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In This Issue

The Complete Material Safety Data Sheet

By Ariel Rosa, Environmental Protection Specialist, HTIS

Today's convenience of the internet service allows manufacturers to use the Internet for distribution of Material Safety Data Sheets (MSDSs) to downstream users. These days obtaining a MSDS from manufacturers has become as simple as visiting their webpage, finding the proper link, looking up the right document clicking and printing. Of course knowing or obtaining the product's name, identity, part number or even the product use from its label prior to navigating the web would help and surely get you there faster.

Having the MSDS posted in the company webpage has its advantages as well as disadvantages. Some companies feel they are meeting all OSHA requirements by having their product's MSDSs posted and readily accessible in the internet for their customers even though at times discrepancies found in their MSDSs might not be "negotiable" when a customer calls the company to report them.

Inaccuracies with information provided on MSDSs are well known to manufacturers, industry, occupational physicians, safety and health staff, etc. The information available in the internet is largely unsubstantiated and not subjected to the same rigorous standards as printed literature in reputable journals.

CASE: I recently assisted a customer who was trying to obtain a MSDS from a private contractor. I found the MSDS corresponding to the product in the company webpage and printed the MSDS but

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noticed the following statement written on the bottom of each page *"Valid on the Date of Printing Only"* followed by the current date. The company's computerized MSDS system automatically updates the printing date accordingly. I thought it was unique since the MSDS did not have a *Preparation Date* and/or *Revision Date* listed within the content. The statement on the MSDS led me to believe that the MSDS will be rendered "***invalid"*** the next day.

Does the MSDS that I found meet the OSHA Hazard Communication Standard (HCS) requirements? Let's revisit the HCS, 29 CFR 1910.1200 to see what the requirements are.

By OSHA's definition, the MSDS is a detailed information bulletin prepared by the manufacturer, importer or supplier of products that contain a hazardous chemical. The MSDS describes the physical and chemical properties, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first-aid procedures, and control measures for a given product

MSDSs provide a comprehensive source of information and are valuable components of the hazard communication program. Information on a MSDS aids in the selection of safe products and helps prepare employers and employees to respond effectively to daily exposure situations as well as to emergency situations.

Regardless of the format used by the preparer a MSDS is required by OSHA to contain the following information:

- Product or chemical identity used on the label,
- Manufacturer's or supplier's name and address,
- Chemical and common names of each hazardous ingredient,
- Name, address, and phone number for hazard and emergency information,
- Preparation or revision date of MSDS,
- The hazardous chemical's physical and chemical characteristics, such as vapor pressure and flashpoint,
- Physical hazards, including the potential for fire, explosion, and reactivity,
- Known health hazards,
- OSHA-permissible exposure limit (PEL), ACGIH threshold limit value(TLV), or other exposure limits,
- Emergency and first-aid procedures,
- Whether OSHA, NTP, or IARC lists the ingredient as a carcinogen,
- Precautions for safe handling and use,
- Control measures such as engineering controls, work practices, hygienic practices, or personal protective equipment required,
- Primary routes of entry, and
- Procedure for spills, leaks, and clean-up.

The preparation and/or revision date in a MSDS is one of OSHA's HCS key elements. Without a preparation date the MSDS lacks regulatory conformity.

It is the manufacturer's responsibility to ensure

that the MSDS is accurate and properly completed. The HCS also requires the employer to ensure that the information contained in each MSDS is complete.

Since my recent experience I have learned that other companies, although having a preparation date printed in the MSDS, chose to add the following statement to their documents: *"The information in this data sheet is to the best of our knowledge correct at the date of printing. The company reserves the right to modify data without notice. The issue of a new data sheet will automatically follow any changes in data. The user should check the date of this sheet and if more than 12 months have elapsed, then the data should only be used after checking with our nearest sale office to establish that they are still valid."* In my estimate, if this MSDS meets all the other requirements then the MSDS is in compliance with OSHA.

Although the internet services allows for manufacturers to meet requirements for providing MSDS information to their customers the MSDS may not meet OSHA requirements. Employers are required to verify that each MSDS received has all the information needed to comply with OSHA guidelines. As an employer, you are entitled to receive this information the first time you purchase the material containing this chemical; new or significant information about the hazard must be reflected in an updated and revised MSDS that the manufacturer or supplier is required to provide with product shipments within 90 days of such a change. Should the manufacturer or supplier fail to provide a MSDS, it is the legal responsibility of the employer to obtain the MSDS as quickly as possible.

CHECKING THE ACCURACY OF MSDSs

What can be done if you suspect that the MSDS that you received is not accurate or complete?

- Ask your Employer: If a MSDS is not accurate, your employer is responsible for obtaining an accurate, complete MSDS. Ask your employer to request a more accurate MSDS from the supplier or manufacturer.
- Contact the Manufacturer: Your employer may contact the manufacturer and ask for a more accurate MSDS.
- Call OSHA: Your state OSHA (if applicable) can check MSDSs and give you more accurate information. Federal OSHA can also require a manufacturer to redo a MSDS if the information is inaccurate or incomplete.
- Call NIOSH: The toll-free number for information about chemical identities, health effects or other information is (800) 232-4636.

The OSHA MSDS Initiative and Sample MSDSs

OSHA is developing an enforcement initiative for compliance officers to review and evaluate the adequacy of MSDSs. Under this program, the Agency will choose a certain number of chemicals, and following the requirements in the HCS, identify some critical elements (phrases, words, etc.) that should appear on an accurate MSDS. Compliance officers would use this information as they encounter these chemicals

at worksites. Where MSDSs are found that do not contain these critical elements, OSHA will notify the manufacturer in writing of the deficiencies or inaccuracies. Manufacturers will be required to correct and update their MSDS. They will then have to respond to OSHA and inform the Agency of the steps taken to correct and update their data sheet. Those manufacturers that fail to respond or do not update their MSDS can potentially be cited under the HCS.

