



# HTIS

Hazardous Technical Information Services

## BULLETIN

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## Chromium in Drinking Water

*By Beverly Howell, Industrial Hygienist, HTIS*

The Environmental Working Group (EWG) is a non-profit public health, environmental research and advocacy organization based in Washington, DC, with offices in Ames, Iowa and Oakland, California. The majority of their research is focused on potential health risks from exposures to hazardous chemicals that contaminate food, water and the environment or that are used as ingredients in consumer products.

In 2010, the EWG conducted a study that analyzed the drinking water in 35 cities across the United States. Purported as the first nationwide analysis of hexavalent chromium in drinking water to be made public, the study revealed that drinking water in most of the cities contained hexavalent chromium.

In 2000, hexavalent chromium even made its way to the big screen in the dramatic film "Erin Brockovich", when Brockovich discovered a systematic cover-up of hexavalent chromium in the town of Hinkley's (California) water supply that threatened the health of an entire community.

Chromium is a metallic element in the periodic table. It is odorless and tasteless. Chromium is found naturally in rocks, plants, soil and volcanic dust, humans and animals. The most common forms of chromium in the environment are trivalent (chromium-3), hexavalent (chromium-6) and the metal form, chromium-0. Chromium-3 occurs naturally in many vegetables, fruits, meats, grains and yeast. Chromium -6 and -0 are generally produced by industrial processes. Major sources of chromium-6 in drinking water are discharges from steel and pulp mills, and erosion of natural deposits of chromium-3. At many locations, chromium compounds have been released to

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the environment through leakage, poor storage, or improper disposal practices. Chromium compounds are very persistent in water as sediments.

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water.

The MCLG for chromium (total) is 0.1 mg/L or 100 ppb. EPA has set this level of protection based on the best available science to prevent potential health problems. EPA has set an enforceable regulation for chromium (total), called a maximum contaminant level (MCL), at 0.1 mg/L or 100 ppb. MCLs are set as close to the health goals as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies. In this case, the MCL equals the MCLG, because analytical methods or treatment technology do not pose any limitation.

The Phase II Rule, the regulation for chromium (total), became effective in 1992. The federal government restricts the amount of "total chromium" in drinking water and requires water utilities to test for it, which includes both trivalent chromium, a mineral that humans need to metabolize glucose, and hexavalent chromium, the metal that has caused cancer in laboratory animals. Testing, however, is not required to distinguish what percentage of the total chromium is chromium-6 versus other forms such as chromium-3, so EPA's regulation assumes that the sample is 100 percent chromium-6. This means the current chromium-6 standard has been as protective and precautionary as the science of that time allowed.

In a memo issued January 11, 2011, the EPA Assistant Administrator wrote "recent studies indicate the potential for greater human health risks from chromium-6 (the most toxic form of chromium) than was previously thought. We are peer reviewing our assessment of the new health data, and will evaluate the final assessment in accordance with the Safe Drinking Water Act to determine if new standards need to be set.

Given this emerging public health information, EPA is providing guidance to all public water systems to see how a system could enhance chromium monitoring through additional sampling and analysis specifically for chromium-6. The Agency strongly encourages water systems to consider the recommendations provided at :

<http://water.epa.gov/drink/info/chromium/guidance.cfm>, and to determine how your system might enhance drinking water monitoring for chromium-6."

California, who has been a frontrunner in state environmental regulations, took the first step last year in limiting the amount of hexavalent chromium in drinking water by proposing a

"public health goal" for safe levels of 0.06 parts per billion. If California does set a limit, it would be the first in the nation. Also, the 25 cities identified in the EWG study would have levels that would exceed the goal proposed in California.

The Department of Defense is reminded in a January 15, 2011, Chemical & Material Emerging Risk Alert to:

- Ensure compliance with the Under Secretary of Defense (Acquisition, Technology, & Logistics) policy of April 8, 2009, "Minimizing the Use of Hexavalent Chromium".
- Review any current uses of Cr(VI) and any sites with detected releases of chromium or Cr(VI) to determine how tightened standards may affect your activities. Ensure effective controls and monitoring are in place.
- Review the Advanced Surface Engineering Technologies for Sustainable (ASETS) Defense database at [www.asetdefense.org](http://www.asetdefense.org) for information and technical data on alternatives for coatings and surface treatments, their performance, and availability.

While the EWG study is informative, it only provided a snapshot in time; continued research, assessments and analysis are on the horizon.

#### References:

1. Environmental Working Group, "Chromium-6 Widespread in US Tap Water", December 20, 2010, <http://static.ewg.org/reports/2010/chrome6/html/home.html> ;
2. US Environmental Protection Agency, "Memorandum — Guidance for Public Water Systems on Enhanced Monitoring for Chromium-6( Hexavalent Chromium) in Drinking Water", January 11,2011; and,
3. Office of the Undersecretary of Defense for Acquisition, Technology & Logistics, Chemical & Material Risk Management Directorate, Chemical & Material Emerging Risk Alert, "Hexavalent Chromium ( Cr(VI)", January 15. 2011.

## Environmental News

### Pesticide Container Rule and Interim Repair Policy

By Muhammad Hanif, Chemist, HTIS

The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires the U.S. Environmental Protection Agency (EPA) to promulgate regulations prescribing procedures and standards

for container design as well as for the removal of pesticides from containers prior to disposal of the pesticide. These regulations are not limited to commercial entities such as registrants, refillers, retailers, or applicators, but also apply to Department of Defense (DoD) pesticide storage and recoup activities, pesticide applicators, commissaries, Defense Logistics Agency (DLA) Disposition Services locations and repackaging activities at DoD facilities.

