requirements.

d. Title VI - Stratospheric Ozone Protection
Section 611 (Labeling) of the Amendments required the USEPA to promulgate regulations to implement the labeling requirements within 18 months after enactment of the 1990 CAAA.

Changes to the ozone depleting substance (ODS) labeling regulations were recently finalized. The intent of the changes is to alleviate the burden placed on specific parties whose activities contribute no additional emissions of ozone-depleting substances.

Here's a review of the regulation in its new, amended form. If you're familiar with the original version the modifications have been italicized.

Effective May 15, 1993, labels were required on containers of class I and class II substances and on products containing or "manufactured with" class I substances. Beginning on January 1, 2015, labels will also be required on all products containing or manufactured with class II substances. (Call our office for a listing).

In order to determine whether your company's products are "manufactured with" OD compounds, it's necessary to review the definition of that term. "Manufactured with a controlled substance" means that the manufacturer of the product used a controlled substance directly in the product's manufacturing, but the product itself does not contain *more than trace quantities of [this* clause did not previously exist] the controlled substance at the point of introduction into interstate commerce.

The following situations are excluded from the meaning of the phrase "manufactured with a controlled substance."

- Where a product has not had physical contact with the controlled substance.
- Where the manufacturing equipment *or the product has* had physical contact with a controlled substance in an intermittent manner, not as a routine part of the direct manufacturing process.
- Where the controlled substance has been transformed, except for trace quantities.
- Where the controlled substance has been completely destroyed. Completely destroy means to cause the destruction of a controlled substance by one of the five destruction processes approved by the Parties to the Montreal Protocol at a demonstrable destruction efficiency of 98% or more or a greater destruction efficiency if required under other applicable federal regulations. The five approved processes are liquid injection, incineration, reactor cracking, gaseous/fume oxidation, rotary kiln incineration or cement kiln.

D. Clean Water Act (CWA)

Overview: In 1972, Congress enacted the first comprehensive national clean water legislation in response to growing public concern for serious and widespread water pollution. The Clean Water Act is the primary federal law that protects our nation's waters, including lakes, rivers, and coastal areas.

The Clean Water Act focuses on improving the quality of the nation's surface waters. It provides a comprehensive framework of standards, technical tools and financial assistance to address the many causes of pollution and poor water quality, including municipal and industrial wastewater discharges, polluted runoff from urban and rural areas, and habitat destruction.

A summary of the Clean Water Act, links to additional information, is available at: http://www2.epa.gov/laws-regulations/summary-clean-water-act

The Clean Water Act:

a. Requires municipalities and major industries to meet performance standards to ensure pollution control; This includes point source discharges such as site effluent discharge, storm water discharge or non point source such as storm runoffs into the nations waters.
b. Charges states and tribes with setting specific water quality criteria appropriate for their waters and their intended uses and developing pollution control programs to meet them; The states are responsible for setting TMDLs (Total Maximum Daily Limits) for pollutants and are responsible for issuing NPDES (National Pollution Discharge Elimination System) permits.
c. Provides funding to states and communities to help them meet their clean water infrastructure needs; and
d. Protects valuable wetlands and other aquatic habitats through a permitting process that ensures development and other activities are conducted in an environmentally sound manner.

D.1 Whole Effluent Toxicity (WET)

Whole Effluent Toxicity (WET): A term used to describe the aggregate toxic effect of an aqueous sample (e.g.,

whole effluent wastewater discharge) as measured by an organism's response upon exposure to the sample (e.g., lethality, impaired growth or reproduction). WET tests replicate, to the greatest extent possible, the total effect and actual environmental exposure of aquatic life to toxic pollutants in an effluent without requiring the identification of the specific pollutants. WET testing is a vital component of the water quality standards implementation through the NPDES permitting process.

D.2 Cooling Water Intake

Overview: Regulation of cooling water intake structures will affect many facilities across the country. AWT members who call on these facilities will want to be aware of the new rules. More than 44,000 industrial facilities use water taken from lakes, rivers, estuaries or oceans for cooling purposes and will potentially be affected by these rules.

The US Environmental Protection Agency, under 316b of the Clean Water Act, regulates the locations, design, construction, and capacity of cooling water intake structures. These structures must be built with the best technology available for minimizing adverse environmental impact.

Water intake structures cause adverse environmental impact by pulling large numbers of fish and shellfish into a plant's cooling system. There the organisms may be killed or injured by heat, physical stress or chemicals used in the cooling system. Likewise, organisms may be killed or injured when they are trapped against screens at the intake structures. The 316b rule states that both entrainment mortality and impingement mortality must be reduced. Entrainment mortality means that smaller aquatic organisms including fish eggs are drawn into the cooling system and killed or injured. Impingement mortality means larger aquatic organisms such as fish are pinned against screens and killed or injured.

THE EPA HAS ENACTED THE REGULATIONS IN THREE PHASES

Phase I (Finalized December 2001): New Facilities

Phase II (Finalized February 2004): Existing electric generating stations drawing more than 50 million gallons per day and using more than 25% for cooling purposes are regulated.

Phase III (Finalized June 2006): New offshore oil and gas extraction facilities that have a design intake flow threshold of greater than 2 million gallons per day (MGD) and that withdraw at least 25 percent of the water exclusively for cooling purposes.

The EPA made the decision that the uniform national standards are not the most effective way to address cooling water intake structures at existing facilities that were not covered under earlier Phase II rules.

Facilities which do not meet the threshold of either Phase I or Phase II should be aware that the permitting authorities will still have the authority under the 316b to regulate on a "case by case" basis any facility. This authority is based on the "best professional judgment" of the permit writer who concludes that cooling intake structures are creating an adverse environmental impact. The cooling intake restrictions would be part of the existing NPDES permit for the facility.

IMPACT

Although the EPA did not set a uniform national standard for all facilities, 316b can still be used to regulate cooling water intakes. If a facility is regulated under 316b rules their cooling water costs will increase. Some plants may elect to use alternate technologies such as open recirculation systems to reduce cooling water volumes and the environmental impact. Other facilities will have to redesign their water intake structures.

It is important to note how the 316b regulations could impact our clients who now use or are considering the use of water from lakes, rivers, estuaries, or oceans for cooling in their facilities.

Reference(s): Cooling Intake

1. http://www.epa.gov/waterscience/316b/basic.htm
2. Go to AWT website (www.awt.org), Log in to Members Only; Click on: Legislative and Regulatory Activities: "EPA Cooling Intake Memo"

D.3 Spill Prevention Control and Countermeasure (SPCC) Plan

Overview: There are numerous regulations at local and state levels governing the containment of hazardous materials. The federal requirements were initiated for oil storage only, which the EPA has determined shall be required for any single above-ground unit with a capacity of 1320 gallons or more. Underground storage tanks of 42,000 gallons or more (of oil) are subject to special rules for monitoring. As a general rule, if you are planning to store oil or oily substances, including any petroleum distillate, exceeding these amounts, contact your state regulatory agency (EPA, DNR, etc.) to get applicable regulations for your location.

These regulations are found in federal regulations (40 CFR Part 112) and require that certain procedures, methods and equipment be used to prevent and contain discharges of oil or petroleum products. This includes the development of an emergency action plan. The regulations apply to non- transportation-related facilities that store oil or petroleum products in greater than threshold quantities.

Facilities are regulated if, due to their location, a discharge could reasonably be expected to reach a waterway (including sewer pathways).

The following storage capacities, subject you to the SPCC regulations:

- A total aboveground storage capacity of 1,320 gallons in one container; or
- More than 42,000 gallons of underground storage capacity. It is important to note that the total capacity of your tanks or containers must be considered, not the actual amount of oil stored or the portion commonly used. If you are storing oil in containers that are less than 55 gallons in size, you do not need to include these in calculating your SPCC storage capacity.

Some examples of facilities covered by the SPCC program are:

- Vehicle maintenance and refueling facilities
- Facilities that use, store, produce, gather or process oil or petroleum products
- Loading areas/racks, transfer hoses

The following are exempt from the SPCC regulations:

- Containers less than 55 gallons
- Underground storage tanks regulated in Ohio by BUSTR
- Tanks used exclusively for wastewater treatment.

If subject to the SPCC rules, there are two basic requirements:

- Provide adequate secondary containment for oil or petroleum product storage and transfer areas to contain any releases; and
- Prepare and implement a written SPCC plan.

Under the SPCC regulations, the definition of oil is very broad and includes animal, vegetable and soluble oils. Other common oil and petroleum products that are regulated include, heating oil, crude oil, mineral oil, gasoline and diesel fuel.

Reference(s): Containment (oil)

1. 40 CFR §112.3

Secondary containment of non-oil/oily substances is not specifically regulated by the EPA except for hazardous waste. Current codes for secondary containment are covered by a variety of non-governmental organizations: NFPA Uniform Fire Code; International Fire Code; BOCA National Fire Prevention Code; and the Standard Fire Prevention Code. The requirement for secondary containment is dependent on the class and quantity of material being stored.

Reference(s): Containment (chemicals)

1. http://www.rimbach.com/scripts/Article/PEN/Number.idc?Number=82

D.4 Stormwater Pollution Prevention Plan (SWP3)

Pursuant to 40 CFR 122, stormwater discharges "associated with industrial activities" will require an NPDES discharge permit which can be applied for in one (1) of three (3) methods prescribed by the USEPA. They are : (1) individual permit, (2) group permit, and (3) general permit.

However, pursuant to 40 CFR 122.26(b)(14)(xi) the term, "Storm Water Discharge Associated with Industrial Activity", includes only storm water discharges from industries in SIC code 35 where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to precipitation.

Material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. If a point source of storm water discharge is not a "Discharge Associated with Industrial Activity," the facility is not within the purview of this permit regulation.

Question(s): CWA

1. Does your customer (or you) have a NPDES (National Pollutant Discharge Elimination System) permit?

   If No…

   - Does not apply

   If Yes…

   - You may be asked to provide SDSs and, sometimes, supplemental environmental data on the products that are discharged from your customer's (or your) facility.
   - You should be knowledgeable about the limits in your customer's (or your) NPDES permit and how your products and services may impact these limits.

2. Does your customer (or you) have storm water sewer outfalls nearby?

   If No…

   - Does not apply **If Yes…**
   - Is this a separate storm water system that does go directly to a POTW or is it combined with a sanitary sewer?

   If No…

   - It is likely that this is an NPDES permitted point source discharge and the following apply:
     a. You may be asked to provide SDS' and, sometimes, supplemental environmental data on the products which are discharged from your customer's (or your) facility.
     b. You should be knowledgeable about the limits in your customer's (or your) NPDES permit and how your products and services may impact these limits.

   If Yes…

   - Does not apply

3. Does your customer (or you) discharge to a Publicly Owned Treatment Works (POTW)?

   If No…

   - Does not apply

   If Yes…

   - The CWA does not apply directly, however the POTW permitting authority will often have restrictions that may affect your treatment

programs and discharges to their sanitary sewers.

4. Does your customer's (or your) NPDES permit require WET (Whole Effluent Toxicity) testing? The WET test methods are acute aquatic toxicity test methods approved by the EPA.

   If No…

   - Does not apply

   If Yes…

   - Your customer or the permitting authority may require testing of your products as part of the WET testing. Your customer or the permitting authority may require supplemental information on the aquatic toxicity of the components of your products or may require additional acute aquatic toxicity test data of your products.

5. Does your customer have a cooling water intake from a lake, river, estuary or ocean and do they intake more than 2 million gallons per day (MGD)?

   If No…

   - Does not apply

   If Yes…

   - Your customer must comply with the CWA Section 316b once Phase III is enacted. The EPA will propose the rule in November of 2004. If your customer uses in excess 50 MGD of water they must comply with Phase II of the Section 316b that was enacted in February of 2004. This section of the CWA will have significant impact on water treatment of these facilities. One example is that cooling towers will be preferred over once through cooling water systems because of the reduction of water required for cooling.

E. Safe Drinking Water Act (SDWA)

Overview: Signed into law in 1974, and reauthorized in 1996, to ensure public health protection through compliance by public water systems with all health-based standards, including all monitoring and reporting requirements. It focuses on community water systems (serving year round populations at their primary residences) non-transient non-community systems and transient non-community water systems whether they are above ground or underground sources. There are direct public health effects from drinking water that does not meet safety standards. The law also placed increased emphasis on providing the public information about the quality of their drinking water. The 1996 amendments require systems to report their water quality annually to their customers and produce an annual compliance report. In addition, the SDWA addresses underground injection.