The inaccuracies problem of MSDS is not a new one. Stricter guidelines governing the content, format, readability and accessibility of MSDSs should be implemented not only to protect the manufacturing community but also the customers. Manufacturers should not only be encouraged but required to regularly review their published MSDSs for content accuracy.

Reference:
http://www.osha.gov/dsg/hazcom/enforcementmsdsrequirement.html

DHS Imposes New Security Requirements on High Risk Chemical Facilities

By Abdul H. Khalid, Chemical Engineer, HTIS

The U.S. Department of Homeland Security (DHS) issued an interim final rule (IFR) on high-risk chemicals and their security to control and prevent the intentional misuse of chemicals. The DHS issued the IFR under Section 550 of the Homeland Security Appropriations Act of 2007 to secure certain chemical facilities within the country.

According to this announcement certain high risk chemical facilities are required to complete a "Top-Screening" process if they have any chemical of interest in a quantity greater than its "**Screening Threshold Quantity (STQ)".** About 105 chemicals of interest have a screening threshold quantity as "any amount". For example carbon monoxide (used in calibration) or ethylene oxide (used in sterilization) has STQ as "any amount". **DHS lists 344 chemicals of interest in the draft version of Appendix A of Part 27**. The list of chemicals and their threshold quantities proposed by the DHS is available on the department's website at: http://www.dhs.gov/xprevprot/laws/gc_1166796969417.shtm

Chemical facilities are to prepare Security Vulnerability Assessments (SVAs), which identify the facility's security vulnerabilities, and to develop and implement Site Security Plans (SSPs), which include measures that satisfy the identified risk-based performance standards. It also allows certain covered chemical facilities, in specified circumstances, to submit Alternate Security Programs (ASPs) in lieu of an SVA, SSP, or both. This rule applies to facilities that manufacture or process potentially dangerous chemicals and also to those that store or use potentially dangerous chemicals.

The rule contains associated provisions addressing inspections and audits, recordkeeping, and the protection of information that constitutes Chemical-terrorism Vulnerability Information (CVI). This rule provides the department with the authority to seek compliance through the

issuance of Orders, including Orders Assessing Civil Penalty and Orders for the Cessation of Operations. This regulation became effective June 8, 2007, except for Appendix A to part 27. **A subsequent final rule document will announce the effective date for Appendix A to Part 27.**

References: 1. Federal Register, April 9, 2007, Vol. 72, No. 67, pages-17687-17745. 2. The full text is available at: http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/E7-6363.htm. 3. Chemical Facility Anti-Terrorism Standards Fact Sheet at: http://www.dhs.gov/xprevprot/programs/gc_1177002415803.shtm

DOT Amends Tighter Controls on Oxygen and Oxygen Generators Aboard Aircraft

By Tom McCarley and Abdul Khalid, HTIS

For more than a decade, the US Department of Transportation (DOT) has been developing more stringent rules for the carrying of oxygen cylinders, oxidizing gases and oxygen generators aboard aircraft in the aftermath of the crash of ValueJet Flight 596 in the Florida Everglades on May 11, 1996. Investigators have attributed the actuation of chemical oxygen generators to the start of a fire in the aircraft cargo hole as a probable cause leading to the crash. New, tighter, rules were published in the January 31, 2007 Federal Register and reported to you in the Sep-Oct 2007 HTIS Bulletin. In response to several appeals following the issuance of the January 31, 2007 rule, DOT moved the voluntary compliance date to October 29, 2007 and the mandatory compliance date for several rule amendments to October 1, 2008. A general concern expressed in the appeals was the compliance cost and insufficient time to meet the requirements for outer packaging, marking requirements, and thermal resistance testing.

In a September 28, 2007 Federal Register update, DOT reset the compliance dates and finalized the following changes to the January 31, 2007 rule:

- A delay to the mandatory effective date from October 1, 2007 until October 1, 2008 to require a new limit on the pressure relief device (PRD) settings on cylinders containing compressed oxygen or other oxidizing gases when transported aboard aircraft.,
- A clarification to the thermal resistance test methods for packaging for oxygen cylinders and oxygen generators in Appendix D to 49 CFR 178,
- Inclusion of DOT specification 3E and 39 cylinders among the types of cylinders authorized for the transportation of compressed oxygen and other oxidizing gases aboard aircraft and,
- Allowing a new marking option to ensure easier identification of cylinders equipped with the new Pressure Release Devices and outer packaging meeting the flame penetration and

thermal resistance requirements.

References: 1. Federal Register, Vol. 72, No. 20, pp 4442-4458, January 31, 2007. 2. Federal Register, Vol 72, No. 188, pp 55091-55100, September 28, 2007.

Radioactive Material Shipping and Packaging

Ariel Rosa, Environmental Protection Specialist, HTIS

Radioactive materials (RAM) are used in many products and processes that affect our daily lives. They are used in our hospitals, factories, laboratories and homes. Radioactive materials are commonly used in both the diagnosis and treatment of disease. Very small amounts of radioactive materials are components of some consumer products, such as, some smoke detectors that contain a small amount of radioactive Americium-241 to provide early warning of fires in our homes. Polonium-210 is a radioactive material used to prevent the buildup of static electricity in some photocopiers, thus helping prevent paper jams. Products like plastic wrap, radial tires, and coffee filters are manufactured in factories that use radioactive material. There are many more uses of radioactive materials in our society which provide enormous benefits.