On October 29, 2008, the EPA published a final rule that amended the pesticide container and containment regulations providing for the safe storage and disposal of pesticides as a means of protecting human health and the environment. On October 8, 2010, the EPA amended the original rule to make changes to the container label requirements, and to provide additional time for pesticide registrants to revise labels to bring them into compliance with the regulations. The effective date for this amendment is August 16, 2011.

The pesticide container and containment regulations consist of five sections, and are found at Title 40, Code of Federal Regulations (CFR), Part 165 – Pesticide Management and Disposal (40 CFR 165). A brief summary of the sections of the pesticide container and containment regulations follows:

**Nonrefillable Containers:** This section addresses "one-way" or disposable containers and applies to pesticide registrants. These standards will ensure that containers are strong and durable, minimize human exposure during container handling, and facilitate container disposal and recycling.

**Refillable Containers:** This section applies to containers that are intended to be refilled and reused, and applies to pesticide registrants. These standards have several purposes and they are 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.

**Repackaging:** This section describes procedures and other safeguards for repackaging pesticide into refillable containers, and 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.

**Labeling:** The labeling segment includes instructions on how to properly clean pesticide containers, and provides a statement identifying the container as either nonrefillable or refillable. Pesticide registrants are required to ensure that labels include the specified information, and users are required to comply with the instructions as stated on the labels.

**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. These standards are intended to protect the environment from leaks and spills at bulk storage areas, and from contamination due to pesticide dispensing operations.

The EPA has prepared an outline of the key requirements in the final rule to facilitate the regulated community's ability to determine who is subject to the rule and how to comply. This document was updated in October 2008 and September 2010 to incorporate the amendments. The outline of the key requirements is available at:

[http://www.epa.gov/opp00001/regulating/regulations\\_at\\_a\\_glance.htm](http://www.epa.gov/opp00001/regulating/regulations_at_a_glance.htm)

Under the Subparts for Pesticide Container and Containment Structures, the EPA requires that portable **Nonrefillable Containers, Refillable Containers, and Repackaging meet certain DoT container design, construction and marking standards** regardless whether or not a pesticide meets a DoT's hazardous material definition.

- A pesticide product that is **not** a DoT hazardous material must be packaged in a container that, if portable, is designed, constructed and marked to comply with the requirements of 49 CFR 173.4 to .6, 173.24, .24a, .24b, 173.28, 173.155, 173.203, 173.213, 173.240(c) and (d), 173.241(c) and (d), Part 178 and Part 180 that apply to a Packing Group III material, or, if subject to a special permit, to the applicable requirements of 49 CFR part 107 subpart B – Special Permits. These requirements apply to the pesticide product as it is packaged for transportation in commerce.
- A pesticide product that is a DoT hazardous material must be packaged in a container that, if portable, complies with the requirements of 49 CFR Parts 171-180, or, if subject to a special permit, to the applicable requirements of 49 CFR part 107 subpart B. These requirements apply to the pesticide product as it is packaged for transportation in commerce.

As the result of a significant enforcement case involving a major retailer, the EPA conducted a survey of retail stores throughout the United States to determine what other retailers were doing with damaged pesticide containers. Most retailers repaired the damaged pesticide and sold the product at a reduced cost. The EPA contends that any repair of pesticide containers constitutes "production" under 40 CFR 167.3. In addition, repaired pesticides may also be considered misbranded if the net contents do not match the label.

On October 9, 2009, the EPA issued a Container Repair Interim

Policy establishing a process by which pesticide retailers and distributors could, under certain circumstances, repair minor damage to pesticide containers. The interim policy has very specific requirements, including an application and review process to ensure the integrity of the label, the product, and the repaired container. The interim policy is available at:

<http://www.epa.gov/pesticides/regulating/container-repair-interim-policy.pdf>

The EPA has estimated that approximately five million pounds of consumer pesticide products become waste each year in the United States due to damage to pesticide containers, prior to retailers selling the products. In order to achieve the objectives of long standing policies, compliance with the interim policy is necessary to ensure waste minimization and pollution prevention.

For additional information and to discuss specifics related to the Pesticide Container and Containment Rule, please contact Nancy Fitz ([fitz.nancy@epa.gov](mailto:fitz.nancy@epa.gov)), 703-305-7385 or Jeanne Kasai ([kasai.jeanne@epa.gov](mailto:kasai.jeanne@epa.gov)), 703-308-3240 at Field and External Affairs Division (FEAD) (7506P), Office of Pesticide Programs, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460; fax number: (703) 308-2962;

#### References:

1. Federal Register Volume 73, Number 210, Wednesday, October 29, 2008, pages 64215 -64228 (73 FR 64215)].
2. U.S.Environmental Protection Agency Office of Pesticide Programs, "Pesticide Container Repair Interim Policy", October 9, 2009.

## Prescription Drug Disposal

*By Abdul H. Khalid, Chemical Engineer, HTIS*

Unused or expired prescription drugs that sit on shelves in homes or medical facilities may present a danger to people, as well as ecosystems, and disposing of unused or expired medications in a fashion that is simple, legal, and environmentally responsible is a challenge. However, removing unused or expired medications is a tremendous help in preventing intentional misuse, as well as unintentional poisonings of children and pets.