Nationally, there are approximately 170,000 public water systems (PWS). These public water systems range in size from large metropolitan areas to rest stops and campgrounds, provided that they meet the public water system definition. The definition of a public water system is a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves at least 25 individuals. Nationally, 22% of the public water systems (approximately 37,000 PWS) had violations of the National Primary Drinking Water Regulations in calendar year 1999.

EPA sets standards for approximately 90 contaminants in drinking water. For each of these contaminants, EPA sets a legal limit, called a maximum contaminant level (MCL), or requires a certain treatment.

Reference(s): SDWA
http://www.epa.gov/safewater/sdwa/index.html

E.1 National Primary Drinking Water Regulations (NPDWR)

Overview: National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water

Reference(s): NPDWR
http://www.epa.gov/safewater/mcl.html

E.2 National Secondary Drinking Water Regulations (NSDWR)

Overview: National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

Reference(s): NPDWR
http://water.epa.gov/drink/contaminants/index.cfm

E.3 Unregulated Contaminants

Overview: This list of contaminants which, at the time of publication, are not subject to any proposed or promulgated national primary drinking water regulation (NPDWR), are known or anticipated to occur in public water systems, and may require regulations under SDWA. For more information check out the list, or visit the Drinking Water Contaminant Candidate List (CCL) website:
http://www.epa.gov/safewater/mcl.html

E.4 Lead and Copper Rule (LCR)

Overview: Purpose is to protect public health by minimizing lead (Pb) and copper (Cu) levels in drinking water, primarily by reducing water corrosivity. Pb and Cu enter drinking water mainly from corrosion of Pb and Cu containing plumbing materials.

The Lead and Copper Rule establishes an action level (AL) of 0.015 mg/L for Pb and 1.3 mg/L for Cu based on 90th percentile level of tap water samples. An AL exceedance is not a violation but can trigger other requirements that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring treatment, public education, and lead service line replacement.

All community water systems (CWSs) and non-transient, non-community water systems (NTNCWSs) are subject to the LCR requirements.

Proposed Revisions, June 2006...

EPA is proposing targeted regulatory changes to the existing national primary drinking water regulations (NPDWRs) for lead and copper. The purpose of the Lead and Copper Rule (LCR) is to protect public water system consumers from exposure to lead and copper in drinking water. The proposed regulatory changes action will:

- enhance the implementation of the LCR in the areas of monitoring, treatment, customer awareness, lead service line replacement; and
- improve compliance with the public education requirements of the LCR and ensure drinking water consumers receive meaningful, timely, and useful information needed to help them limit their exposure to lead in drinking water.

Reference(s): LCR

1. http://www.epa.gov/safewater/lcrmr/index.html
2. Lead and Copper Rule: A Quick Reference Guide http://www.epa.gov/safewater/lcrmr/pdfs/qrg_lcmr_2004.pdf
3. Effect of pH, DIC, Orthophosphate and Sulfate on Drinking Water Cuprosolvency: http://nepis.epa.gov
4. [Proposed] Revisions to the Regulations Controlling Lead in Drinking Water Fact Sheet: http://www.epa.gov/safewater/lcrmr/fs_lcr_2006_pro-rule.html

F. Marine Protection, Research, and Sanctuaries Act (Ocean Dumping Act); MPRSA

Overview: In 1972, Congress enacted the Marine Protection, Research and Sanctuaries Act (MPRSA), declaring that it is the policy of the United States to regulate the dumping of all types of materials into ocean waters and to prevent or strictly limit the dumping into ocean waters of any material which would adversely affect human health, welfare, or amenities, or the marine environment ecological systems, or economic potentialities. MPRSA is sometimes referred to as the Ocean Dumping Act (ODA), an amendment enacted in 1988.

Unless authorized by a permit, MPRSA generally prohibits (1) transportation of material from the U.S. for the purpose of ocean dumping (2) transportation of material from anywhere for the purpose of ocean dumping by U.S. agencies or U.S.-flagged vessels; and (3) dumping of material transported from outside the U.S. into the U.S. territorial sea or into contiguous zone (12 nautical miles from the base line) to the extent that it may affect the territorial sea or the territory of the United States.

In 1988, Congress enacted the Ocean Dumping Ban Act, which amended MPRSA to ban ocean dumping of industrial waste and sewage sludge. Industrial waste includes any solid, semisolid or liquid waste generated by a manufacturing or processing plant. Thus, a permit cannot be issued and any ocean dumping of these materials is prohibited.

A permit is required for the ocean dumping of material, which is defined as matter of any kind or description, including, but not limited to dredged material; solid waste; incinerator residue; garbage; sewage; sewage sludge; munitions; radiological, chemical and biological warfare agents; radioactive materials; chemicals; biological and laboratory waste; wreck or discarded equipment; rocks; sand; excavation debris; and industrial, municipal, agricultural, and other waste. The term does not include sewage from vessels or oil, unless the oil is transported via a vessel or aircraft for the purpose of dumping.

To the extent that the disposition of effluent from an outfall structure is regulated under the Clean Water Act (through, for example, an NPDES permit and ocean discharge criteria), it is not considered dumping under MPRSA. Under certain circumstances, the disposition of material is also not considered dumping if it is pursuant to an Army Corps of Engineers permit or provisions of the Atomic Energy Act. Some limited exemptions exist for disposals related to the construction of fixed structures and deposit of oyster shells.

MPRSA also provides for a research program on long-range effects of pollution, over fishing and man-induced changes of ocean ecosystems and on ocean dumping and other methods of waste disposal. The statute also creates programs to monitor environmental conditions and for the designation and regulation of marine sanctuaries.

G. LUST— Leaking Underground Storage Tank

Overview: Underground storage tanks (USTs) are administered by the EPA through the office of the state Fire Marshall. Certain USTs, such as those for home heating fuel, agricultural usage, etc; are exempt from Bureau of Underground Storage Tank

Regulations (BUSTR) regulations. BUSTR regulations were initially intended to prevent pollution due to leakage and overfilling of existing USTs. Compliance dates for older USTs have already passed. The main requirements for USTs are double wall construction, constant monitoring for leak detection as well as overfill protection. Any new USTs would need to be in compliance with BUSTR regulations and monitoring procedures prior to being installed. Consult your state fire Marshall for additional information.

H. Resource Conservation and Recovery Act (RCRA)—Hazardous Waste Regulations

EPA regulations found at 40 CFR Part 261 govern disposal of Hazardous Wastes as defined in RCRA. These rules are extensive and detailed, requiring among other things training of all affected employees, registration with the Federal or State EPA to obtain a generator ID Number, proper accumulation and handling, characterization of wastes, and use of permitted transportation, storage, treatment, & disposal companies. There must be a plan for handling contingencies, such as releases, reactions, fires and explosions. Additionally, DOT Hazardous Materials regulations apply to employers shipping hazardous wastes.

Determine what wastes may be potentially hazardous by virtue of being listed or a hazardous characteristics toxicity, corrosivity, reactivity, and ignitability. Test by lab analysis, any potentially hazardous wastes prior to disposal. If hazardous, obtain an EPA generator ID number, develop and implement documented procedures for the management of such wastes, train personnel, and select permitted transport, treatment and disposal vendors who have a record of regulatory compliance.

VI. (FDA) Food and Drug Administration

Overview: The Food and Drug Administration (FDA), Center for Food Safety and Applied Nutrition (CFSAN), provides a list of ingredients that can be used in the production of steam that may come into direct or indirect contact with food products. This list of accepted boiler water additives is listed in 21 CFR §173.310 (Boiler Water Additives). There are specific regulations, or exceptions, of ingredients that are restricted or not allowed for steam that may contact milk and milk products. There are other criteria that must be met for products used in the production of steam for industries that had previously required "USDA Letters of Authorization" under a now defunct program (see USDA).

There are two other lists, published by FDA, CFSAN, Office of Premarket Approval, which contain substances that are allowed for specific uses that are not published in 21 CFR §173.310. These two lists are: *Threshold of Regulation Exemptions; and Food Contact Substances Notification. Any* substance listed in the *Threshold of Regulation Exemptions may* be used by any company for the stated use, as long as the "Use Limitations" are followed. Only the company that submitted a petition in the *Food Contact Substances Notification may* use that compound for the stated purpose. To use a compound in the *Food Contact Substances Notification Program, you* must submit your own petition or buy the product from the company who is published in this list.

Reference(s): FDA

1. 21 CFR §173.310, Boiler Water Additives: Provides a list of FDA *accepted substances* that may be used as boiler water additives. Some of these substances have limitations as to their concentration or the steam's end use. Note: The words "approved", "authorized" or "registered" should not be used in any product literature or references.
2. Threshold of Regulation Exemptions: Lists exemptions that have been issued under 21 CFR 170.39 Threshold of regulation for substances used in food-contact articles. The list includes the name of the company that made the request, the chemical name of the substance, the specific use for which the substance received an exemption from regulation as a food additive, and any appropriate limitations on the substance's use. Questions pertaining to this list should be directed to the Office of Premarket Approval.
   Phone: (202) 418-3100.
   Email: mailto:premarkt@cfsan.fda.gov.
   Web site: http://www.fda.gov/food/ingredientspackaginglabeling/packagingfcs/notifications/default.htm
3. Food Contact Substances Notification Program: In 1997, the Food and Drug Administration Modernization Act (FDAMA), amended the Food Drug and Cosmetic Act to streamline the way in which the FDA conducted business. One of the new procedures established to accomplish this goal was a notification process for food-contact substances. The amended FD&C Act (United States, 1998a) defined a food-contact substance as "any substance intended for use as a component of materials used in manufacturing, packing, packaging, transporting, or holding food if such use is not intended to have a technical effect in such food."

   This notification process is intended to replace the petition process (and the Threshold of Regulation program) as the primary means for authorizing new uses of food additives that are food-contact substances. However, discretion is given to the FDA for deciding when the petition process is more appropriate for evaluating data

to provide an adequate assurance of safety. For more information, contact:

The Office of Food Additive Safety (HFS-200)
Center for Food Safety and
Applied Nutrition Food and Drug Administration
5100 Paint Branch Parkway College Park, MD 20740-3835
(202) 418-3001, (202) 418-3054, (202) 418-3494

or by electronic mail to: OPAPMN@cfsan.fda.gov
Web site: http://www.fda.gov/food/ingredientspackaginglabeling/packagingfcs/default.htm

4. Summary of All GRAS Notices: The summary tables that are immediately below provide the following information about GRAS notices received within each year since 1998, when FDA received its first GRAS notice:
   - The name of the substance
   - The file number (GRN No.) that FDA has assigned to the notice
   - A hyperlink to the letter that FDA sent in response to the notice

   Within the summary table for each year, there is a hyperlink to a table that provides more details about the GRAS notices received in that year. This "detailed table" includes:

   - The name of the notifier
   - The intended conditions of use

   Within the detailed table for each year, there is a hyperlink to the address of the notifier.

   These tables are current as of August 31, 2004, and therefore, do not show any new notices filed by FDA, or response letters issued by FDA, after that date. These tables will be updated approximately monthly.

   For further information about the GRAS notification program, telephone Dr. Paulette Gaynor at (202) 418-3079 or send a question by email to: premarkt@cfsan.fda.gov

Websites:

1. FDA Overview site: http://www.fda.gov/Food/IngredientsPackagingLabeling/GRAS/
2. FDA Animal Food Generally Recognized as Safe (GRAS) Notification Program: http://www.fda.gov/AnimalVeterinary/Products/AnimalFoodFeeds/GenerallyRecognizedasSafeGRASNotifications/default.htm

A. AWT Kosher Certification Overview

Overview: Kosher certification is sometimes mandatory in providing water treatment services in food processing settings. The following information is provided to give AWT members a basic understanding of what kosher certification is and what it entails. Members are encouraged to confirm all details of certification and compliance with Rabbis from the specific certifying body that they may need to deal with.

Jewish dietary laws address food preparation and handling and identify what can and cannot be eaten by observant orthodox Jews. Foods that can be eaten and approved combinations of foods that can be eaten are said to be kosher.