Transporting Radioactive Materials

Two federal agencies (DOT and the NRC) have established strict requirements for the packaging and shipping of radioactive material. These requirements are based on the volume, nature and radioactivity of the material. Both agencies are also responsible for ensuring that U.S. regulations are compatible with International Atomic Energy Agency (IAEA) protocols for international shipments of radioactive materials.

DOT regulates packaging, labeling, shipping papers, personnel training, loading and unloading, handling, and storage, as well as transportation routing and vehicle requirements. The NRC regulates packaging safety to protect workers and the public. The NRC also establishes regulations for protection against diversion of radioactive materials while in transport and regulates the use of radioactive materials.

Radioactive material is transported everyday by highway, rail, air and water. The types of materials transported include: Surface Contaminated Objects (SCO), Low Specific Activity (LSA) materials, Low-Level Waste (LLW), transuranic waste, spent nuclear fuel, high-level waste, and non-waste shipments of radioactive material which may also include such items as radiopharmaceuticals, industrial radiography sources, and fresh nuclear fuel material.

Of almost 400 million packages of hazardous material shipped each year in the United States, radioactive materials account for less than 1 percent. Of these 3 million packages, the vast majority are shipments of radiopharmaceuticals and radioisotopes destined for medical applications in hospitals and medical facilities. Other shipping destinations include industrial, research and manufacturing plants, nuclear power plants and national defense facilities. The use of radioactive material produces radioactive waste that also must be shipped to a disposal site.

Federal Regulations place strict administrative controls on the transport of radioactive material. A worldwide philosophy for

the transport of RAM is that:

- Safety should be primarily focused on the package. Packaging is the first line of defense.
- Package integrity should be directly related to the degree of hazard of the material it contains.

This two-part philosophy means that small quantities of radioactive material (quantities that would present little hazard if released) may be shipped in less secure packages than those containing higher levels of radioactive material.

Radioactive Material Packaging

A radioactive material packaging is a container that is used to safely transport radioactive material from one location to another. In RAM transportation the container alone is called the Packaging. The packaging together with its contents is called the Package. RAM is packaged to ensure that radiation levels at the package surface do not exceed federal regulations.

Careful research and design goes into packaging radioactive materials. RAM is generally shipped in its most stable form. Typically, that means they are shipped as solids. When radioactive liquids and gases are transported additional federal regulations requirements must be met. Therefore, different shipping packaging is required for various types, forms, quantities, and levels of radioactivity.

The basic types of radioactive material packaging are:

Excepted Packaging

Excepted Packaging is designed to survive normal conditions of transport. Excepted packaging are used for the transportation of materials that are either Low Specific Activity (LSA) or Surface Contaminated Objects (SCO) and that are limited quantity shipments, instruments or articles, articles manufactured from natural or depleted uranium or natural thorium. Empty packaging is also excepted (49 CFR 173.421-428).

Excepted packaging can be almost any packaging that meets the basic requirements, with any of the above contents. Excepted packaging is excepted (excluded) from several labeling, and shipping paper requirements; they are however, required to have the letters 'UN" and appropriate four-digit UN identification number marked on the outside of the package.

Industrial Packaging (IP)

There are three categories of industrial packages: IP-1, IP-2, and IP-3. The category of package will be marked on the exterior of the package. IPs are designed to survive normal conditions of transport (IP-1) and at least the DROP test and stacking test for Type A packaging (IP-2 and IP-3). IPs are used for the transportation of materials with very small amounts of radioactivity; Low Specific Activity (LSA) or Surface Contaminated Objects (SCO).

Industrial packaging are usually metal boxes or drums. Requirements for industrial packaging are addressed in 49 CFR 173.411.

Type A Packaging

Type A packaging are designed to survive normal transportation, handling, and minor accidents. They are used for the transportation of limited quantities of radioactive material that would not result in significant health

effects if they were released. Type A packaging may be cardboard boxes, wooden crates, or drums and have an inner containment vessel made of glass, plastic, or metal surrounded with packing material made of polyethylene, rubber, or vermiculite. Type A Packages must withstand moderate degrees of heat, cold, reduced air pressure, vibration, impact, water spray, drop, penetration, and stacking tests. The shipper and carrier must have documentation of the certification of the packages being shipped.

Type A packaging are addressed in 49 CFR 173.412.

Type B Packaging

Type B packaging are designed to transport material with the highest levels of radioactivity. Type B packaging range from small hand-held radiography cameras to huge heavily shielded steel casks transport containers weighting up to 125 tons. Type B packaging must meet severe accident performance standards that are considerably more rigorous than those required for Type A packages. Life-endangering amounts of radioactive materials are required to be transported in Type B packages.

Type B packaging either have a Certificate of Compliance (COC) by the Nuclear Regulatory Commission (NRC) or a Certificate of Competent Authority (COCA) by the Department of Transportation (DOT).

Type B packaging are addressed in 49 CFR 173.413, 49 CFR 173.416 and 10 CFR 71.

Extraordinary Safety Record

Since transport accidents cannot be prevented, the regulations are primarily designed to:

- Insure safety in routine handling situations for minimally hazardous material
- Insure integrity under all circumstances for highly dangerous materials

These goals are accomplished by focusing on the packaging and its ability to:

- Contain the material (prevent leaks)
- Prevent unusual occurrences (such as criticality)
- Reduce external radiation to safe levels (provide shielding)

For over 50 years the nuclear energy industry has transported radioactive materials safely. There has never been a release from a Type B package. When accidents have occurred, no injury or death has resulted from the release of the radioactive materials. In every case, the levels of radioactivity were so low that they presented no hazard to the public or to the workers who cleared the accident scene.