The White House Office of National Drug Control Policy (ONDCP), the U.S. Department of Health and Human Services (HHS) and EPA jointly released new guidelines, that are designed to reduce the diversion of prescription drugs, while also protecting the environment. The new federal prescription drug disposal guidelines are to:

- Take unused, unneeded or expired prescription drugs out of their original containers.
- Mix the prescription drugs with an undesirable substance, like used coffee grounds or kitty litter, and put them in impermeable, non-descript containers, such

as empty cans or sealable bags, further ensuring that the drugs are not diverted or accidentally ingested by children or pets.

- Throw the containers containing undesirable substance in the trash
- Flush prescription drugs down the toilet only if the accompanying patient information specifically instructs that it is safe to do so.
- Return unused, unneeded or expired prescription drugs to pharmaceutical take-back locations that allow the public to bring unused drugs to a central location for safe disposal.

The federal prescription drug disposal guidelines state specifically that the following drugs should be flushed down the toilet instead of being disposed of in the trash: Actiq (fentanyl citrate), Daytrana transdermal patch (methylphenidate), Duragesic trans- dermal systems (fentanyl), OxyContin (oxycodone), Avinza (morphine sulfate), Baraclude (entecavir), Reyataz (atazanavir sulfate), Tequin (gatifloxacin), Zerit for oral solution (stavudine), meperidine, Percocet (oxycodone and acetaminophen), Xyrem (sodium oxybate), and Fentora (fentanyl buccal tablet).

To dispose of prescription drugs not labeled "to be flushed", one can take advantage of community drug take-back programs or other programs, such as household hazardous waste collection events, that collect drugs at a central location for proper disposal. Call the local city or county government's household trash and recycling service, and ask if a drug take-back program is available in the community. The take-back event or program, must be Drug Enforcement Agency (DEA) approved, and is considered the best way to dispose of unused or expired medications.

Dumping the medication down the drain or flushing it down the toilet can become a source of water contamination. The EPA continues to investigate whether such contamination adversely impacts human health or aquatic life. To learn where a collection site is, relative to where one lives, consult the following websites:

- <http://www.deadiversion.usdoj.gov/takeback/> ; or,
- <http://www.dea.gov>

For more information on the proper disposal of prescription and over the counter medications, please visit the following website: [http://www.whitehousedrugpolicy.gov/publications/pdf/prescrip\\_disposal.pdf](http://www.whitehousedrugpolicy.gov/publications/pdf/prescrip_disposal.pdf)

#### References:

1. News Release, September 21, 2010, "EPA Urges Citizens to Clear out Medicine Cabinets for Drug Take-Back Events" website at: <http://www.epa.gov>.
2. <http://www.med.navy.mil/sites/nhoh/PublishingImages/NewsApr09.pdf>

3. [http://www.whitehousedrugpolicy.gov/publications/pdf/prescrip\\_disposal.pdf](http://www.whitehousedrugpolicy.gov/publications/pdf/prescrip_disposal.pdf)
4. <http://www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingOver-the-CounterMedicines/ucm107163.pdf>.

## The EPA Improves Guidance for — Compact Fluorescent Light Bulbs Cleanup and Recycling

By Ariel Rosa, Environmental Protection Specialist, HTIS

On December 28, 2010, the U.S. Environmental Protection Agency (EPA) published its updated guidance on how to properly clean up the remains of a broken compact fluorescent lamp (CFL). Included with the guidance is a new consumer brochure with CFL recycling and cleanup tips. The EPA encourages Americans to use CFLs for residential lighting to save energy and prevent greenhouse gas emissions that lead to global climate change.

The cleanup of CFL can be a problem, primarily because CFLs contain mercury. The mercury found within CFLs is an essential part of CFLs, allowing the bulb to be an efficient light source. On average, CFLs contain about four milligrams of mercury sealed within the glass tubing. By comparison, older thermometers contain about 500 milligrams of mercury – an amount equal to the mercury in over 100 CFLs. At present, manufacturers of fluorescent lighting products are working to reduce the amount of mercury content in CFLs. No mercury is released when the bulbs are intact (not broken) or in use. However, when a CFL breaks, some of the mercury is released as vapor and may pose potential health risks. The broken bulb can continue to release mercury vapor until it is cleaned up and removed from the area. The guidance and brochure provide simple, user friendly directions to help prevent and reduce exposure to people from mercury pollution.

After a CFL has broken, the EPA recommends that before starting cleanup:

- Have people and pets leave the room.
- Air out the room for 5-10 minutes by opening a window or door to the outdoor environment.
- Shut off the central forced air heating/air-conditioning system, if present.
- Collect materials needed to clean up broken bulb.

The EPA also recommends that after cleaning up a broken CFL:

- Promptly place all bulb debris and cleanup materials outdoors in a trash container or protected area until materials can be disposed of properly, and avoid leaving any bulb fragments or cleanup materials indoors.

- If possible, continue to air out the room where the bulb was broken, and discontinue using the heating/air conditioning system for several hours.