Examples of animals that may be eaten include a number of ruminants that have cloven hooves and that chew cud, i.e., cattle goats, sheep and venison. Prohibited meats include pork, camel, and rabbit. Examples of birds that may be eaten are chicken, goose, and domestic duck. Prohibited foul include raptors, scavengers, storks, herons, and ostrich. Examples of seafood that may be eaten include all fish with both fins and scales like tuna and salmon. Prohibited seafood includes fish without scales (catfish, shark, swordfish), shellfish (clams, mussels, and oysters), and crustaceans (crabs, shrimp, and lobsters).

Insects and rodents like rats and mice are forbidden foods. Consequently any infestation of foodstuffs with such pest species automatically makes the food unfit for consumption according to Jewish law.

Meat cannot be eaten with dairy. Allowed meats must be thoroughly drained and/or salted to remove blood. Prohibited parts include the sciatic nerve in the hindquarters and the fat around internal organs.

The word pareve indicates that a food or food processing additive contains neither meat nor dairy, and its presence has no negative consequences. Often, kosher certification letters describe listings of water treatment products as "kosher and pareve." This is standard, boiler plate text.

The spelling of the word pareve and some other words used in Jewish dietary law are subject to variations. For example, kosher certification is sometimes referred to as Kashruth or Kashrut or Kashrus or similar spellings. (Please note the paragraphs devoted to terminology in the final paragraphs of this overview.)

An important subset of kosher certification is receiving "kosher for Passover" certification. (If Jews cannot eat a food product during Passover, this is a marketing issue for a food processor). During the week of Passover, extra requirements are in force for observant Jews. Restrictions prohibit the consumption of grains, grain products, and foods containing a grain derived material. There are similar restrictions on legumes. In some water treatment applications, the kosher for Passover certification is a requirement.

There are many Jewish agencies that provide rabbinical supervision and provide official letters of certification. Such arrangements typically require disclosure of chemical ingredients used in products, facility audits, and payment of fees.

Certification and fee payment usually occurs on an annual cycle.

If a company wants to have a kosher certification letter on products that are drop- shipped from another manufacturer or another point of manufacture, it is sometimes possible. If the manufacturing facility has kosher certification, a private label agreement may be obtained. If the manufacturing facility does not have kosher certification, some arrangement may still be possible if one can document the absence of problematic substances.

The Orthodox Union in New York, NY (OU) is the largest and one of the strictest certifying organizations. There are many others. Several certifying agencies, their commonly used abbreviations, and their label symbols are shown below:

Name	Abbreviation	Label Symbol
Orthodox Union	OU	
Chicago Rabbinical Council	cRc	
KOF-K (no English language name identified)	KOF-K	
Consortium with no name identified	Triangle-K	
Star K Kosher Certification Agency	Star-K	

Impact: When a water treatment company pursues kosher certification, the process is time consuming. A major commitment of man-hours is required to document the nature and origin of product ingredients. Communications with raw material suppliers are often necessary to gather needed information that, in many cases, will exceed what is available on SDS or standard technical bulletins.

Satisfactory submission of application information and ingredient documentation is followed by site visits and the signing of a formal contractual agreement. A typical Orthodox Union (OU) contract has two important attachments:

1. Schedule A – a list of approved ingredients used at the facility.
2. Schedule B – a list of approved finished goods by trade name and including any special notations such as approval for use in the manufacture of foods to be eaten during Passover.

The proof of kosher certification is a letter on the letterhead of the given kashruth agency listing all of the kosher and pareve tradenames signed by a rabbi. In a typical situation, the letter is in force for 12 months from the date on the letter. Fee payment renews the contractual agreement for another year.

Additional definitions, terms and label abbreviations that may be of interest:

Kosher categories are Meat (*Fleishig in* Yiddish, *Basari in* Hebrew), Dairy (*Milchig in Yiddish, Chalavi in* Hebrew) or neither meat or dairy (*Pareve in* Yiddish, *Parve in Hebrew).* According to Jewish Dietary Laws, meat and dairy food must be prepared and consumed separately, and pareve food can be eaten with either meat or dairy dishes.

Meat: “Meat”, “M” or “Glatt” printed near the kosher symbol on the food package indicates the product is kosher and contains some meat or meat derivative.

Dairy: “Dairy” or “D” printed near the kosher symbol on the food package indicates the product is kosher and contains some milk or milk derivative.

Fish: “F” printed near the kosher symbol on the food package indicates the product is kosher and contains fish ingredients.

Pareve: “Pareve”, “Parev”, or “Parve” printed near the kosher symbol on the food package indicates the item is neither meat nor dairy.

Passover: “P” printed near the kosher symbol on the food package does not stand for pareve, but instead it means the product is kosher for Passover and all year round. D-P means dairy and kosher for Passover and all year round. M-P or Glatt-P means meat and kosher for Passover and all year round. F-P means fish and kosher for Passover and all year round.

Reference(s): For additional information, contact one of the agencies named above or a local synagogue. Helpful websites include: www.kashrut.com/agencies www.ou.org www.crcweb.org www.star-k.org www.biotestservices.com/AEC_2006.pdf

Question(s): FDA

Do you sell products to customers who process food or food related products?

If No…

Does not apply

If Yes…

Q.1 Are the ingredients in the product listed in order of their active concentration on the product label?

Q.2 Are the ingredients on the label written as listed in 21 CFR §173.310, or 21 CFR §182, Substances Generally Recognized As Safe (GRAS)?

Q.3 Does the label include adequate directions to insure compliance with any limits stated in 21 CFR §173.310?

Q.4 If an ingredient or substance in the product has been FDA accepted, but not listed in 21 CFR §173.310 or 21 CFR

§182, do you have documentation on file from the supplier or manufacturer that states the ingredient is FDA accepted?

VII. Occupational Safety and Health Agency (OSHA) – Part of Department of Labor

Overview: The Occupational Safety and Health Administration is an agency of the

U.S. Department of Labor. The U.S. Congress passed the Occupational Safety and Health Act of 1970 (the OSHA Act) 1 "…to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources." The legislation, signed into law Dec. 29, 1970, established OSHA and its sole responsibility to provide worker safety and health protection.

Reference(s): OSHA

1. http://www.OSHA.gov
2. OSHA Training Materials: http://www.osha.gov/dte/index.htm

A. Emergency Action Plan

OSHA 29 CFR 1910.38(a) requires an Emergency Action Plan which must include, at a minimum, the following elements:

- Emergency escape procedures and route assignments;
- Critical operation procedures and shut-down assignments; o Procedures for accounting for personnel after evacuation; o Rescue and medical duties for designated employees;
- Reporting means and procedure for fires and other emergencies;
- Names, titles, and phone numbers of specific contact personnel that provide additional assistance or specialized resources;
- Warning alarm systems, or other means of notifying employees of an emergency;
- Special procedures for specific emergencies (tornado, intruder, bomb threat, flood, etc.);
- Emergency Action training for all employees and specialized training for personnel with key roles in an evacuation.

Evacuation drills performed to assure competent performance in the event of an actual emergency.

The Emergency Action/Disaster Plans need to include procedures and responsibilities for media communications, intruders and terroristic or violent acts, chemical spills, environmental contamination.

Develop and post Emergency Telephone call lists of medical facilities, transportation companies, utilities, regulatory agency contacts, non-emergency and seven-digit emergency police and fire numbers, directors' and administrators' home or cell phone numbers.

Perform required Emergency Action training for all employees, and volunteers initially, and whenever there are changes in the procedures, physical layout of the building, whenever there is evidence that the training has been forgotten, or a person's responsibility under the plan changes. We suggest using a brief overview of the plan to orient new volunteers, and request they sign an acknowledgment of understanding.

Perform additional training for key role personnel who take command of the situation and facility, meet and direct the arriving public response vehicles, shut- off utilities, control access to and from the site [exclusion of news media personnel and other non-critical personnel], transport victims, perform the head count and determine who is missing, and communicate with the media.

B. Fire Prevention Plan

OSHA 29 CFR 1910.38(b) requires a Fire Prevention Plan which must include, at a minimum, the following elements:

- A list of fire hazards, proper handling and storage, ignition sources, hot work practices and permit, and procedures for the control of the fire;
- Names or job titles of individuals responsible for maintenance of equipment and systems provided for the control of fires;
- Names or job titles of individuals responsible for the control of fuel sources;
- Housekeeping procedures to control an accumulation of flammable or combustible materials or residues; and
- Employee training on fire prevention and response, including annual fire extinguisher training.

Perform required Fire Prevention and Response plan training for all employees, and volunteers initially, and whenever there are changes in the procedures, physical layout of the building, whenever there is evidence that the training has been forgotten, or a person's responsibility under the plan changes. We suggest using a brief overview of the plan to orient new employees, and request they sign an acknowledgment of understanding. Provide annual fire extinguisher training for personnel assigned these duties.

C. Hazardous Waste Operations and Emergency Response (HAZWOPER)

OSHA regulations require employers to provide written safety programs, personal protective equipment, and extensive training to employees

designated to respond to emergency chemical spills, leaks, or other releases of hazardous materials in the workplace. These regulations are under OSHA 29 CFR 1910.120, and are referred to by the acronym HAZWOPER. They are intended to cover employees who respond to significant releases, not mere drips or leaks that occur on a routine basis, response to which should be covered in Hazard Communication standard.

Management should determine their intent for such contingencies. In the event management decides to avoid the HAZWOPER regulations and opt for evacuation in all such emergencies, this policy should be formalized as part of the Emergency Action Plan. In such an option, private contractors or governmental authorities should be contacted and/or contracted for all emergency response activities. Disadvantages include cost of retainer contracts, and delay in the initiation of response actions, when time is the most crucial element. Also, EPA RCRA rules require immediate response to Hazardous Waste releases by Large Quantity Generators.

If management opts for emergency response by in-house personnel, then a thorough review of all potential contingencies should be initiated, so that a specific response procedures may be developed, a written safety and health plan developed, and appropriate training performed. You may combine the requirements of both HAZWOPER and EPA Hazardous Waste Contingency Plan in one document, containing:

- The chemical emergency response plan is fully implemented, including training and drills to test and critique;
- There is a procedure for evaluating the risk of hazardous chemical releases;
- There is a procedure to periodically review the adequacy of the written emergency response plan, particularly after an actual incident;
- The written emergency response plan is updated and revised for continual improvement;
- There is adequate emergency response personnel training;
- Emergency response personnel receive baseline physical examinations by licensed physician, and are provided with medical surveillance;
- Emergency response personnel who exhibit signs or symptoms which may have resulted from exposure to hazardous substances, are provided with medical consultation;
- A procedure for the selection, use, and maintenance of chemical protective clothing meeting regulatory requirements;
- A procedure for the selection, use, and maintenance of personal protective equipment including meeting regulatory requirements.

Specific emergency response training requirements for employees with spill response duties are contained in 29 CFR 1910.120 (HAZWOPER). Training may be conducted at any one of five levels, depending on the response management requires. Level Five, Incident Commander applies to any team at or above Level Two. Each level requires the completion of the previous level as a prerequisite.

Level One	First Responder (Awareness Level): Trained to recognize a spill and to notify the proper authorities. No action may be taken to contain or stop the spill. Usually a three to five hour class.
Level Two	First Responder (Operations Level): Trained to recognize a spill, notify the proper authorities and to respond to the spill in a defensive manner. May spread sorbents or shut-off a valve from a safe distance, but may not take any action that may result in personal contact with the hazardous substance. Requires eight hours of training and annual refresher training.
Level Three	HazMat Technician: May respond aggressively to a spill to plug or patch a hole or take other actions to stop the release of hazardous substances. This requires twenty-four hours of training and annual refresher.
Level Four	HazMat Specialist: May respond in the same manner as Level Three and may determine and implement clean-up and decontamination procedures. The training is twenty four hours and an annual refresher is required.
Level Five	Incident Commander: These individuals are trained to the Level of the Emergency Response Team in addition to this special incident training They are knowledgeable in the management of emergency response procedures, and incident command system. They know how to implement all response and contingency plans developed by the employer. They have the authority to dedicate corporate resources to the team and their response activities. This training is required for level two and above teams.