The nuclear energy industry's excellent safety record can be attributed to the following factors;

- Strict requirements for packaging and handling of radioactive materials,
- Extensive testing of the shipping package under normal and accident transport conditions,
- Careful control over the radioactive material being transported, and
- An established system for dealing with any accident

involving radioactive materials.

Reference: 1. http://www.energy.gov/safetyhealth/nuclearsafety.htm
2. http://www.epa.gov/radtown/freight-train.htm
3. http://www.radiationsafetyacademy.com/docs/DOT/DOTramreview.pdf

DOT's Document Aid Airports and Airlines in Communicable Disease Prevention

By Tom McCarley, Chemist, HTIS

Citing ever increasing concern about global travel as a means for the spread of new or reemerging communicable diseases, the Department of Transportation in coordination with the Centers for Disease Control and Prevention (CDC) has published a manual to assist the airline industry, airports, and federal agencies and employees working at our air border stations in their respective roles of being the upfront guard in spotting and preventing dangerous communicable diseases from entering the US. With 130 international airports sending passengers from around the globe to the US daily, it is a daunting task to protect against dangerous communicable disease entry through the airlines.

The 144 page manual entitled "National Aviation Resource Manual For Quarantinable Diseases" is available for download from http://isddc.dot.gov/OLPFiles/OST/013334.pdf .

Of particular concern are the nine diseases for which the government has the authority to isolate and quarantine individuals under the Public Health Service Act:

1. Cholera and suspected cholera
2. Diphtheria
3. Infectious tuberculosis (TB)
4. Plague
5. Smallpox
6. Yellow fever
7. Viral hemorrhagic fevers (Lassa, Marburg, Ebola, Crimean-Congo, South American, and others not yet isolated or named).
8. Severe acute respiratory syndrome (SARS)
9. Influenza caused by novel or re-emergent influenza viruses that are causing, or have the potential to cause, a pandemic.

Although the target for the manual are those working at our international airports, the manual should be of interest to anyone who travel by air.

Reference: US Department of Transportation : "National Aviation Resource Manual For Quarantinable Diseases", December 2006 - http://isddc.dot.gov/OLPFiles/OST/013334.pdf

EPA Approves One-Year Registration of the Soil Fumigant Iodomethane

By Abdul H. Khalid, Chemical Engineer, HTIS

In an October 5, 2007 news release, the U. S. Environmental Protection Agency (EPA) announced that the agency approved a one-year registration of the soil fumigant iodomethane or methyl iodide under the "highly restrictive" usage conditions.

Iodomethane is an alternative to the ozone-depleting pesticide methyl bromide and can be used as a pre-plant soil fumigant to control plant pathogens, nematodes, insects, and weeds on strawberries, tomatoes, peppers, ornamentals, turf, trees, and vines. More

information on iodomethane is available on the EPA's Web site at: http://www.epa.gov/pesticides/factsheets/iodomethane_fs.htm.

According to the EPA, the decision was based on risk assessments conducted over four years, including a review of more than 50 chemical-specific studies on mutagenicity, cancer, birth defects, reproductive effects, neurotoxicity, and respiratory effects.

Methyl bromide has been widely used as an agricultural soil and structural fumigant to control a wide variety of pests. Its production and import was reduced gradually until the phase-out took effect on January 1, 2005 with allowable exemptions because methyl bromide depletes the stratospheric ozone layer and is classified as a Class I ozone-depleting substance. The allowable exemptions are:

- Quarantine and Preshipment (QPS) exemption,
- Elimination of quarantine pests, and
- The Critical Use Exemption (CUE) designed for agricultural users with no technically or economically feasible alternatives.

For further information on this news release, POC is Dale Kemery, phone: 202-564-4355 or e-mail at kemery.dale@epa.gov. For other inquires or questions, contact Doug Parsons, phone: 202) 564-0341 or e-mail at: parsons.douglas@epa.gov.

Reference: EPA's News Releases, October 5, 2007, "EPA Issues One-Year Registration for Soil Fumigant Iodomethane" at: http://yosemite.epa.gov/opa/admpress.nsf/0/5bc83aa27bf1590d8525736b00603808?OpenDocument

EPA's Accelerated Phase-out of HCFCs

By Tom McCarley, Chemist, HTIS

Hydrochlorofluorocarbons (HCFCs) are a class of chemicals that deplete stratospheric ozone and are thus regulated as Class II ozone depleting substances (ODS). Many have been used over the past decade or so as replacement for so-called Class I ODS chlorofluorocarbons (CFCs) which are even more strongly ozone depleting. One of the more familiar of the HCFCs is R-22 (HCFC-22), which is commonly used in household and commercial air conditioners.

Below are the upcoming target dates for phase-out of HCFCs. The phase-out years are termed accelerated because they occur sooner than that initially called for by the historic international treaty, the Montreal Protocol.

Year 2010

No production and no importing of HCFC-142b and HCFC-22, except for use in equipment manufactured before 1/1/2010.

No production and no importing of any HCFCs, except for use as refrigerants in equipment manufactured before 1/1/2020

Year 2020

No production and no importing of HCFC-142b and HCFC-22

Year 2030

No production and no importing of any HCFCs

On June 26, 2007, the EPA announced the availability of a contractor

prepared document, "Changes in HCFC Consumption and Emissions from the U.S. Proposed Adjustments for Accelerating the HCFC Phase-out", prepared by ICF Consulting. That document is available at http://www.epa.gov/ozone/title6/phaseout/HCFC%20Phaseout%20Proposed%20Adjustments%20Analysis_June%202007.pdf for those that want to examine an in-depth analysis of uses and projected phase-out scenarios of HCFCs.