The EPA also recommends the use of local options for recycling CFLs, rather than disposing of them with household trash. Recycling prevents the release of mercury into the environment, and allows the reuse of most of the components in the light bulb. Some states and local jurisdictions have more stringent regulations than the EPA, and may require that you recycle CFLs and other mercury-containing light bulbs. California, Maine, New Hampshire, Minnesota, Vermont and Massachusetts all prohibit mercury-containing lamps from being discarded into landfills. Some retailers, such as, Ace Hardware, Home Depot, IKEA, Orchard Supply and Lowe's provide recycling in-store. The website Earth911.com provides assistance with in-store recyclers in most areas. The EPA does not endorse, certify, authorize or approve any of the services mentioned, and retailers only provide them as a convenience to customers.

CFLs that are hazardous waste are required by The Resource Conservation and Recovery Act (RCRA) to be designated as "universal wastes". Universal wastes are:

- generated in a wide variety of settings, not solely industrial
- generated by a vast community
- present in significant volumes in nonhazardous management systems.

The universal waste program provides an alternative set of regulations that reduce the regulatory burden by allowing longer storage of these wastes and reduced recordkeeping. To be covered under the universal waste program, these items must first be identified as hazardous waste. Only material identified as a hazardous waste that meets the definition of battery, mercury-containing equipment, pesticide, or lamp are managed under the universal waste regulations.

Businesses and industries that qualify as universal waste handlers must follow specific requirements for storing, transporting and disposing of CFLs. However, households are exempt from these regulations. Nonetheless, as CFLs become more ubiquitous in residences, households need to become more keenly aware of proper disposal practices for CFLs.

### References:

1. <http://www.epa.gov/cflcleanup>
2. [www.epa.gov/cfl](http://www.epa.gov/cfl)
3. <http://epa.gov/wastes/inforesources/pubs/hotline/training/uwast05.pdf>
4. <http://epa.gov/wastes/hazard/wastetypes/universal/laws.htm>
5. <http://epa.gov/wastes/hazard/wastetypes/universal/lamps/frame.htm>
6. <http://www.epa.gov/cfl/cflrecycling.html>

## Testing of 19 HPV Chemical Substances Under the EPA's TSCA

By Abdul H. Khalid, Chemical Engineer, HTIS

On January 4, 2011, the U.S. Environmental Protection Agency (EPA) issued a final rule under Section 4 (a) (1) (B) of the Toxic Substances Control Act (TSCA), requiring manufacturers, importers, and processors of 19 high production volume (HPV) chemical substances to test the health and environmental effects of those substances and make the information and related data available to the Agency. The EPA considers the safety of chemicals as one of the highest priorities of the agency, and now needs to review data on priority chemicals.

A HPV chemical is a chemical produced in or imported into the United States in quantities of 1 million pounds or more per year. The 19 HPV chemicals are:

to remove or find better substitutes for chemicals in the product supply chain, in order to protect human health as well as the environment, from consumer products that contain toxic chemicals.

EPA's news release stated that, "The rule strengthens the voluntary HPV Challenge Program Chemical List launched by the EPA that included chemicals used in household products such as hobby/craft glues, personal-care products, home cleaning products, home maintenance products, and automotive products. The program challenged companies to make health and environmental effects data publicly available for HPV chemicals.

Companies voluntarily supplied data on more than 2,200 HPV chemicals under the challenge program; however, no health and environmental effects data were provided on the 19 chemicals in this rule, making it necessary for the EPA to require testing. The EPA requires a manufacturer to submit a letter of intent to test, and an exemption application prior to testing. In the coming year, the EPA intends to require testing

CAS Number	Chemical Name
57 – 07 – 0	Acetaldehyde
78 – 11 – 5	1,3-Propanediol, 2,2-bis[(nitrooxy)methyl]-, dinitrate (ester)
84 – 65 – 1	9,10-Anthracenedione — (used to make dyes)
89 – 32 – 7	1 <i>H</i> ,3 <i>H</i> -Benzo[1,2- <i>c</i> :4,5- <i>c'</i> ]difuran-1,3,5,7-tetrone
110 – 44 – 1	2,4-Hexadienoic acid, (E,E)-
118 – 82 – 1	Phenol, 4,4'-methylenebis[2,6-bis(1,1-dimethylethyl)-
119 – 61 – 9	Methanone, diphenyl- — (used in personal-care and other consumer products)
144 – 62 – 7	Ethanedioic acid
149 – 44 – 0	Methanesulfinic acid, hydroxy-, monosodium salt
2524 – 04 – 1	Phosphorochloridothioic acid, O,O-diethyl ester
4719 – 04 – 4	1,3,5-Triazine-1,3,5(2 <i>H</i> ,4 <i>H</i> ,6 <i>H</i> )-triethanol
6381 – 77 – 7	<i>D</i> -erythro-hex-2-enonic acid, gamma.-lactone, monosodium salt
31138 – 65 – 5	<i>D</i> -gluco-heptonic acid, monosodium salt, (2.xi)-
66241 – 11 – 0	C.I. Leuco Sulfur Black 1 — (used as fingerprinting agent)
68187 – 76 – 8	Castor oil, sulfated, sodium salt
68187 – 84 – 8	Castor oil, oxidized
68479 – 98 – 1	Benzenediamine, ar,ar-diethyl-ar-methyl-
68527 – 02 – 6	Alkenes, C <sub>12-24</sub> , chloro — (used in metal fabrication)
68647 – 60 – 9	Hydrocarbons, C>4

Steve Owens, the assistant administrator for the EPA's Office of Chemical Safety and Pollution Prevention stated that the testing of chemical substances and chemical data reporting would provide the EPA with critical information to better evaluate any potential risks from chemicals that are being used in large quantities. The data, with related information, are essential to improving chemical safety as well as protecting the health of the American people and the environment.