Reference(s): HAZWOPER

1. 29 CFR §1910.120(q)(6); 29 CFR §1910.120(e); 29 CFR §1910.120(q)(11)(ii)
2. August 5, 1993, OSHA letter of interpretation
3. 29 CFR §1910.120(q)(11)
4. 40 CFR §262.34(a)(4); 40 CFR §265.16; 40 CFR §262.34(d)(5)(iii); 40 CFR §261.5

D. Confined Space Entry and Rescue

OSHA Confined Space Entry standard (29 CFR 1910.146) establishes safety requirements, including a permit system, for entry into confined spaces posing special dangers for entrants. The standard

introduces the term “permit-required confined space” to cover the particular confined spaces which are regulated. The standard requires a confined space inventory, hazard evaluation, posting danger signs, training, and a written program with detailed procedures to minimize the potential for confined space injuries and deaths.

Entry requires a permit system under which entry is authorized, supervised, and terminated by competent supervisors, after extensive air quality testing, hazard identification and control, briefing of entrants, attendants and rescue personnel, completion of a safety checklist on the permit, and posting the permit at the entrance. The standard requires employers to document critical elements of their compliance program and training records. All entrants, attendants, supervisors, and rescuers must be trained to detailed specifications, all appropriate safety and rescue equipment must be provided, along with training and drills in its use.

If feasible, the employer must train and equip for non-entry retrieval. When not feasible, the employer must provide for a rescue team of their own or public responders. Whether employee rescuers or public responders are relied upon, they must be evaluated as to their experience, training, availability, capabilities, and practice annually in the employer’s spaces. The confined space program must interface with the lock-out, medical services, hazard communication, and hot work programs.

A confined space is defined as having the following characteristics:

- Limited means of entry and exit;
- Not designed for continuous human occupancy, and;
- Large enough that employees may enter and perform assigned work. Confined spaces can be further subdivided into two categories: permit-required and non-permit confined spaces. Non-permit spaces are confined spaces that do not actually or potentially contain hazards that could cause death or serious physical harm. Drop ceilings and crawl spaces are examples of non-permit spaces.

Permit-required spaces are confined spaces that have safety and health hazards in addition to the 3 physical characteristics listed above. Neither employees or contractors may enter unless special precautions are taken. The standard defines a permit-required (regulated) confined space as “...a confined space that has one or more of the following characteristics:

- Contains or has a potentially hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrants;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by floor that slopes downward and tapers to a smaller cross-sectional area; or
- Contains any other recognized serious safety or health hazards. OSHA allows employers to declassify permit-required spaces into non-permit spaces on an “as entered” basis, or by development of a body of statistically- relevant amount of data over time, for spaces where there are no actual or potential atmospheric hazards and all other hazards can be controlled or isolated. This option may be available for some of the confined spaces such as cooling towers.

Develop and implement a confined space program that can be customized by each location. Assure that all confined spaces are identified, their hazards evaluated immediately, and warning signs posted. This documented information must be a part of the site-specific program, and the information shared with maintenance, other employees, and outside contractors, as appropriate. If any employees or contractors must enter any permit-required spaces, the employer must develop and implement an entry permit program.

If no employees or contractors will enter permit-required spaces, effective measures must be taken to prevent entry by anyone. This may be done with locks, warning signs, notices, and training.

If entry is anticipated, provide a complete confined space entry and rescue program with all required elements per OSHA 29 CFR 1910.146.

Atmospheric hazards, physical hazards such as engulfment, hot surfaces, or moving machinery, and hazards of stored energy must be identified and eliminated or controlled before work may commence. The lock-out/tag-out program must tie-in to the isolation requirements of the permit space entry. A combination of air monitoring, ventilation, isolation, permit system, personal protective equipment, safety and rescue equipment, attendants, rescue personnel/equipment, and annual training is required for compliance with the standard.

When there are potential atmospheric hazards, the air must be tested prior to entry, and continuously during entry, for airborne contaminants, explosive vapors, oxygen deficiency and other hazards as appropriate. Record the readings on the permit.

Use a permit system in which a competent, authorized entry supervisor determines the hazards, prepares the space and personnel for entry and takes preparatory measures for emergency rescue. The entry supervisor, attendant and entrant must receive adequate training to safely perform their duties.

As part of the permit system, the entry supervisor must authorize entry, prepare and sign written permits, order corrective measures if necessary, and cancel permits when work is completed. Permits must be available to all entrants at the time of entry

and should extend only for the duration of the task. They must be retained for a year to facilitate review of the program.

Provide confined space training that gives workers the knowledge and skills needed to perform their jobs safely. The standard contains provisions for initial training, refresher training and record keeping. The training program must make entrants, attendants, rescuers, and entry supervisors proficient in their required duties. These employees must also be familiar with the kinds of hazards they might face during entry and understand the routes of entry, signs, symptoms, and consequences of exposure to potential atmospheric hazards. Whether an in-house team response team is developed, or public responders are relied upon, they must receive all the training required for an entrant, plus training in hazard recognition, communication methods, non-entry retrieval, entry rescue, first aid/ CPR, respiratory protection, hazards and control measures, and annual hands-on simulated rescue.

Additional refresher training must be provided:

- When there is a change in an employee's assigned duties;
- There is a change in permit-required space operations that presents new hazards for which employees have not been trained;
- When the employer believes there are deviations from the entry procedures or an employee feels that there are inadequacies in his own knowledge or ability to use these procedures safely.

Provide the OSHA-required non-entry retrieval system consisting of a manual winch, harness and life-line be employed where feasible, for any vertically configured confined spaces entered by employees or contractors. An exception is made for situations where the retrieval equipment would hinder the rescue effort or would increase the overall entry risk. Where non-entry retrieval is infeasible or creates a greater hazard, provide a rescue team trained and evaluated annually for the specific spaces and hazards. The rescue team must participate in annual hands on drills that simulate rescue operations with dummies or actual persons being removed from spaces.

Host employers must provide information to contractors on permit spaces, the permit space program, procedures, and likely hazards the contractor might encounter. Joint entries must be coordinated and the contractor debriefed at the conclusion.

There should be a procedure to evaluate contractor training and experience, as appropriate for the hazards of the spaces, prior to commencement of work. A pre-entry briefing must be held, and documented. Contractors must utilize their own procedures deemed adequate by the host employer, or use the host employers program, procedures, and permits.

Reference(s): Confined Space

1. 29 CFR §1910.146, 29 CFR §1910.146 Appendices A, B, C, D, E

Question(s): Confined Space

1. Are permit-required confined spaces thoroughly emptied of any corrosive or hazardous substances, such as acids or caustics, before entry?
2. Are all lines to a permit-required confined space, containing inert, toxic, flammable, or corrosive materials valved off and blanked or disconnected and separated before entry?
3. Are all impellers, agitators, or other moving parts and equipment inside permit-required confined spaces locked-out if they present a hazard?
4. Is either natural or mechanical ventilation provided prior to permit-required confined space entry?
5. Are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substances and explosive concentrations in the permit-required confined space before entry?
6. Is adequate illumination provided for the work to be performed in the permit space?
7. Is the atmosphere inside the permit space frequently tested or continuously monitored during conduct of work?
8. Is there an assigned attendant outside of the permit space, when required, whose sole responsibility is to monitor for hazards, communicate with entrants, and summon rescuers?
9. Is the attendant appropriately trained and equipped?
10. Is the attendant and other employees prohibited from entering the permit space until released by another attendant?
11. Is respiratory protection required if the atmosphere inside the permit space cannot be made acceptable?
12. Is all portable electrical equipment used inside permit spaces either grounded and insulated, or equipped with ground fault protection?
13. Before gas welding or burning is started in a permit space, are hoses checked for leaks, compressed gas bottles forbidden inside of the permit space, torches lighted only outside of the confined area and the permit area tested for an explosive atmosphere each time before a lighted torch is to be taken into the confined space? Is a hot-work permit required and completed? Is local exhaust ventilation provided for these processes?
14. If employees will be using oxygen-consuming equipment-such as welders, chemical or torches, is sufficient ventilation provided to assure combustion without reducing the oxygen concentration of the atmosphere below 19.5 percent by volume?
15. If the confined space is below the ground and near areas where motor vehicles will be operating, is it possible for vehicle exhaust or carbon monoxide to enter the space?

E. Control of Hazardous Energy Sources

E.1 Lockout/Tagout (Control of Hazardous Energy During Service and Maintenance

Overview: OSHA 29 CFR 1910.147 Control of Hazardous energy During Servicing and Maintenance (lock-out/tag-out) is the standard for maintenance operations involving equipment that is energized by electricity, pneumatic, or hydraulic force, steam, fuel, chemical, mechanical, gravity or other means. It requires that all equipment that can be locked out, be locked out at every energy isolation point, during service/maintenance operation. All personnel involved with the servicing a piece of machinery must have applied their own locks with individual keys. All of the above is required before work can commence. All equipment that cannot be locked out as designed, or with commercially available adaptors and padlocks, must be tagged during maintenance. When tags are used without locks, additional safeguards and training are required to obtain equivalent safety.

The standard requires training for both those "authorized" to apply locks and those "affected" by their inability to use the locked equipment. The standard requires the employer to inventory the equipment employees service, the types of energy sources used and stored in each, the means of de- energizing and isolating the energy, dissipating the stored energy, a written program including specific procedures for equipment that has two or more energy sources or has stored energy, and documentation of an annual audit of the procedures to assure that employees are following the procedures.

Provide a lock-out program that covers elements required by the OSHA standard for Control of Hazardous Energy During Servicing and Maintenance, found at 29 CFR 1910.147:

- Inventory of equipment serviced by employees;
- Specific procedures for equipment with more than one energy source, or may contain stored energy;
- Identification of employees who are authorized to de-energize and isolate energy sources, then apply locks and tags;
- Initial and annual lock-out and tag-out training for each of the three groups defined in the standard: authorized, affected and "others."
- A procedure for annual program evaluation, including documented work observations;
- A procedure for re-energizing equipment following maintenance;
- Procedure to evaluate all Lockout/Tagout-related injury or near miss incidents.

Identify all "affected" employees (machine operators) and "authorized" employees (maintenance personnel), "other" employees using the regulatory definitions. Provide training on procedures and devices, as appropriate for compliance, annually and upon assignment to a position that is either "affected," "authorized," or "other."

Perform and document annual inspections of procedures and update the written program at least annually.

Perform an inventory of equipment to determine the energy sources, means of isolating and dissipating energy, verifying isolation, and what types of adaptors are needed to effectively implement safe procedures. Purchase any additional locks, tags and other supplies, as necessary. Assure that enough locks are available, and that they have are easily distinguished from other locks used at the facility.

Reference(s): Lockout/Tagout

29 CFR §1910.147 and 29 CFR §1910.147; Appendix A

Question(s): Lockout/Tagout

1. Is all machinery or equipment capable of movement, required to be de- energized or disengaged and locked-out during cleaning, servicing, adjusting or setting up operations, whenever required?
2. Where the power disconnecting means for equipment does not also disconnect the electrical control circuit:
   - Are the appropriate electrical enclosures identified?
   - Is means provided to assure the control circuit can also be disconnected and locked-out?
3. Is the locking-out of control circuits in lieu of locking-out main power disconnects prohibited?
4. Are all equipment control valve handles provided with a means for locking-out?
5. Does the lockout procedure require that stored energy (mechanical, hydraulic, air, etc.) be released or blocked before equipment is locked-out for repairs?
6. Are appropriate employees provided with individually keyed personal safety locks?
7. Are employees required to keep personal control of their key(s) while they have safety locks in use?
8. Is it required that only the employee exposed to the hazard, place or remove the safety lock?
9. Is it required that employees check the safety of the lockout by attempting a startup after making sure no one is exposed?
10. Are employees instructed to always push the control circuit stop button immediately after checking the safety of the lockout?
11. Is there a means provided to identify any or all employees who are working on locked-out equipment by their locks or accompanying tags?
12. Are a sufficient number of accident preventive signs or tags and safety padlocks provided for any reasonably foreseeable repair emergency?
13. When machine operations, configuration or size requires the operator to leave his or her control station to install tools or perform other operations, and that part of the machine could

move if accidentally activated, is such element required to be separately locked or blocked out?

14. In the event that equipment or lines cannot be shut down, locked-out and tagged, is a safe job procedure established and rigidly followed?

E.2 Electrical Safety - Related Practices

Overview: OSHA's Electrical Safety Standards published at 29 CFR 1910.331-335, contain basic employee safety procedures for the avoidance of electrical hazards by "Non-qualified" personnel, and a provision for special safety procedures, training, and safety equipment/apparel that must be used by employees that management deems as qualified to work on live electrical circuits of 50 volts or higher. See Appendix 3 for additional information.