References: 1. Federal Register, Vol. 72, No. 123, pages 35230-2, June 27, 2007.

EPA to Regulate Ion Generators as Pesticides

Submitted by Fred Tramontin and Abdul Khalid, HTIS

On September 22, 2007, the EPA announced that machines that generate silver ions or other substances for pesticidal purposes will be regulated as pesticides.

Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), a product that incorporates a substance or mixture of substances to prevent, destroy, repel, or mitigate pests is considered a pesticide and must be registered. However, a product that uses only physical or mechanical means to trap, destroy, repel or mitigate a pest (including microbial pests), such as a mousetrap, is a device and does not need to be registered. Its production and labeling are regulated.

The notice, published in the Federal Register is the vehicle used to notify manufacturers about the new determination. The EPA will identify the information needed for an application for registration and give those products currently out of compliance time to obtain registration.

The agency was quick to note that this is not an action to regulate nanotechnology. The EPA has not yet received any information that suggests that this product uses nanotechnology. The agency said that it will evaluate any applications to register this type of equipment according to the same regulatory standards as other pesticides.

This bulletin is printed on recycled paper

EPA Updates HFC-134a Recovery and Recycling Equipment Standards

By Tom McCarley, Chemist, HTIS

In a direct final rule of November 9, 2007, the Environmental Protection Agency (EPA) updated its regulations governing mobile air conditioning systems using the refrigerant HFC-134a. The EPA issues direct final rules for those regulations it considers non-controversial, the Federal Register for November 9, 2007 also contains a proposed rule to start the rulemaking clock in case adverse comments are received to the direct final rule.

As older vehicles using ozone-depleting R-12 are relegated to the nation's junkyards and scrap metal operations, a greater preponderance of motor vehicles are using non ozone depleting HFC-134a. Section 609 of the Clean Air Act calls standards for refrigerant handling equipment used by serving technicians to be at least as stringent as those of the Society of Automotive Engineers (SAE). Because SAE

standard J2210 has been replaced by SAE J2788, the EPA has changed its standards at 40 CFR 82.26 – Appendix C to reflect the updated standards.

The direct final rule of November 9, 2007 also updates the addresses to which certifications must be sent based on your locality.

Reference: Federal Register, vol. 72, No. 217, pp63490-9, November 9, 2007

EPA Issues 22nd SNAP Ruling on ODS Substitutes

By Tom McCarley, Chemist, HTIS

On October 4, 2007, the EPA issued its 22nd release of acceptability decisions regarding substitutes for ozone depleting substances (ODS). Alternatives to Ozone-Depleting Substances are regulated by the EPA under Section 612 of the Clean Air Act under a program known as the Significant New Alternatives Policy (SNAP). Substitute chemicals are regulated for all major ODS applications (refrigeration, solvent use, aerosol use, foam-blowing etc.) and are regulated under the SNAP program whether or not the substitute materials have any ozone depletion potential. The EPA wants to ensure the substitutes are acceptable for use based on their safety, health, and environmental attributes

This 22nd general SNAP ruling allows three additional refrigerant/coolant blends to be used for refrigeration and air conditioning. The blends and their allowable uses are:

1. RS-45[R-125/143a/134a/600a (63.2/18.0/16.0/2.8)] is acceptable for use in new and retrofit equipment as a substitute for hydrochlorofluorocarbon (HCFC)-22 in:

- Chillers (centrifugal, screw, reciprocating),
- Industrial process refrigeration,
- Industrial process air conditioning,
- Retail food refrigeration,
- Cold storage warehouses,
- Refrigerated transport,
- Commercial ice machines,
- Ice skating rinks,
- Household refrigerators and freezers,
- Water coolers,
- Residential dehumidifiers, and
- Household and light commercial air conditioning and heat pumps.

RS-45 is a blend of 18.0% by weight hydrofluorocarbon (HFC)-143a (1,1,1-trifluoroethane, CAS ID 420-46-2); 63.2% by weight HFC-125 (pentafluoroethane, CAS ID 354-33-6); 16.0% by weight HFC-134a (1,1,1,2-tetrafluoroethane, CAS ID 811-97-2; and 2.8% by weight R-600a (isobutane, 2-methyl propane, CAS ID 75-28-5). The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has assigned this blend the designation R-434A

2. KDD5 (a proprietary blend) is acceptable for use in new and retrofit equipment as a substitute for HCFC-22 in:

- Chillers (centrifugal, screw, reciprocating),
- Industrial process refrigeration,
- Industrial process air conditioning,
- Retail food refrigeration,
- Cold storage warehouses,
- Refrigerated transport,
- Commercial ice machines,

- Ice skating rinks,
- Household refrigerators and freezers,
- Vending machines,
- Water coolers,
- Residential dehumidifiers,
- Household and light commercial air conditioning and heat pumps,
- Motor vehicle air conditioning (buses and passenger trains only), and
- Non-mechanical heat transfer.

3. R-428A is acceptable for use in new and retrofit equipment as a substitute for R-502, HCFC-22, and refrigerant blends containing HCFC-22, including R-402A, R-408A, R-403B, and R-411B in:

- Retail food refrigeration,
- Cold storage warehouses,
- Refrigerated transport,
- Commercial ice machines, and
- Household refrigerators and freezers.

In addition, R-428A is acceptable for use in new equipment as a substitute for R-403B in Industrial process refrigeration and is acceptable for use in new and retrofit equipment as a substitute for R-502 and HCFC-22 in Ice skating rinks.