This EPA action is, in some sense, due to the European Union (EU)'s REACH regulation that took effect in 2007, and is intended

of other chemicals for which the agency has not received data."

**For further information on HPV chemicals, visit EPA's website at:**  
<http://www.epa.gov/hpv>

**Or, contact:**

**Dale Kemery**  
 PH / Commercial: 202.564.7839 / 4355  
 eMail: kemery.dale@epa.gov

**Reference:** News Release, "EPA Requires Testing of 19 Widely

## Occupational Safety and Health News

### All Bloodborne Pathogens Exposures Should be Reported

By Ariel Rosa, Environmental Protection Specialist, HTIS

The Occupational Safety and Health Administration's (OSHA) Bloodborne Pathogens Standard, 29 CFR 1910.1030, covers all employees whose job requirements cause them to be "reasonably anticipated" to come in contact with blood and other potentially infectious materials. Workers in many different occupations are at risk of exposure to pathogenic viruses and microorganisms that may be present in human blood, and that may cause disease in humans. These pathogens, collectively known as bloodborne pathogens (BBP), include, but are not limited to, human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV).

Workers who may encounter occupational exposure to BBPs include physicians, nurses, nursing home workers, dental workers, mortuary affairs specialists, law enforcement, emergency, fire, and rescue personnel.

Needlesticks are reportable injuries and are just one component of the BBP Standard. Needlesticks, as well as cuts from sharp objects contaminated with another person's blood, are among the most common means of exposure to BBPs. However, any contact to the eyes, mouth, nose, or broken skin with blood or other potentially infectious bodily fluids can spread such diseases. According to the Center for Disease Control, each year 385,000 needlestick and other sharps-related injuries are sustained by hospital-based healthcare personnel. From surveys of healthcare personnel, it is estimated that 50% or more of these occupational percutaneous injuries are not reported.

#### Preventive measures:

The best way to prevent exposure to bloodborne pathogens is to practice "universal precautions". This means that employees should always treat blood and body fluids as if these materials are infectious, even if the materials are not infectious.

OSHA's Bloodborne Pathogens Standard requires that employers develop a Bloodborne Pathogen Exposure Control Plan to eliminate, or minimize, employee occupational exposure to human blood or other infectious body fluids, through available engineering controls, personal protective equipment, and safe

work practices, including housekeeping. The exposure control plan must contain, at a minimum:

1. The exposure determination that identifies job classifications and, in some cases, tasks and procedures where there is occupational exposure to blood and other potentially infectious materials (OPIM) ;
2. The procedures for evaluating the circumstances surrounding an exposure incident; and
3. A schedule of how and when other provisions of the standard will be implemented, including methods of compliance.

The Department of Defense (DoD) has adopted OSHA's BBP Standard. Each service component and agencies have implemented the standard by way of policy regulations and guidance to meet common, as well as unique requirement, that address prevention as well as exposure issues. Due to concern for DoD personnel, the Assistant Secretary of Defense issued a "Policy Letter on Needlestick Safety of Health Care Workers" on 4 June 2001, ensuring that all Medical and Dental Treatment Facilities comply with the Bloodborne Pathogen Standard and all applicable state regulations with respect to needlestick safety.

#### Why employees fail to report exposures

According to the National Institute for Occupational Safety and Health (NIOSH), one of the biggest problems with workplace exposures is that some employees are reluctant to report exposure incidents.

Although rates of underreporting are difficult to ascertain, studies estimate that high percentages of workers do not report all exposures.

Some of the reasons why employees fail to report exposures include:

- They do not think they will get an infection from the exposure.
- They think the exposure may have been their fault.
- They were not wearing the proper personal protective equipment.
- They are embarrassed by the exposure incident.
- They think it takes too much time away from work to report.
- They think reporting may result in a negative performance evaluation.
- They fear losing their job.
- They think that wiping blood or other body fluids off their skin is sufficient.
- They are not sure whether certain incidents should be considered exposures.

#### Why employees should report exposures

Reporting exposures to blood or potentially infectious bodily fluids allows the employer to take appropriate post-exposure actions to protect not only the workers, but also their families, and the public against infection from bloodborne pathogens.

By documenting exposures, employers can identify causes and prevent them from occurring again. This keeps workers on the job and helps to reduce costs in the long run.

Prompt reporting is essential because, in some cases, post-exposure treatment may be recommended and should be started as soon as possible.

#### Employers can encourage reporting by:

- Establishing a policy that all potential exposures must be reported.
- Identifying and addressing issues, workplace culture, or barriers that discourage reporting.
- Making sure that employees know what an exposure is.
- Explaining the risks of an infection.
- Establishing an easy-to-use system for reporting and evaluating exposures.
- Ensuring that reports are handled promptly and confidentially.
- Making certain that all employees and managers understand an organization's reporting protocol.
- Address reporting procedures in the initial and annual bloodborne pathogens training.
- Regularly reminding workers to promptly report all potential bloodborne pathogens exposures.
- Assuring employees that reporting an exposure will not affect their job or performance evaluation.
- Keeping a record of exposures. Looking for patterns of exposure and seeking solutions to prevent future exposures.
- Showing workers how reporting helps prevent future exposures.