Develop and implement a safety program for all locations, adopting OSHA's minimum electrical safety procedures. Determine if work on or near live circuits is required by employees, and if so, designate qualified employees, when performing work on live circuits at or above 50 volts, or closer than the required clearance distances for non-qualified. Implement a procedure to determine how to qualify persons who work on energized equipment involving either direct contact or contact by means of tools or materials and train them in the use of special precautionary techniques, personal protective equipment, insulating materials, and insulated tools.

Provide adequate training for non-qualified employees who face a risk of electric shock if de-energization procedures are not followed, or who are not otherwise qualified to work on or near exposed energized parts. Provide special training for designated qualified employees who face a risk of electric shock, arc flash, burns, and other hazards during work on or near exposed energized parts. Perform required training initially, and whenever there are changes in the procedures, hazards, whenever there is evidence that the training has been forgotten, or a person's responsibility under the plan changes. Training shall be performed in accordance with OSHA 29 CFR 1910.331-335.

Be sure that electrical safety-related work practices are implemented to prevent electric shock, arc flash, burns, and other injuries, resulting from direct or indirect electrical contact when work is performed on or near circuits which may be energized. Assess the potential electrical hazards to determine what special procedures, protective equipment/apparel, and training should be used. Assure that specific electrical work procedures are consistent with the nature and extent of the hazards.

Assure that tags are used without locks only when supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of the lock. Samples of additional safety measures include removal of an isolating circuit element, blocking of a control switch, or opening an extra disconnecting device.

Assure that only qualified persons use test equipment to test circuit elements and electrical parts of equipment to which employees may be exposed, and verify that circuit elements and equivalent parts are de-energized.

Assure that only qualified persons determine if an energized condition exist or may exist as a result of inadvertently induced voltage or unrelated voltage feed back, even through specific parts of the circuit that have been de- energized and otherwise presumed safe.

Assure that if the circuit to be tested is over 600 volts nominal, the test equipment is checked for proper operation immediately before and immediately after the test.

Assure that the following regulatory requirements are met regarding:

- Use of portable cord and plug-connected equipment, including flexible extension cords;
- Electric power and light circuits;
- Test instruments and equipment;
- Occasional use of flammable or ignitable materials;
- The use of electrical personal protective equipment and certain alerting techniques are used to warn and protect associates from injury due to electric shock, burns, or failure of electrical equipment parts.

F. Hazard Communication Standard (HAZCOM—Chemical Right to Know)

Revised March 20, 2012.

We recommend that the OSHA website be consulted regarding the revised OSHA HAZCOM standard. This website is located at http://www.osha.gov/dsg/hazcom/index.html

The standard that gave workers the right to know, now gives them the right to understand.

On March 20, 2012 the Occupational Safety and Health Administration ("OSHA") announced regulations, which will conform OSHA's Hazard Communication Standard to the *Globally Harmonized System of Classification and Labeling of Chemicals* ("GHS").

"Exposure to hazardous chemicals is one of the most serious threats facing American workers today. Revising OSHA's Hazard Communication Standard will improve the quality and consistency of hazard information, making it safer for workers to do their jobs and easier for employers to stay competitive." **Hilda Solis, U.S. Secretary of Labor**

- The Revised Standard will be fully implemented in 2016 but employees must be trained by

December 1, 2013.

- The Revised Standard includes changes to the Safety Data Sheets (formerly called MSDS), Labeling and Training Requirements.
- The OSHA website is the best source of basic information on revised standard. Consider the following important Information and links.

Major changes to the Hazard Communication Standard

F.1 Hazard classification

Provides specific criteria for classification of health and physical hazards, as well as classification of mixtures.

Under both the current Hazard Communication Standard (HCS) and the revised HCS, an evaluation of chemical hazards must be performed considering the available scientific evidence concerning such hazards. Under the current HCS, the hazard determination provisions have definitions of hazard and the evaluator determines whether or not the data on a chemical meet those definitions. It is a performance-oriented approach that provides parameters for the evaluation, but not specific, detailed criteria. The hazard classification approach in the revised HCS is quite different. The revised HCS has specific criteria for each health and physical hazard, along with detailed instructions for hazard evaluation and determinations as to whether mixtures or substances are covered. It also establishes both hazard classes and hazard categories—for most of the effects; the classes are divided into categories that reflect the relative severity of the effect. The current HCS does not include categories for most of the health hazards covered, so this new approach provides additional information that can be related to the appropriate response to address the hazard. OSHA has included the general provisions for hazard classification in paragraph (d) of the revised rule, and added extensive appendixes (Appendixes A and B) that address the criteria for each health or physical effect.

F.2 Labels

Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
http://www.osha.gov/Publications/OSHA3636.pdf
http://www.osha.gov/Publications/OSHA3492QuickCardLabel.pdf

F.3 Safety Data Sheets

Will now have a specified 16-section format.
http://www.osha.gov/Publications/OSHA3514.pdf
http://www.osha.gov/Publications/OSHA3493QuickCardSafetyDataSheet.pdf

OSHA Guide to the GHS: https://www.osha.gov/dsg/hazcom/ghs.html

Question(s): SDS

1. Do you have a system in place to keep your SDS up to date?
2. Do customers receive updates for a changed or revised SDS?
3. Do you have a system in place to insure a customer receives a SDS for each product inventoried or on site?
4. Do you retain obsolete SDS for the required 30 year period?

F.4 Information and training

Employers are required to train workers by December 1, 2013 on the new labels elements and safety data sheets format to facilitate recognition and understanding. http://www.osha.gov/Publications/OSHA3642.pdf

OSHA HAZCOM Questions and Answers with links to the OSHA Website

Q. What is the Globally Harmonized System?

Q. Why did OSHA decide to modify the Hazard Communication Standard to adopt the GHS?

Q. What is the phase-in period in the revised Hazard Communication Standard?

Q. Why must training be conducted prior to the compliance effective date?

Q. What are the major changes to the Hazard Communication Standard?

Q. What Hazard Communication Standard provisions are unchanged in the revised HCS?

Q. How will chemical hazard evaluation change under the revised Hazard Communication Standard?

Q. How will labels change under the revised Hazard Communication Standard?

Q. What pictograms are required in the revised Hazard Communication Standard? What hazard does each identify?

Q. Can I use a black border on pictograms for domestic shipment?

Q. Will OSHA allow blank red borders?

Q. When must label information be updated?

Q. How will workplace labeling provisions be changing under the revised Hazard Communication Standard?

Q. How is the Safety Data Sheet (SDS) changing under the revised Hazard Communication Standard?

Q. Will TLVs be required on the Safety Data Sheet (SDS)?

Q. May the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) lists be used to make carcinogen classifications?

Q. Will the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) classifications be required on the Safety Data Sheet (SDS)?

Q. How has OSHA addressed hazards covered under the current Hazard Communication Standard that have not been addressed by the GHS?

Q. How has OSHA addressed pyrophoric gases, simple asphyxiants, and combustible dust?

Q: How many businesses and workers would be affected by the revised Hazard Communication Standard?

Q: What are the estimated overall costs for industry to comply with the revised Hazard Communication Standard?

Q: What are the estimated benefits attributable to the revised Hazard Communication Standard?

Q. I understand that the United Nations revises the GHS every two years. How will OSHA manage and communicate changes to the Hazard Communication Standard?

For further detail we recommend that the OSHA website be consulted regarding the revised OSHA HAZCOM standard. This website is located at http://www.osha.gov/dsg/hazcom/index.html

Reference(s): HAZCOM General Requirements

1. AWT "OSHA Hazard Communication Standard, Reference Guides for Water Treatment Companies". http://www.awtstore.org
2. 29 CFR 1910.1200 Hazard Communication. www.osha.gov/dsg/hazcom/standards.html
3. OSHA 29 CFR 1910 General Industry Manual ($55)
4. OSHA Field Inspection Reference Manual ($20)
5. Frequently Asked Questions for Hazard Communication. OSHA. www.osha.gov/html/faq-hazcom.html
6. Online Course 205: Hazard Communication Program. Oregon OSHA. This is an online training course to help people develop a hazard communication program. http://www4.cbs.state.or.us
7. Hazard Communication Standard. OSHA Fact Sheet (1993, January 1), 3 pages. www.osha.gov/dsg/hazcom/HCSFactsheet.html
8. Hazard Communication Guidelines for Compliance. OSHA Publication 3111 (2000), 112 KB PDF, 33 pages. This document will aid employers in understanding the Hazard Communication Standard and in implementing a hazard communication program. www.osha.gov/Publications/osha3111.pdf
9. Hazard Communication Compliance Guidelines. OSHA Small Business Training Manual, Section 16, 8 pages. Provides a discussion of the Hazard Communication Standard, training overheads and handouts, and a self- inspection checklist. www.osha.gov/Publications/smallbusiness/small-business.html

F.5 HAZCOM, Hazard Determination and Classification

Overview: Manufacturers and importers must perform a Hazard Determination based on hazards of ingredients at 1% or more (0.1% for carcinogens), or by testing the product as a whole.

Reference(s): Hazard Determination

1. OSHA Safety and Health Topics page Hazardous and Toxic Substances for information on chemical hazards. http://www.osha.gov/SLTC/hazardoustoxicsubstances/index.html
2. OSHA Safety and Health Topics page Sampling and Analysis for information relating to determining worker exposures. www.osha.gov/SLTC/samplinganalysis/index.html
3. Global Information Network on Chemicals. The GINC is a worldwide information network for safe use of chemicals. They include a list of sites that provide information on Chemical Safety. http://www.chem.unep.ch/irptc/irptc/canbginc.html
4. The National Toxicology Programs 10th Report on Carcinogens: http://ehp.niehs.nih.gov and the International Agency for Research on Cancer http://www.iarc.fr monographs must be consulted when determining the carcinogenic potential of a chemical under the HCS.
5. The Chemical Safety and Hazard Investigation Board has a number of links to sites with information related to chemical safety: http://www.csb.gov/

F.6 HAZCOM, Written Program

Overview: All workplaces where employees are exposed to hazardous chemicals must have a written plan that describes how the standard will be implemented in that facility.

Question(s): Written Program

i. Is there a list of hazardous substances used in your workplace?
ii. Is there a written hazard communication program dealing with Safety Data Sheets (SDS), labeling, and employee training?
iii. Is each container for a hazardous substance (i.e., vats, bottles, storage tanks, etc.) labeled

with product identity and a hazard warning (communication of the specific health hazards and physical hazards)?

iv. Is there a Safety Data Sheet readily available for each hazardous substance used?

v. Is there an employee-training program for hazardous substances?

vi. Does this program include:
   1. An explanation of what an SDS is and how to use and obtain one?
   2. SDS contents for each hazardous substance or class of substances?
   3. Explanation of "Right to Know?"
   4. Identification of where an employee can see the employers written hazard communication program and where hazardous substances are present in their work areas?
   5. The physical and health hazards of substances in the work area, and specific protective measures to be used?
   6. Details of the hazard communication program, including how to use the labeling system and SDSs?

vii. Are employees trained in the following:
   1. How to recognize tasks that might result in occupational exposure?

F.7 HAZCOM, Employee Training

Overview: Each employee who may be "exposed" to hazardous chemicals when working must be provided information and trained prior to initial assignment to work with a hazardous chemical, and whenever the hazard changes. Always keep accurate training records to document your efforts. Use sign-in sheets, quizzes and topic agendas.