R-428A is a blend of 77.5% by weight HFC-125 (pentafluoroethane, CAS ID 354-33-6); 20.0% by weight HFC-143a (1,1,1,-trifluoroethane, CAS ID 420-46-2); 0.6% by weight R-290 (propane, CAS ID 74-98-6); and 1.9% by weight R-600a (isobutane, 2-methyl propane, CAS ID 75-28-5). A common trade name for this refrigerant is RS-52.

As you can see from the above three EPA approvals, the emphasis is the phase-out of common refrigerant hydrochlorofluorocarbon-22 (R-22). Under the current phase-out schedule, production and importation of R-22 will cease on January 1, 2010 in the U.S. for use in equipment manufactured after that date. The final consumption phase-out of R-22 is scheduled for 2030. A report commissioned by the EPA discussing the uses of R-22 and its impending phase-out is at: http://epa.gov/ozone/title6/phaseout/ServicingNeedsRevisedDraftReport_September.2006.pdf

Reference: Federal Register, Vol. 72, No. 192 pp 56628-56632, October 4, 2007

What Are OSHA's Guidelines On Training?

Submitted by Leonard Lambert, HTIS

The Occupational Safety and Health Administration (OSHA) believes that training is an essential part of every employer's safety and health program for protecting workers from injuries and illnesses. Because of this belief, OSHA requires all employers to train their employees on the safety and health aspects of their jobs. Research has shown that workers who are new on the job have a higher rate of accidents and injuries than more experienced workers. If ignorance of specific job hazards or proper work practices is even partly to blame for this higher injury rate, training will help provide a solution. Training in the proper performance of a job is time and money well spent. The employer should regard it as an investment, rather than an expense. This is because an effective safety and health training program can result in fewer injuries and illnesses, better morale

and lower insurance premiums, among other benefits. The Occupational Safety and Health Act of 1970, Section 5(a)(2) requires that each employer "comply with occupational safety and health standards promulgated under this Act," and more than 100 of the Act's standards contain training requirements. Therefore DLA has issued the DLA Safety and Health Training Plan (revised January 2006, see page 7) to implement OSHA training requirements in the DLA work force. Based on employee functions and assignments, the Plan is used to develop a work force that is well-educated and trained in safety and health matters. The DLA Training Center (DTC) provides on-site training to supervisors, using the Plan to identify employee training requirements and entering those in the agency's Learning Management System. They are first focusing on sites working toward OSHA's Voluntary Protection Program (VPP). DTC will contact your local safety office or forward presence to coordinate training at your site.

Training Guidelines

1. Determine if training is needed. The first step in the training process is to determine whether a problem can be solved by training. Ideally, safety and health training should be provided before problems or accidents occur. This training should cover general safety and health rules and work procedures, and would be repeated if an accident or near-miss incident occurred. Problems that can be addressed effectively by training include those that arise from a lack of knowledge of a work process, unfamiliarity with equipment or incorrect execution of a task. Training is less effective for problems arising from a worker's lack of motivation or attention to detail.

2. Identify training needs. The next step is to determine what training is needed. For this, it is necessary to identify what the employee is expected to do and in what ways his or her performance is deficient. This information can be obtained by conducting a job analysis. Employees themselves can provide valuable information on their training needs. Hazards can be identified through the employees' responses to such questions as whether anything about their jobs frighten them, if they feel they are taking risks or if they believe their jobs involve hazardous operations or substances.

3. Identify goals and objectives. Once the training needs have been identified, employers can prepare objectives for the training. For an objective to be effective it should identify, as precisely as possible, what the workers will do to demonstrate that they have learned or that the objective has been reached. They should also describe important conditions under which the individual will demonstrate competence and define what constitutes acceptable performance. For example, rather than using the statement "The employee will understand how to use a respirator," it would be better to say, "The employee will be able to describe how a respirator works and when it should be used."

4. Develop learning activities. Learning activities enable workers to demonstrate that they have acquired the desired skills and knowledge. To ensure that employees transfer the skills or knowledge from the learning activity to the job, the learning situation should simulate the actual job as closely as possible. The determination of

methods and materials for the learning activities can be as varied as the employer's imagination and available resources will allow. The employer may want to use charts, diagrams, manuals, slides, films, transparencies or any combination of these and other instructional aids.

5. Conducting the training. The training should be presented so that its organization and meaning are clear to the employees. In addition to organizing the content, employers must develop the structure and format of the training. The content developed for the program, the nature of the workplace and the resources available will help employers determine the frequency of training activities, the length of the sessions, the instructional techniques and the individuals best qualified to present the information. An effective training program allows employees to participate in the process and to practice their skills and knowledge. This will help to ensure that they are learning the required knowledge or skills and permit correction if necessary. Employees can become involved in the training process by participating in discussions, asking questions, contributing their knowledge and expertise and learning through hands-on experiences and role playing exercises.

6. Evaluating program effectiveness. As one of its critical components, training should have a method of measuring its effectiveness. Evaluation will help employers and/or supervisors determine the amount of learning achieved and whether a worker's performance has improved. The results of the evaluation of the training program can give employers the information needed to decide whether the workers achieved the desired results, and whether the training session should be offered again at some future date.

7. Improving the program. If the training did not give workers the level of knowledge and skill that was expected, it may be necessary to revise the program or provide retraining. A critical examination of the steps in the training process will help employers determine where course revisions are necessary.

For more information on OSHA's training guidelines, including specific guidelines for general industry, download the "Training Requirements in OSHA Standards and Training Guidelines" booklet at www.osha.gov/Publications/osha2254.pdf

OSHA Updates Compliance Inspection Procedures

By Abdul H. Khalid, Chemical Engineer, HTIS

In August 2007, the U. S. Occupational Safety and Health Administration (OSHA) issued its published instructions (Directive Number: CPL 02-02-073) that updated enforcement procedures for compliance officers conducting inspections of emergency response operations.