#### Training

An employer shall institute a training program, as well as ensure employee participation in the program. The training program should be in accordance with the requirements listed in OSHA 1910.1030(g)(2). Training should occur before assignment to a task where occupational exposure may take place, and at least, annually thereafter. Additional training should be provided when changes, such as modification of tasks or procedures, affect employee's occupational exposure.

#### References:

1. OSHA Bloodborne Pathogens Standard- 1910.1030.
2. NIOSH: NIOSH Safety and Health Topic: "Bloodborne Infectious Diseases HIV/AIDS, Hepatitis B Virus, and Hepatitis C Virus" - <http://www.cdc.gov/niosh/topics/bbp/>
3. Department of Defense Education Activity Regulation 4800.5.
4. "The Needlestick Safety and Prevention Act", Public Law 106-430, November 6, 2000.
5. Policy Letter from The Assistant Secretary of Defense on "Needlestick Safety for Health Care Workers", June 4, 2001.

## HMIRS User Basics

By Philip Saunders, Chemical Engineer, HTIS

The Hazardous Materials Information Resource System (HMIRS) is designated as the authoritative Material Safety Data Sheet (MSDS) repository for the Department of Defense (DoD). This system allows on-line users to search for and obtain an electronic copy of an MSDS that is stored in a remote electronic storage location. This satisfies the MSDS requirement found in the Occupational Safety & Health Administration's Hazard Communication Standard as found in 29 CFR 1910.1200(b)(4)(ii) which states:

*"Employers shall maintain copies of any material safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a material safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a material safety data sheet if an employee requests the material safety data sheet, and shall ensure that the material safety data sheets are readily accessible during each work shift to employees when they are in their work area(s)."*

In addition, 29 CFR 1910.1200(g)(1) requires employers to have an MSDS "in the workplace for each hazardous chemical that they use." As recently as 1999, OSHA has issued interpretations allowing employers to use electronic repositories such as HMIRS, rather than having hard copies of each MSDS available in every work area. This method avoids the need to periodically review the hard copies to ensure that they are current, eliminates the need to weed out obsolete or unnecessary hard copies of an MSDS, and prevents duplication of efforts when there are multiple worksites operated by the same employer (such as a Federal Government agency or department). Access to HMIRS can be obtained by filling out the DD2875 form available at

[http://www.dlis.dla.mil/HMIRS/hmirs\\_registrationform.asp](http://www.dlis.dla.mil/HMIRS/hmirs_registrationform.asp).

OSHA's MSDS requirement only applies to hazards associated with chemicals, but the Department of Defense is also covered by the MSDS requirements found in Fed-Std-313. This standard requires that an MSDS be obtained for items that are regulated as transportation hazards by the Department of Transportation (DOT), the International Air Transport Association (IATA) or the International Maritime Organization (IMO); for radioactive materials regulated by the Nuclear Regulatory Commission (NRC); and, for other materials that are regulated as environmental hazards by the Environmental Protection Agency (EPA).

When the electronic copy of an MSDS for a product is entered into a new HMIRS record, information about that product is obtained from the document and other resources, and entered into searchable data fields within the electronic record. Some of the data entered include logistics information such as the Federal Supply Class (FSC) and National Item Identification Number (NIIN), the contract number used to procure the material, the Commercial and Government Entity (CAGE) code for the vendor for that contract, and the CAGE for the 'responsible party' for the MSDS (usu-

ally the product's manufacturer or the company that prepared the document). Information that is obtained from the MSDS itself includes the product name (as shown on the MSDS), its part number, the hazardous (and sometimes the non-hazardous) chemicals contained in the product, its physical as well as chemical properties and the transportation regulatory requirements.

One challenge that HMIRS users may have occurs when they are unable to locate an applicable HMIRS record for a particular material – even if there is an appropriate record available. Having both the NIIN and contract number in the record allows HMIRS users to match that record to the unique product the vendor supplied under that contract. However, the typical HMIRS user will likely search for a product's National Stock Number (NSN), the combination of the FSC and the NIIN, rather than just its NIIN. The problem with this approach is that the FSC associated with a particular NIIN can be changed (like assigning a new area code to a seven digit phone number). This change is usually due to logistical reconsiderations such as the availability of more comprehensive information on end item applications. When an HMIRS record is created, the FSC entered into that record is based on the FSC that was in use at the time that the contract was awarded.

If the FSC has been changed but no contracts have been awarded since that change, then there should be no records in HMIRS having that new FSC. When a contract is awarded following a change in the FSC, a completely new HMIRS record will be created using the new FSC, rather than changing the existing record, since there may still be stock bearing the old FSC. HMIRS users may encounter situations where the Hazardous Materials Indicator Code (HMIC) in the Total Item Record (TIR) for a NIIN is "Y", logistically indicating that there is information on the NIIN in HMIRS, but a search of HMIRS using the NSN produces no results, it is suggested that HMIRS users search using the wild card character (\*) followed by the NIIN, rather than using the full NSN. The search results using this method will show all records that contain that NIIN, regardless of the FSC contained in the record.

Another potential source of confusion occurs when a search of HMIRS returns multiple records for the same material. One possible cause for this is due to revisions to the MSDS, since most companies periodically update their MSDS so that the information they contain is current. In most cases, the changes are minor and the revised version of the document can be added to an existing HMIRS record. However, the changes to the document might be significant enough that the new revision will need to be entered into an entirely new record, along with the contract number which applies to that document. This usually occurs if the contact information for the responsible party (and thus the CAGE) changes (such as following a relocation), or if the identity and percentages for the chemical ingredients shown on the two documents are not the same (such as in a reformulation). This may cause a situation where there are two or more records with the same NSN and product name. If that occurs, the HMIRS user should add the contract number to the search criteria, since the goal is to have a single record that applies to the exact product supplied by the vendor under that contract.