Reference(s):

1. OSHA Standard, 29 CFR 1910 Subpart Z (1910.1200). www.osha.gov/Publications/osha3084.pdf
2. Appendix E to 1910.1200, Guidelines for Employer Compliance
3. Chemical Hazard Communication. www.osha.gov/Publications/osha3084.pdf
4. Hazard Communication Guidelines for Compliance. www.osha.gov/Publications/osha3111.pdf
5. OSHA Small Business Outreach Training Program, Hazard Communication. Provides a discussion of the Hazard Communication standard, training overheads and handouts, and a self-inspection checklist. www.osha.gov/Publications/smallbusiness/small-business.html
6. OSHA Technical Links – Hazard Communication. www.osha.gov/dsg/hazcom/index.html
7. Small Business Self-Inspection Checklists. http://www.osha.gov/Publications/smallbusiness/small-business.html#check
8. Sample Lesson Plan. Topic: Hazard Communication, General Industry Training Program (10-hour). 32 KB PDF, 4 pages.http://www.bnl.gov/esh/shsd/PDF/hazcom_lp.pdf
9. Training Requirements in OSHA Standards and Training Guidelines. http://www.osha.gov/Publications/osha2254.pdf
10. The OSHA Office of Training and Education's OSHA Construction Industry Safety and Health Outreach Program (1996, May) contains a section on the Hazard Communication Standard, which can also be found as an OSHA Fact Sheet. http://www.osha.gov/dte/outreach/index.html
11. OSHA, Hazard Communication. www.osha.gov/dsg/hazcom/index.html

F.8 Hazard Communication Compliance Self-Inspection Checklist:

1. Obtain a copy of the rule.
2. Read and understand the requirements.
3. Assign responsibility for tasks.
4. Prepare an inventory of chemicals.
5. Ensure that containers are properly labeled.
6. Obtain an SDS for each chemical.
7. Prepare written program.
8. Make SDSs available to workers.
9. Conduct training of all personnel who could handle each chemical.
10. Establish procedures to maintain current program.
11. Establish procedures to evaluate effectiveness of program.

- Chemical Hazard Communication. OSHA Publication www.osha.gov/Publications/osha3084.html
- The NACOSH Report to OSHA on Hazard Communication www.osha.gov/dsg/hazcom/index.html
- NIOSH Pocket Guide (NPG) to Chemical Hazards. NPG is a source of general industrial hygiene information on several hundred chemicals/classes for workers, employers, and occupational health professionals. http://www.cdc.gov/niosh/docs/81-123/
- Occupational Health Guidelines for Chemical Hazards. (1998, August 13).
- Summarizes information on permissible exposure limits, chemical and physical properties, and health hazards. http://www.cdc.gov/niosh/docs/81-123/

F.9 Inventory (List) of Hazardous Chemicals

Overview: The standard requires a list of hazardous chemicals in the workplace as part of the written hazard communication program. The list may also serve as an inventory of all products for which an Safety Data Sheet (SDS) must be maintained.

1. How to use work practice and engineering controls and personal protective equipment and to know their limitations?
2. How to obtain information on the types selection, proper use, location, removal handling, decontamination, and disposal of personal protective equipment?
3. Who to contact and what to do in an emergency?

G. Personal Protective Equipment (PPE)

G.1 Hazard Assessment and Training

Overview: Revisions to the OSHA standard for personal protective equipment (PPE) general requirements became effective July 5, 1994. They require that formal hazard assessment and documented training be performed by October 5, 1994. The PPE standards have also updated the applicable ANSI standards incorporated by reference. The employer must certify the PPE hazard assessment and keep it on file for OSHA should an inspector request it. It should also be used as a training tool for employee information and training on the proper use and selection of PPE.

Management should be certain that they are providing all the equipment specified in the hazard assessment and perform frequent inspections to assure proper selection and use.

The hazard assessment should describe exact requirements of personal protective equipment usage for the various functions and/or job positions.

The PPE policy should cover all types of hazards and body targets for which PPE is appropriate, discipline policy for non-use, the selection criteria, maintenance, use, storage, training, limitations and hazards of use in accordance with OSHA 29 CFR 1910.132.

OSHA requires employers to:

- Assess hazards, control hazards, (PPE is last resort in effort to control hazard);
- Select appropriate PPE that complies with current ANSI design criteria;
- Provide (at no cost) in sanitary and reliable condition;
- Assure maintenance is being done;
- Be aware that if employee has their own PPE, employer is still responsible to see that it is proper, reliable and maintained;
- Regarding the cost of PPE for items that can be taken home for personal use, the employer can negotiate cost, sharing arrangements, e.g. prescription safety glass, steel toe footwear.
- The following hazards may be controlled by PPE, according to OSHA:
  - Strike
  - Crush
  - Freeze
  - Penetrate
  - Impact, and
  - Stresses Caused by Dust, Fume, Mist, Vapor, Gas, Radiation, Noise, Shock
- Assure the ready availability of appropriate PPE for employee use, at locations of use, provided for their personal use, and in inventory when replacements are needed.

G.2 PPE Design – ANSI standards

See IX. A

National standards referenced in OSHA standards:

- Footwear ANSI Z41-1991
- Eye & Facewear ANSI Z87.1-1989
- Hard Hats ANSI Z89.1-1997
- Insulated Rubber Gloves-tested under ASTM D120-87

G.3 PPE Training

Perform PPE training once the hazard assessment, policies & procedures are developed, initially for new employees & volunteers, and whenever there are indications that it should be repeated, based on observations that there are employees who are not wearing required equipment, the equipment or hazard assessment or a person's job position changes. Training shall be performed in accordance with OSHA 29 CFR 1910.132.

Training must include:

- When PPE is necessary;
- What PPE is necessary;
- How to don/doff, adjust, fit and wear;
- Limitations of PPE;
- How to care, maintain, determine useful life and dispose. and
- The employee must demonstrate understanding and competence
- Retraining is necessary when:
- Reason to believe employee has lost understanding and skill required to be protected;
- New employees are hired;
- New duties with new PPE;
- New hazards or operations;
- New PPE selected or provided, and
- Evidence of inadequate use or knowledge.

If you require safety clothing or equipment determine which you are required to provide and which ones you can have employees absorb all or share in the cost. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=20094

Reference(s): PPE

1. AWT PPE Guide: http://www.awtstore.org
2. AWT Respiratory Guide: http://www.awtstore.org

Question(s): PPE

1. Are employers assessing the workplace to determine if hazards that require the use of personal protective equipment (for example, head, eye, face, hand, or foot protection) are present or are likely to be present?
2. If hazards or the likelihood of hazards are found, are employers selecting and having affected employees use properly fitted personal protective equipment suitable for protection from these hazards?

3. Has the employee been trained on PPE procedures, that is, what PPE is necessary for a job task, when they need it, and how to properly adjust it?
4. Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials?
5. Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns?
6. Are employees who need corrective lenses (glasses or contacts) in working environments having harmful exposures, required to wear only approved safety glasses, protective goggles, or use other medically approved precautionary procedures?
7. Are protective gloves, aprons, shields, or other means provided and required where employees could be cut or where there is reasonably anticipated exposure to corrosive liquids, chemicals, blood, or other potentially infectious materials? See 29 CFR 1910.1030(b) for the definition of "other potentially infectious materials."
8. Are hard hats provided and worn where danger of falling objects exists?
9. Are hard hats inspected periodically for damage to the shell and suspension system?
10. Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, or poisonous substances, falling objects, crushing or penetrating actions?
11. Are approved respirators provided for regular or emergency use where needed?
12. Is all protective equipment maintained in a sanitary condition and ready for use?
13. Do you have eye wash facilities and a quick drench shower within the work area where employees are exposed to injurious corrosive materials?
14. Where special equipment is needed for electrical workers, is it available?
15. Where food or beverages are consumed on the premises, are they consumed in areas where there is no exposure to toxic material, blood, or other potentially infectious materials?
16. Is protection against the effects of occupational noise exposure provided when sound levels exceed those of the OSHA noise standard?
17. Are adequate work procedures, protective clothing and equipment provided and used when cleaning up spilled toxic or otherwise hazardous materials or liquids?
18. Are there appropriate procedures in place for disposing of or decontaminating personal protective equipment contaminated with, or reasonably anticipated to be contaminated with, blood or other potentially infectious materials?

G.4 Respiratory Protection

OSHA restricts the use of respirators as a means of protecting employees to applications where work practice, administrative and engineering controls are incapable of reducing contaminants to levels below the published permissible exposure limits, during emergency response, or while other controls are being implemented. Protection is preferred to be engineering controls [isolation, ventilation], administrative controls [limited time of exposure], or work practice controls [increased distance from source, wet methods]. If these preferred means are insufficient to adequately control exposure, or until they are implemented, respirators may be used. These regulation, which underwent a major revisions in 1998, are found at 29 CFR

Major requirements of the revised standard include:

- Written Program with site-specific procedures for each location;
- Hazard evaluation required to characterize respiratory hazards and conditions of work to assist employer in selecting appropriate respirator;
- Medical evaluation to determine ability of worker to wear the respirator selected
- Fit testing of all tight-fitting respirators, required annually;
- Dust/mist mask considered a respirator under the standard - renamed filtering face piece;
- Training required annually to ensure that employee uses respirator safely
- Periodic program evaluation by the designated program administrator, with input by affected employees, to ensure that respirator use continues to be effective;
- Use of highly protective respirators in Immediately Dangerous to Life or Health (IDLH) Atmospheres, including oxygen deficient atmospheres.
- Provide and document air monitoring. If air monitoring indicates no overexposure in a worst-case scenario, prohibit the use of respirators.

OSHA requires the following:

Program

- Written program with site-specific procedures (c)(l)
- Program administrator to oversee program (c)(3)
- Program evaluation with employee input (1)

Respirator Use: Medical

Inclusion of "dust mask" as a respirator (b)

- Specific requirements for voluntary use of respirators (c)(2)
- Canister and cartridge change schedule (d)(3)(iii)
- Procedures for proper maintenance, storage, and pre-use inspection
- Permits re-use of "single use respirators"
- Minimal requirements for voluntary use of "dust masks" (Appendix D)
- Contact lenses allowed under full face piece
- Disinfection "as necessary" rather than after each use (h)(1)(i)
- Tags, rather than records for inspections (h)(3)(iv)
- Breathing air quality (i)

- Employer may rely on “certificate of analysis” for purchased air (i)(4)(ii)
- Questionnaire instead of medical evaluation (e)(2)
- No annual medical examination (f)(3)

Fit Testing
- Annual fit tests, not semi-annual (f)(2)
- “Sufficient number” instead of five models and sizes (Appendix A)
- Single valid quantitative fit tests instead of three (f)(7)

Hazard Evaluation
- Reasonable estimates of employee exposure (d)(1)(iii)
- Work area surveillance (g)(2)

Training and Records
- Training contents and evaluation (k)
- Record keeping for medical, fit tests, written program (m) Provide and document respirator user training annually and for new employees before working in a job that requires respirator use. Training must include information on selection, donning, doffing, inspection/fit-check, limitations, storage, cleaning and maintenance. Respirators shall be stored in a convenient, clean, and sanitary location, such as a sealable plastic bag. (29 CFR 1910.134, ANSI Z88.2-1988)

H. Powered Industrial Trucks

H.1 General Requirements

OSHA requirements for powered industrial trucks (29 CFR 1910.178) and driver training were significantly expanded in 1999, and include:

- The truck is adequate for the load;
- The truck is adequate for the surface traveled on;
- The truck is adequate for any locations with hazardous atmospheres;
- Driver training and retraining on specific truck-related and workplace- related topics;
- A performance evaluation [driving test];
- A visible means to identify trained drivers;
- Pre-shift inspections; and
- Adequate maintenance.

Additional requirements relate to the various types of lift truck fuels. Employers should develop and implement a lift truck safety policy covering the following:

- The specific regulatory requirements for trucks and operations 29 CFR 1910.178(d)-(q));
- Only qualified employees are selected as lift truck drivers. Lift trucks should be operated by employees who are physically qualified, particularly with regard to acuity of vision, depth and color perception, hearing, muscular coordination, and reaction time (not an OSHA requirement);
- Motor vehicle reports of current and prospective lift truck drivers checked, and medical exams are preformed to insure initial and continuing qualification of lift truck drivers(not an OSHA requirement);
- Driver training, retraining at specific intervals or after specific triggering events, and performance evaluations performed in accordance with recently expanded OSHA requirements;
- Pre-shift lift truck inspections performed and documented;
- Lift trucks failing pre-shift inspection tagged out-of-service and a maintenance order written;
- Trucks tagged out-of-service not used until required maintenance work is completed.

Provide an audible backup alarm, on any lift truck which has an obstructed rear view, in accordance with OSHA standards.

Provide OEM seat belts, and enforce their use.

H.2 Industrial Truck (forklift) Operator Training

The new requirements for industrial truck (forklift) operator training (codified at 29 CFR §910.178(l)) are intended to reduce the number of injuries and deaths that occur as a result of inadequate operator training. They apply to all industries (general industry, construction, shipyards, marine terminals, and longshoring operations) in which the trucks are being used, except agricultural operations.