Compliance Directive C PL 02-02 -073 specifically addresses inspection policies to ensure uniform enforcement of paragraph (q) of the Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), 29 CFR 1910.120 (general industry) and 29 CFR 1926.65 (construction). The instruction covers emergency response operations for releases of, or substantial threats of releases of hazardous substances without regard to the location of the hazard. The full text of compliance directive CPL

02-02 -073 pertaining to emergency response to hazardous substances releases is available on OSHA's Web site at: http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-073.pdf.

According to this directive, the release of chemicals or hazardous substances into a workplace whether caused by an accidental release or by a terrorist event, would **be considered a hazardous materials (HAZMAT) incident.** Emergency responders and employees performing emergency response efforts for such releases would consequently be covered by the HAZWOPER standard.

This directive also explains OSHA's responsibilities under the National Response Plan (NRP), which outlines the federal government's response to attacks and disasters. When OSHA receives a mission assignment to implement the Worker Safety and Health Support Annex under the NRP, OSHA becomes part of the overall management system for the response. Some additional terms were defined and expanded training requirements for emergency responders and other groups such as skilled support personnel. OSHA expects that these instructions will be of great help to other Federal, State, and local personnel who have responsibilities under incident command systems and will assist in emergency response operations. Some of the significant changes are listed below:

- Definition of "First Receivers",
- Issues involving damaged packages during shipping,
- Emergency responder training levels,
- Medical surveillance for emergency responders,
- Computer-based training,
- Updates to citations guidelines, and
- Shelter-in-Place.

For questions involving issues on this directive or other matter, contact the Office of Health Enforcement (OHE), Directorate of Enforcement Programs (DEP), U.S. Department of Labor's (OSHA), Room: N-3119, 200 Constitution Avenue N.W., Washington, D.C. 20210, Phone: 202-693-2100/2190 or fax Phone: (202) 693-1681.

Reference: OSHA Instruction; Directive No. CPL 01-02-073; Effective Date: August 27, 2007, posted on OSHA's web site at: http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-02-073.pdf

OSHA Clarifies Key Definition in Process Safety Management Standard

By Tom McCarley, Chemist, HTIS

It has been over fifteen years since the Occupational Safety and Health Administration (OSHA) finalized its Process Safety Management of Highly Hazardous Chemicals Standard. Based on those fifteen years experience with the standard and in response to a case before the Occupational Safety and Health Review Commission, OSHA has looked at its definition and interpretation of what "on site in one location means" for purposes of determining threshold amounts of regulated chemicals to ascertain applicability of the standard.

The term "on site in one location" means that the Process Safety Management rule applies

when a “threshold quantity (TQ) of a highly hazardous chemical (HHC) exists within contiguous areas under the control of an employer, or group of affiliated employers, in any group of vessels that are interconnected, or in separate vessels that are located in such proximity that the HHC could be involved in a potential catastrophic release, as indicated in the regulatory definition of ``process."

In turn, “process” is defined to mean:

“any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities”. For purposes of this definition, any group of vessels which are interconnected and separate vessels which are located such that a highly hazardous chemical could be involved in a potential release shall be considered a single process.”

The Process Safety Management of Highly Hazardous Chemicals was promulgated on February 24, 1992 and is codified in the regulations at 29 CFR 1910.119; it regulates processes which involve a chemical at or above the specified threshold quantities listed in appendix A 29 CFR 1910.119 or to a process which involves a flammable liquid or gas (as defined in the Hazard Communication Standard at 1910.1200(c)) on site in one location, in a quantity of 10,000 pounds or more.

Reference: Federal Register, Vol. 72, No. 109, pp 31453-7, June 7, 2007

New Policies for Lighters and Electronics

Submitted by Eduardo Alvarado, HTIS

In an effort to concentrate resources for detecting explosive threats, the Transportation Security Administration **(**TSA) has stopped banning common lighters in carry-on luggage. However, torch lighters remain banned in carry-ons. The law became effective on August 4, 2007**.**

Lifting the lighter ban is consistent with TSA's risk-based approach to aviation security. First and foremost, lighters are no longer considered a significant threat. Freeing security officers up from fishing for 22,000 lighters every day (the current number surrendered daily across the country) enables them to focus more on finding explosives, using behavior recognition, conducting random screening procedures and other measures that increase complexity in the system, for deterring terrorists. The U.S. is the only country in the world to ban lighters – all other nations, including Israel and the U.K., do not.

Lighter Timeline

In aviation, terrorists hijacking and diverting planes was the threat for decades. On 9/11, aircrafts were used as weapons, and recent plots have included liquid explosives. Below is a timeline of the evolution of the lighter ban.

- **December 21, 2001** - Richard Reid made a failed attempt to detonate an improvised explosive device in his shoe onboard a Paris to Miami flight. His shoe-bomb device malfunctioned and he was subdued by cabin crew and passengers. He was using matches as an ignition source.
- In an effort to address this threat, TSA soon required travelers to remove their shoes for security screening.

- **December 17, 2004** – The President signed into law the Intelligence Reform and Terrorism Prevention Act of 2004 which, among other measures, requires TSA to add "butane lighters" to its prohibited items list. (Torch lighters have long been prohibited for hazmat reasons.)
- **March 31, 2005** – TSA recognized Congressional intent and added all common lighters to the prohibited items List.
- The United States becomes the only nation in the world to prohibit lighters from carry-on luggage.
- **April, 2005** – Lighters immediately become the number one prohibited item surrendered at checkpoints across the country – at times, almost 39,000 a day.
- **October 4, 2006** Congress passed the Department of Homeland Security Appropriations Act which gives the TSA administrator the discretion NOT to enforce the lighter ban.
- **August 4, 2007** -- Common lighters are no longer banned from carry-ons.