It is also possible that there could be two or more records with the same NIIN and contract number. This usually occurs when the product is supplied under a long-term or indefinite-delivery contract with multiple delivery orders awarded over an extended period of time, during which a revision to the MSDS is made due to a reformulation, a corrected error or a regulatory change. Or, in some instances, the vendor may have two or more suppliers for the same item, e.g., an alkaline battery obtained from either Duracell or Energizer.

If the delivery order numbers have been entered into the records, then a search using the NSN along with the complete contract number (the basic contract number with the four-digit delivery order number at the end) should return the correct record. If only the basic contract number (without the delivery order number) is available, in order to identify the correct HMIRS record some judgment may be necessary to make a decision based on the age of the material, when it was purchased, the manufacturer of the material and the revision date of the MSDS.

These are examples of what one may encounter if one does not have sufficient experience using HMIRS. If one experiences challenges in locating an HMIRS record for a specific asset, try using one of the tips described above. If that does not help, you can always contact Hazardous Technical Information Services (HTIS) using one of the methods listed on the back of this bulletin. HTIS will assist by determining which record should be used and arranging for additions, corrections or other updates to the system.

#### References:

1. HMIRS at: [http://www.bta.mil/products/bea/iwp/definitions2\\_systementity\\_18202.htm](http://www.bta.mil/products/bea/iwp/definitions2_systementity_18202.htm)
2. 29 CFR 1910.1200, Subtitle B, Chapter XVII, Occupational Safety and Health Administration, Department of Labor.
3. OSHA Letter of Interpretation: 02/18/1999 - Clarification of systems for electronic access to MSDSs.
4. Fed-Std-313, Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities.

## OSHA's New Policy Statement on Employee Training Standards

*By Abdul H. Khalid, Chemical Engineer, HTIS*

In an April 28, 2010 memorandum for Regional Administrators, the Assistant Secretary of the Occupational Safety and Health Administration (OSHA), David Michaels, clarified OSHA's policy on employee training that is required under the agency's training standards. Mr. Michaels also advised employers to provide training to their employees on safety and health aspects at places of employment, in a manner that employees will understand the purpose of the training and how to avoid

occupational injuries and diseases. The regional administrators are to provide enforcement guidance to area and regional offices related to the OSHA's training standards and their implementation. OSHA's training standards policy applies to all of the agency's agriculture, construction, general industry, and maritime training requirements.

According to Mr. Michaels, "workers must be trained in a manner so that they can understand the agency's position that, regardless of the precise regulatory language, the terms 'train' and 'instruct,' as well as other synonyms, must present information in a manner that employees receiving it are capable of understanding."

This memorandum poses great challenges for many employers, and they must instruct their employees using both a language and vocabulary that employees can understand. The full text of this memorandum is available online at:

<http://www.osha.gov/dep/standards-policy-statement-memo-04-28-10.html>.

Some of the suggestions outlined below are for employers to make certain that their employees understand health and safety training, as well as OSHA's training standards and policies.

- Simplify health and safety rules, and if possible in plain English, thereby clarifying OSHA's training requirements in accordance with its training standards.
- Use some written tests and translate where necessary to make sure that the employees understand the information provided, as well as have knowledge of the job assigned and its related safety and health aspects.
- Present training in such a manner that employees understand without any language barriers, and make certain that they understand even if employers have to show training materials with diagrams or pictures.
- Document training to show that the employees are adequately trained, and that they understand all the health and safety aspects of the job they are to perform.
- Evaluate and document that the employee can actually demonstrate how to use personal protective equipment (PPE) such as safety harnesses, respirators, and how to lockout/tag out a piece of equipment.

Employers must examine the standards with respect to their requirements and applicability to workplaces, and be familiar with specific requirements, if needed. Each standard is different and has certain specific requirements.

To assist employers meet their training obligations with a Spanish speaking workforce, OSHA has created a web based Hispanic Outreach Compliance Assistance Quick Start Module. The module contains the following seven steps:

- Step 1: Worker Rights and Employer Responsibilities
- Step 2: OSHA Outreach Resources for Spanish-Speaking Employees
- Step 3: OSHA Spanish-Language Training Resources

- Step 4: Where to Find OSHA Training Requirements and How They Apply to Spanish-Speaking Employees
- Step 5: How to Work Cooperatively with OSHA to Reach Your Employees
- Step 6: Contacts at OSHA for Additional Hispanic Outreach Information
- Step 7: Where to Find Additional Spanish-Language Outreach Materials

While the site includes links to Spanish language resources, it is intended for English speaking and bilingual users. The site is located on OSHA's public website at the following address:

[http://www.osha.gov/dcsp/compliance\\_assistance/quickstarts/hispanic/index\\_hispanic.html](http://www.osha.gov/dcsp/compliance_assistance/quickstarts/hispanic/index_hispanic.html)

**Reference:** OSHA Training Standards Policy Statement, April 28, 2010, website at: <http://www.osha.gov/dep/standards-policy-statement-memo-04-28-10.html>

## OSHA Protects Workers by Implementing a Severe Violator Enforcement Program

*By Ariel Rosa, Environmental Protection Specialist, HTIS*

Every day, about 14 Americans fail to return home to their families from work. Tens of thousands die from workplace disease, and more than 4.6 million workers are seriously injured on the job annually. In an effort to address urgent safety and health problems facing Americans in the workplace, the Occupational Safety and Health Administration (OSHA) has implemented a new Severe Violator Enforcement Program (SVEP), and increased civil penalty amounts.