These provisions mandate a training program that bases the amount and type of training required on: the operator’s prior knowledge and skill; the types of powered industrial trucks the operator will operate in the workplace; the hazards present in the workplace; and the operator’s demonstrated ability to operate a powered industrial truck safely. Refresher training is required if: the operator is involved in an accident or a near-miss incident; the operator has been observed operating the vehicle in an unsafe manner; the operator has been determined during an evaluation to need additional training; there are changes in the workplace that could affect safe operation of the truck; or the operator is assigned to operate a different type of truck. Evaluations of each operator’s performance are required as part of the initial and refresher training, and at least once every three years.

Reference(s): Forklift Training
1. 29 CFR §1910.178 (l)
2. A list of OSHA sponsored training materials can be found at: http://www.osha.gov/dcsp/ote/trng-materials/pit/pit.html

Question(s): Forklift Training

What is the definition of a powered industrial truck?

Any mobile power-propelled truck used to carry, push, pull, lift, stack or tier materials. Powered industrial trucks can be ridden or controlled by a walking operator. Earth moving and over the road haulage trucks are not included in the definition. Equipment that was designed to move earth but has been modified to accept forks are also not included.

What does the new standard require?

The new standard requires employers to develop and implement a training program based on the general principles of safe truck operation, the types of vehicle(s) being used in the workplace, the hazards of the workplace created by the use of the vehicle(s), and the general safety requirements of the OSHA standard. Trained operators must know how to do the job properly and do it safely as demonstrated by workplace evaluation. Formal (lecture, video, etc.) and practical (demonstration and practical exercises) training must be provided. Employers must also certify that each operator has received the training and evaluate each operator at least once every three years. Prior to operating the truck in the workplace, the employer must evaluate the operator's performance and determine the operator to be competent to operate a powered industrial truck safely. Refresher training is needed whenever an operator demonstrates a deficiency in the safe operation of the truck.

Does OSHA provide a list of topics to include in my training program?

Yes. The standard provides a list of training topics; however, the employer may exclude those topics that are not relevant to safe operation at the employee's work location.

Who should conduct the training?

People with the necessary knowledge, training, and experience to train powered industrial truck operators and evaluate their competence must conduct all training and evaluation. An example of a qualified trainer would be a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has demonstrated the ability to train and evaluate powered industrial truck operators.

There are many resources available to the employer if he/she chooses not to perform the training himself. Truck manufacturers, local safety and health safety organizations, such as the National Safety Council local chapters, private consultants with expertise in powered industrial trucks, local trade and vocational schools are some available resources.

Various Internet sites are devoted to forklift safety. Private companies who provide forklift safety training services, including videos and written programs, can be located on various Internet websites. Most videos can be either leased or purchased. One important thing to remember is that simply by showing employees a video or videos on some aspect of forklift safety does not meet the full requirements of the OSHA standard. Site- specific information must be conveyed as well as a method to evaluate the employee's acquired knowledge subsequent to the training.

If my employees receive training from an outside consultant, how will I know that these employees have been adequately trained? Outside qualified training organizations can provide evidence that the employee has successfully completed the relevant classroom and practical training. However, each employer must ensure that each powered industrial truck operator is competent to operate a truck safely, as demonstrated by the successful completion of the training and evaluation.

My employees receive training from the union on the use of powered industrial trucks. Will I have to provide any additional training? When a worker reports to work, the employer must evaluate the employee to ensure that he/she is knowledgeable about the operation of the powered industrial trucks he/she will be assigned to operate. This evaluation could be as simple as having a person with the requisite skills, knowledge and experience observe the operator performing several typical operations to ensure that the truck is being operated safely and asking the operator a few questions related to the safe operation of the vehicle. If the operator has operated the same type of equipment before in the same type of environment that he/she will be expected to be working, then duplicative or additional training is not required.

Will testing be required?

No. The standard does not specifically require testing; however, some method of evaluation is necessary.

Does OSHA require the employer to issue licenses to employees who have received training?

No. The OSHA standard does not require employees to be licensed. An employer may choose to issue licenses to trained operators.

What type of records or documentation must I keep?

The OSHA standard requires that the employer certify that each operator has received the training and has been evaluated. The written certification record must include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

How long must I keep the certification records?

Employers who evaluate the operator's performance more frequently than every three years may retain the most recent certification record; otherwise, certification records must be maintained for three years.

If my employees receive training, but accidents still continue to occur, what should I do?

Refresher training in relevant topics is necessary when the operator has been involved in an accident or near-miss incident.

Is annual training required?

No. An evaluation of each powered industrial truck operator's performance is required to be conducted after initial training, after refresher training, and at least once every three years.

How often must refresher training be given?

The standard does not require any specific frequency of refresher training. Refresher training must be provided when:

a. The operator has been observed to operate the vehicle in an unsafe manner.
b. The operator has been involved in an accident or near-miss incident.
c. The operator has received an evaluation that reveals that the operator is not operating the truck safely.
d. The operator is assigned to drive a different type of truck.
e. A condition in the workplace changes in a manner that could affect safety operation of the truck.

If my employees have already received training, or have been operating trucks for many years, must I retrain them?

No. An employer does not need to retrain an employee in the operation of a powered industrial truck if the employer certifies that the operator has been evaluated and has proven to be competent to operate the truck safely. The operator would need additional training in those elements where his or her performance indicates the need for further training and for new types of equipment and areas of operation.

How do I evaluate my employee's competency to operate a truck safely?

Evaluation of an operator's performance can be determined by a number of ways, such as:

- A discussion with the employee
- Observation of the employee operating the powered industrial truck
- A written documentation of previous training
- A performance test

Will OSHA provide training to my truck operators?

No. It is the employer's responsibility to train the employees.

Will I have to train all employees in my workplace?

Any employee that operates a powered industrial truck must be trained.

Will I have to ensure that my operator's are physically capable of driving a powered industry truck?

The new standard does not contain provisions for checking vision, hearing or general medical status of employees operating powered industrial trucks. The Americans With Disabilities Act (ADA) addresses the issue of whether employers may impose physical qualifications upon employees or applicants for employment. The ADA permits employers to adopt medical qualification requirements which are necessary to assure that an individual does not pose a "direct threat to the health or safety of other individuals in the workplace" provided all reasonable efforts are made to accommodate otherwise qualified individuals.

I have three different types of trucks in my workplace. Can I provide training on just one type of truck?

If an operator will be expected to operate all three types of vehicles, then training must address the unique characteristics of each type of vehicle the employee is expected to operate. When an attachment is used on the truck to move odd-shaped materials, then the operator training must include instruction on the safe conduct of those operations so that the operator knows and understands the restrictions or limitations created by each vehicle's use.

I only have powered hand trucks in my workplace. The operator walks alongside the unit while holding onto the handle to guide it. Do the training requirements cover the operators of this type of vehicle?

Yes. The use of powered hand trucks present numerous hazards to employees who operate them and those working in the area where they are used.

I employ drivers from a temporary agency. Who will provide them training—the temporary service or me?

OSHA has issued several letters of interpretations on the subject of training of temporary employees. Basically, there is a shared responsibility for assuring employees are adequately trained. The responsibility for providing training should be spelled out in the contractual agreement between the two parties. The temporary agency or the contracting employer may conduct the training and evaluation of operators from a temporary agency as required by the standard; however, the host employer (or other employer who enters into a contract with the temporary agency) must provide site-specific

information and training on the use of the particular types of trucks and workplace-related topics that are present in the workplace.

Should my training include the use of operator restraint devices (e.g. seat belts)?

Employers are required to train employees in all operating instructions, warnings, and precautions listed in the operator's manual for the type of vehicle that the employee is being trained to operate. Therefore, operators must be trained in the use of operator restraint systems when it is addressed in the operating instructions.

I. Recordkeeping

I.1 Form 300 (Annual Injury and Illness Reporting)

Overview: OSHA requires a variety of basic occupational safety and health record keeping. Special attention should be given to:

- OSHA Injury/Illness Log Form 300, and Supplemental Record Form 301 (OSHA allows use of state workers' compensation forms in lieu of Form 301 to avoid duplication);
- Posting of OSHA Annual Injury/Illness Summary during the months of February through April;
- Calculation and use of total hours worked for determination of injury and illness rates per OSHA formulas;
- Retention of injury & illness records for at least five years;
- Conspicuous display of OSHA poster at all employee bulletin boards;
- Retention and employee access to employee medical surveillance and exposure monitoring data, for thirty years from termination date of employee;
- Retention and access of Material Safety Data Sheets that are obsolete due to revisions or discontinued use of product must be maintained for thirty years; and
- Personal protective equipment hazard assessments should be maintained or as long as they are relied upon.
- Good record keeping builds valuable evidence in your defense in the event of an environmental, intentional tort or other lawsuit.

Records should be kept of the monthly fire equipment inspections in accordance with OSHA 29 CFR 1910.157, the sprinkler system tests and inspections.

As of February 1, 2005, employers must post the summary of the total number of job-related injuries and illnesses that occurred during 2004. Employers are required to post the summary (OSHA Form 300A); they are not to post the OSHA 300 Log. The summary must remain posted from February 1 to April 30.

The North American Industry Classification System, NAICS (pronounced Nakes) has replaced the U.S. Standard Industrial Classification (SIC) system. NAICS was developed as the standard for use by Federal statistical agencies in classifying business establishments for the collection, analysis, and publication of statistical data related to the business economy of the U.S. Canada and Mexico. The new NAICS numbers will be used instead of SIC numbers on OSHA's Form 300A – Work-Related Injuries and Illnesses.

The following is a summary of major changes in OSHA's new recordkeeping rule that employers had to begin using in 2002.

Scope

- The list of service and retail industries that are partially exempt from the rule has been updated. Some establishments that were covered under the old rule will not be required to keep OSHA records under the new rule and some formerly exempted establishments will now have to keep records. (§ 1904.2)
- The new rule continues to provide a partial exemption for employers who had 10 or fewer workers at all times in the previous calendar year. (§ 1904.1)

Forms

- The new OSHA Form 300 (Log of Work-Related Injuries and Illnesses) has been simplified and can be printed on smaller legal-sized paper. It replaces the Log 200.
- The new OSHA Form 301 (Injury and Illness Incident Report) includes more data about how the injury or illness occurred. It replaces Form 101.
- The new OSHA Form 300A (Summary of Work-Related Injuries and Illnesses) provides additional data to make it easier for employers to calculate incidence rates. This is the form that gets posted, now for three months.
- Maximum flexibility has been provided so employers can keep all the information on computers, at a central location, or on alternative forms, as long as the information is compatible and the data can be produced when needed. (§1904.29 and §1904.30)
- Work Related
- A "significant" degree of aggravation is required before a preexisting injury or illness becomes work-related. (§1904.5(a))
- Additional exceptions have been added to the geographic presumption of work relationship; cases arising from eating and drinking of food and beverages, blood donations, exercise programs, etc. no longer need to be recorded.
- Common cold and flu cases also no longer need to be recorded. (§1904.5(b)(2))
- Criteria for deciding when mental illnesses are considered work-related have been added. (§1904.5(b)(2))

- Sections have been added clarifying work relationship when employees travel or work out of their home. (§1904.5(b)(6) and §1904.5(b)(7))

Recording Criteria

- Different criteria for injuries and illnesses have been eliminated; one set of criteria is used for both. The former rule required employers to record all illnesses, regardless of severity. (§1904.4)
- Employers are required to record work-related injuries or illnesses if they result in one of the following: death; days away from work; restricted work or transfer to another job; medical treatment beyond first aid; loss of consciousness; or diagnosis of a significant injury/illness by a physician or other licensed health care professional. (§1904.7(a))
- The recording of "light duty" or restricted work cases is clarified. Employers are required to record cases as restricted work cases when the injured or ill employee only works partial days or is restricted From performing their "routine job functions" (defined as work activities the employee regularly performs at least once weekly). (§1904.7(b)(4))
- Employers are required to record all needlestick and sharps injuries involving contamination by another person's blood or other potentially infectious material. (§1904.8)
- Musculoskeletal disorders (ergonomic injuries) are treated like all other injuries or illnesses: they must be recorded if they result in days away,
- restricted work, transfer to another job, or medical treatment beyond first aid. (§1904.12)
- Special recording criteria are included for cases involving the work-related transmission of tuberculosis or medical removal under OSHA standards. (§1904.9 and 1904.11)
- New definitions are included for medical treatment and first aid. First aid is defined by treatments on a finite list. All treatment not on this list is medical treatment. (§1904.7(b)(5))
- Here's the difference between Medical Treatment and First Aid:
- First aid is usually administered after the injury or illness occurs and at the location where it occurred.
- First aid generally consists of one-time or short-term treatment.
- First aid treatments are usually simple and require little or no technology.
- First aid can be administered by people with little training (beyond first aid training) and even by the injured or ill person.
- First aid is usually administered to keep the condition from worsening, while the victim awaits medical treatment.
- Cleaning, flushing or soaking wounds on the skin surface multiple times is still first aid.
- Multiple applications of first aid do not constitute medical treatment. Day Counts
- The term "lost workdays" is eliminated, but the rule requires recording of days away, days of restricted work, or transfer to another job. The new rules for counting uses calendar days instead of workdays. (§1904.7(b)(3))
- No requirement to count days away or days of restriction beyond 180 days. (§1904.7(b)(3))
- The day on which the injury or illness occurs is not counted as a day away from work or a day of restricted work. (§1904.7(b)(3) and §1904.7(b)(4))