Laptops, Full-size Video Game Consoles and Other Large Electronics

Effective August 4, 2007, laptop computers, full-size video game consoles (for example Playstation®, X-box®, or Nintendo®), full-size DVD players, and video cameras that use video cassettes must be removed from their carrying cases and submitted separately for x-ray screening. Laptop computers and video cameras that use cassettes have long been subject to this policy.

What Needs to be Screened Separately

- Laptops,
- Full-size video game consoles,
- Full-size DVD players,
- Video cameras that use video cassettes, and
- CPAP breathing machines.

Small and portable electronic items do not need to be removed from their carrying cases.

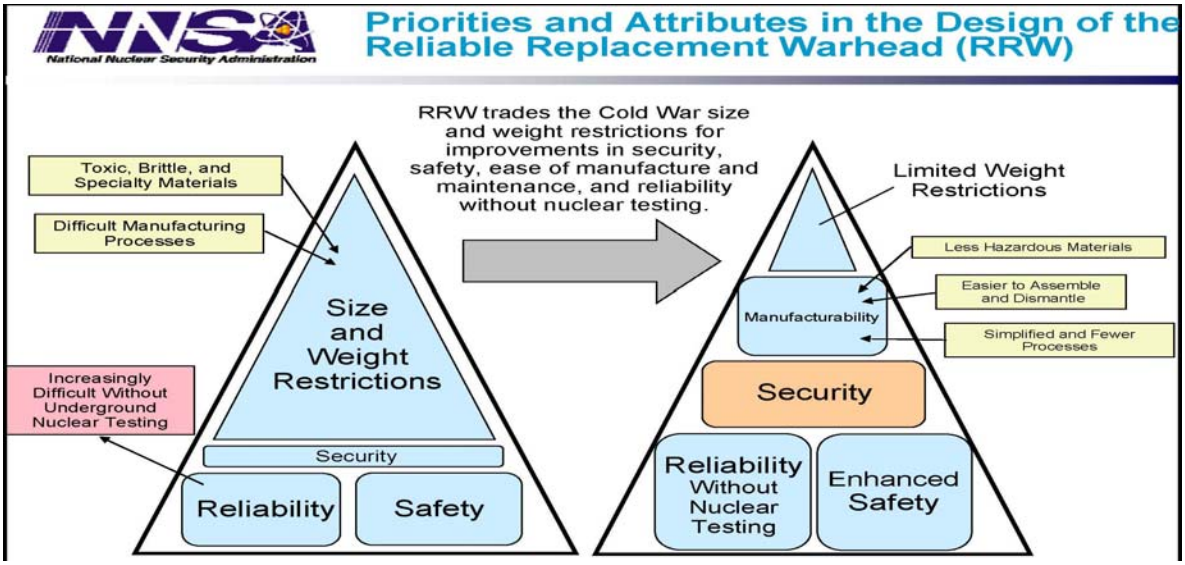
Reference: Transportation Security Administration http://www.tsa.gov/travelers/sop/index.shtm

The Reliable Replacement Warhead Program

By Moraima Lugo-Millán, Chemist, HTIS

The National Nuclear Security Administration (NNSA), which oversees nuclear weapons aspects under the Department of Energy (DOE), is redesigning the nuclear warhead program in order to reduce the number of weapons, and in the same time, provide a safer, more secure, and reliable system for national security purposes. The Reliable Replacement Warhead (RRW) Program will be focused in the transformation of the actual nuclear weapons complex into a more responsive organism for the challenges of the future.

The current stockpile was designed and built during the Cold War era. The skills and technologies needed to restore and maintain these older weapon designs are very difficult to acquire and the materials employed at that time are extremely hazardous. The RRW Program was designed to achieve a smaller deterrent force, reducing not only the number of weapons but the size of the nuclear weapons infrastructure. This program will address the sustainability, safety, security and reliability issues presented with the actual stockpile using modern technology. It promises to eliminate nuclear weapons from stockpile that are no longer needed and reduce the chance of underground nuclear testing. The renovate warhead will be easier to maintain, safer, more secure, and environmentally friendly, while maintaining the same explosive yields and other military characteristics necessaries to prevent terrorism and secure our nation.



The National Nuclear Security Administration (NNSA) ensures that the Reliable Replacement Warhead (RRW) Program will:

- Assure long-term confidence in the reliability of the actual nuclear weapons stockpile,
- Enhance security and prevent unauthorized use by terrorists and criminal organizations,
- Improve the safety of the nuclear weapons stockpile,
- Help to develop a nuclear weapons infrastructure more approachable to future national security needs,
- Enabled a reduced stockpile size,
- Decrease the necessity of underground nuclear testing, and
- Utilize and sustain critical nuclear weapons design and skills.

The NNSA's goal is to reduce nuclear weapons stockpile to 50 percent by the year 2012. The NNSA's future path is to establish, by 2030, a smaller, safer and more secure nuclear weapons stockpile that has assured reliability over the long term, and is backed by the industrial and design capabilities needed to respond to changing technical, geopolitical or military needs, along with national and global security challenges.

References: 1. http://www.nnsa.doe.gov/reliablereplacementwarhead.htm
2. http://www.nnsa.doe.gov/docs/Legacy%20vs%20RRW.pdf
3. http://www.nnsa.doe.gov/docs/factsheets/2007/NA-07-FS-04.pdf
4. http://www.globalsecurity.org/wmd/systems/rrw.htm

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