SVEP is intended to focus OSHA enforcement resources on recalcitrant employers who demonstrate indifference to their responsibilities under the OSH Act. This supplemental enforcement tool includes increased OSHA inspections of worksites, mandatory OSHA follow-up inspections, and inspections of other worksites of the same employer where similar hazards and deficiencies may be present. This program applies to all employers regardless of size and became effective June 13, 2010.

SVEP replaces OSHA Instruction (CPL 02-00-145), Enhanced Enforcement Program (EEP), of January 1, 2008. SVEP targets high-emphasis hazards, including fall hazards as well as specific hazards, such as amputations, combustible dust, crystalline silica, excavation/trenching, lead, and ship-breaking. OSHA identified these targets from selected National Emphasis Programs (NEP).

"For many employers, investing in job safety happens only when they have adequate incentives to comply with OSHA's requirements," said Assistant Secretary of Labor for OSHA, Dr.

David Michaels. Higher penalties and more aggressive, targeted enforcement will provide a greater deterrent and further encourage these employers to furnish safe and healthy workplaces for their employees."

Last year, OSHA assembled a work group to evaluate its penalty policies and found that currently assessed penalties were too low to have an adequate deterrent effect. Based on the group's findings and recommendations, several administrative changes to the penalty calculation system, outlined in the agency's Field Operations Manual, are being made. These administrative enhancements will become effective in the next several months. The penalty changes will increase the overall dollar amount of all penalties, while maintaining OSHA's policy of reducing penalties for small employers and those acting in good faith.

The current maximum penalty for a serious violation, that is, one capable of causing death or serious physical harm, is only \$7,000 and the maximum penalty for a willful violation is \$70,000. The average penalty for a serious violation will increase from about \$1,000 to an average \$3,000 to \$4,000. Monetary penalties for violations of the OSH Act have been increased only once in 40 years despite inflation. The Protecting America's Workers Act (PAWA) would raise these penalties, for the first time since 1990, to \$12,000 and \$250,000, respectively. Future penalty increases would also be tied to inflation. In the meantime, OSHA will focus on outreach in preparation of implementing this new penalty policy.

"Although we are making significant adjustments in our penalty policy within the tight constraints of our law, this administrative effort is no substitute for the meaningful and substantial penalty changes included in PAWA," said Dr. Michaels. "OSHA enforcement and penalties are not just a reaction to workplace tragedies. They serve an important preventive function. OSHA inspections and penalties must be large enough to discourage employers from cutting corners or underfunding safety programs to save a few dollars."

For more information on the penalty policy, visit <http://www.osha.gov/dep/penalty-change-memo.pdf>

**Reference:** <http://www.osha.gov/dep/svep-directive.pdf>.



## Other News

### National Prevention Strategy Should Include Workplace Exposures

By Ariel Rosa, Environmental Protection Specialist, HTIS

On January 11, 2011, the National Prevention Council (NPC) of the American Industrial Hygiene Association (AIHA) provided comments on the Prevention and Health Promotion Strategy, and expressed deep concerns about the lack of consideration for medical conditions caused by workplace exposures.

On June 10, 2010, the President, using Public Law 111-148, created the National Prevention, Health Promotion, and Public Health Council (NPHP&PHC). With Surgeon General Regina Benjamin as its chair, this Council provides coordination and leadership among all executive departments and agencies with respect to prevention, wellness and health promotion practices. With input from the public and interested stakeholders, NPHP&PHC is developing a National Prevention and Health Promotion Strategy known as the National Prevention Strategy (NPS).

The NPS provides an unprecedented opportunity to shift the nation from a focus on sickness and disease to one based on wellness and prevention. It will present the vision, goals, recommendations and action items that public, private, nonprofit organizations and individuals can take to reduce preventable death, disease and disability in the United States.

In reviewing the NPS Strategy, the AIHA was concerned that medical conditions caused by workplace exposures were not taken into consideration. Today, a person who is approximately 60 years old and has worked over 40 years will face the probabilities of the following chronic disease that can be attributed to workplace exposures: musculo-skeletal disorders; hearing loss; lung diseases evidenced on x-ray; chronic obstructive pulmonary disease acute chemical poisoning; cancer; or allergic sensitization.

According to the AIHA, "The medical treatment and disability costs of such occupational illness and injuries place a significant financial burden on our larger health care system, as well as on injured workers and their families.

The AIHA recommended that the Strategy include a Strategic Direction 11 that specifically addresses the critical issue of occupational health, by including recommendations that promote healthy workplaces e.g., free from workplace hazards that impact both the short- and long-term health of workers. The workplace is a critical forum for health promotion and disease prevention.

**Reference:**

1. AIHA: <http://www.aiha.org/>
2. [http://www.healthcare.gov/center/councils/nphpphc/final\\_intro.pdf](http://www.healthcare.gov/center/councils/nphpphc/final_intro.pdf) (The National Prevention Strategy draft, in PDF).



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The HTIS Bulletin is designed to keep DoD personnel informed of technical and regulatory developments on the environmentally safe management of hazardous materials and wastes.

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