Annual Summary and Posting

- Employers must review the 300 Log information before it is summarized on the 300A form. (§1904.32)
- The new rule includes hours worked data to make it easier for employers to calculate incidence (§1904.32(b)(2))
- A company executive is required to certify the accuracy of the summary. (§1904.32(b)(3))
- The annual summary must be posted for three months instead of one. (1904.32(b)(6))

Employee Involvement

- Employers are required to establish a procedure for employees to report injuries and illnesses and train them how to report. (§1904.35(a))
- The new rule informs employers that OSHA prohibits employers from discriminating against employees who do report. (§1904.36)
- Employees are allowed to access the individual incident (301) forms to review records of their own injuries and illnesses. (§1904.35(b)(2))
- Employee representatives are allowed to access those parts of the incident
- (301) form relevant to workplace safety and health. (§1904.35(b)(2))

Protecting Privacy

- Employers are required to protect employee's privacy by withholding an individual's name on Form 300 for certain types of "sensitive" injuries/ illnesses (e.g., sexual assaults, HIV infections, mental illnesses, etc.). (§1904.29(b)(6) to §1904.29(b)(8))
- Employers are allowed to withhold descriptive information about "sensitive" incident in cases where not doing so would disclose the employee's identity. (§1904.29(b)(9))
- Employee representatives are given access only to the portion of Form 301 that contains information about the injury or illness, while personal information about the employee and his or her health care provider is withheld. (§1904.35(b)(2))
- Employers are required to remove employees' names before providing injury and illness data to persons who do not have access rights under the rule. (§1904.29(b)(10))

OSHA RECORDKEEPING SUMMARY

0.1875 in	Required?	Recommended	Retention Duration	Comments
Report of Injury, Illness (Incident Investigation)	T		5 Years	OSHA Form 301, State W.C. Form or Accident Invest Form(s) within 7 Days of Illness / Injury Knowledge
Log of Work-Related Injuries and Illnesses - Form 300 (Annual)	T		5 Years	Record Within 7 Days of Illness / Injury Knowledge
Summary of Work-Related Illnesses and Injuries - Form 300A			5 Years	Post Form 300A for Employee Access February 1st to April 30th
Exposure Monitoring: Air Sampling, Noise Dosimetry	T		30 Years	Provide to Employee or Post for Access As Soon As Possible
Medical Surveillance: Biological Monitoring, Medical Evaluation, Consultation Following Exposure Incident, Fitness to Wear Respirator	T		30 Years from Employees Last Day	Lead, Asbestos, Other Substance-specific Standards. Audiograms for Hearing Conservation Program, Lab Standard & HAZWOPER (Emergency Response)
Material Safety Data Sheets (MSDS) - Old/Obsolete	T		30 Years	From Date of Update, or Date Product Taken out of Use
MSDS - Current	T		Until Revised	Must Be Readily Accessible to Workers
Bloodborne Pathogen Training	T		3 Years	Specific to Bloodborne Pathogens Standard
Respirator Fit Test	T		3 Years	Perform Every Six Month for Negative Pressure Respirators
Alarm, Extinguisher, Sprinkler	T		1 Year	Tests and Inspections as Appropriate
Audiogram (Hearing Test)	T		Employment	Provide Copy of Test Results to Employee
Noise Exposure			2 Years	
Training Attendance and Demonstration of Competency	T		Until Training Is Refreshed	Need More Than Sign-in Sheets. Use tests, Video Tape Hands-on Exercises.
Citation/Notice of Imminent Danger	T		Until Hazard Abated to OSHA's Satisfaction	Must Be Posted by Employer (Citation) or OSHA (Imminent Danger) in Vicinity of Hazardous Condition
Safety Committee Meetings		T	No Requirements	OSHA Loves it When You Involve Workers in Safety
Inspection and Corrective Actions		T	No Requirements	Sign and Date Corrective Actions
Correspondence and Documents Related to Prior OSHA Inspections, Citations, and Settlements		T	No Requirements	Recommend Minimum 7 Year Retention

Reference(s): Form 301 (Annual Injury Reporting)

1. Forms 300, 300A and 301 in pdf format: http://www.osha.gov/recordkeeping/OSHArecordkeepingforms.pdf
2. NAICS Web Site: http://www.census.gov/eos/www/naics/

Question(s): Annual Injury Reporting

1) Can I post the Form 300-A Annual Summary electronically?

OSHA has said that employers who electronically post the OSHA 300-A Summary of Work-related Injuries and Illnesses are not in compliance with the posting requirements of 1904.32(b)(5).

OSHA says the recordkeeping rule allows all forms to be kept on computer equipment or at an alternate location, as long as the employer can produce the data when needed. Section 1904.32(b)(5) requires employers to post a copy of the Annual Summary in each establishment, where notices are normally posted, no later than February 1 of the year following the year covered by the records, and keep it in place until April 30.

I.2 Form 300—Log

Do I still have to complete, certify, and post an Annual Summary if my establishment had no recordable cases for the year?

Yes. After the end of the year, employers must review the Log to verify its accuracy, summarize the 300 Log information on the 300A summary form, and certify the summary (a company executive must sign the certification). This information must then be posted for three months, from February 1 to April 30.

I.3 Form 301 Incident and Illness Report

Optional Form 301 for each incident to record details. Employer may substitute Workers' Compensation forms or their own incident investigation forms, if required information is covered.

J. Fatality and Catastrophe Reporting

Reporting Requirements:

- You must report fatality or hospitalization of 3 or more employees, within 8 hours.
- If you have 10 or fewer employees, normally you do not have to keep records;

- If you are in an exempt low-hazard industry, normally you do not have to keep records;
- Employers must call in all fatal heart attacks occurring in the work environment. (§1904.39(b)(5))
- Employers do not need to call in public street motor vehicle accidents except those in a construction work zone. (§1904.3s(b)(3))
- Employers do not need to call in commercial airplane, train, subway or bus accidents. (§1904.39(b)(4))
- Employers must provide records to an OSHA compliance officer who requests them within 4 hours. (§1904.40(a))

K. First Aid/Medical Services and Infection Control

Paragraph (b) of the OSHA Medical Services and First Aid regulations (29 CFR 1910.151) states, "In the absence of an infirmary, clinic, or hospital near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. First aid supplies approved by the consulting physician shall be readily available."

OSHA has interpreted "near proximity to the workplace" as being construed to mean professional help that can respond to a workplace emergency within three (3) to five (5) minutes. The rationale for the time is that blood loss to the brain for a longer time could cause irreversible brain damage. If public or professional help cannot respond within the aforementioned time frame, an employer must adequately train employee(s) to render first aid.

This standard also requires suitable facilities for the quick drenching or flushing of the eyes and body be provided in the work area for immediate emergency use, where the eyes or body of any person may be exposed to injurious corrosive materials. See section III.D.5. below, for more information on these requirements.

Because of the widespread incidence of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and other communicable diseases, OSHA promulgated standards on "Bloodborne Pathogens" and published them at 29 CFR 1910.1030. The standard became effective March 6, 1992, and its purpose is to protect employees from contracting these diseases in the workplace, with a combination of vaccines, "Universal Precautions," engineering controls, and special procedures, contained in a written Exposure Control Plan.

Since there is no population that is risk free for HIV or HBV, any employee who has occupational exposure to blood or other potentially infectious material, by virtue of residential care, laundry, use of hypodermic injection, or first-aid/CPR duties, is included within the scope of this standard.

VIII. Various State and Local Regulations That May Apply

Overview: More stringent rules (state or local) usually supersede any equivalent Federal regulations. Contact your local fire department to see what might be required.

a. Sprinkler and Alarm Inspections
b. Boiler and other Pressure Vessel Inspections
c. Local Right- to- Know
d. BUSTR (Bureau of Underground Storage Tank Regulations) – See V. G.

IX. Various Consensus Standards

A. American National Standards Institute (ANSI) – Standard For Design and Manufacture of Personal Protective Equipment

See V. G.2

B. American Society for Testing and Materials (ASTM) – Standards for Electrical Insulating Apparel

C. American Society for Healthcare Engineering (ASHE)

Overview: An association of diverse professionals dedicated to continued improvement in the health care environment through advocacy, education, information & collaboration.

Reference(s): ASHE http://www.ashe.org

D. Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

Overview: Evaluates and accredits more than 16,000 health care organizations and programs in the United States. An independent, not-for-profit organization, JCAHO is the nation's predominant standards-setting and accrediting body in health care. Since 1951, JCAHO has developed state-of-the-art, professionally based standards and evaluated the compliance of health care organizations against these benchmarks.

As of January 2001, health care facilities accredited by JCAHO must have a management program to "reduce the potential for organizational-acquired illness." The new standard, numbered EC 1.7, holds health care facilities responsible for "managing pathogenic biological agents in cooling towers, domestic hot water, and other aerosolizing water systems."

Reference(s): JCAHO http://www.jcaho.org/

E. National Fire Protection Association (NFPA)

Overview: The mission of this international not-for-profit organization is to reduce the worldwide burden of fire, electrical and other hazards on the quality of life by providing and advocating scientifically-based consensus codes and standards, research, training and education.

NFPA Code 30, Flammable and Combustible Liquids Code: Specifies procedures for the safe storage, grounding, transfer, etc. of flammable and combustible liquids. NFPA 30 is recognized as the standard by fire departments, insurance agencies, etc. NFPA also publishes a variety of codes such as; classification of flammable and combustible liquids (NFPA 321), installation of sprinklers (NFPA 13), fire doors and fire windows (NFPA 80), storage of liquid and solid oxidizers (NFPA 43A), general storage (NFPA 231), etc.

Reference(s): NFPA http://www.nfpa.org

NFPA can also be contacted at:
National Fire Protection Association
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101

F. NSF International (former name: National Sanitation Foundation)

Overview: An independent, not-for-profit, independent organization which offers programs and services to augment and support the work of regulatory officials around the U.S., including standards development, product testing and certification, as well as onsite audits and inspections. NSF is also involved in education and training in many areas of environmental health, including air, water, and food safety. NSF offers a third party registration or listing service as an option to the discontinued USDA “White Book”.

Reference(s): NSF

- http://www.nsf.org/
- NSF White Book Listing: http://www.nsf.org/usda/Listings.asp
- **Nonfood** Compounds: http://www.nsf.org/business/nonfood_compounds/indexasp?program=NonFoodComReg>

G. Water Quality Association (WQA)

Overview: The Water Quality Association is a not-for-profit international trade association representing the household, commercial, industrial, and small community water treatment industry. WQA maintains a close dialogue with other organizations representing different aspects of the water industry in order to best serve consumers, government officials, and industry members. WQA offers a third party registration or listing service as an option to the discontinued USDA “White Book”.

Reference(s): WQA http://www.wqa.org/

H. DNV (Det Norske Veritas)

Overview: Founded in 1864, DNV has been “safeguarding life, property, and the environment.”

DNV is in the classification society business in maritime, energy, business and healthcare.

The DNV is an international, independent, self-supported and tax- paying foundation operating in many countries, including the US.

DNV visits clients on an annual basis and bases its accreditation on assisting clients in service industries make process changes based on an initial NIAHO and ISO 9001 survey.

NIAHO is the acronym for National Integrated Accreditation for Healthcare Organizations, which is DNV’s hospital accreditation program.

Reference: DNV

1. http://www.dnvgl.com
2. www.dnvaccreditation.com