

# HTIS

Hazardous Technical Information Services

## BULLETIN



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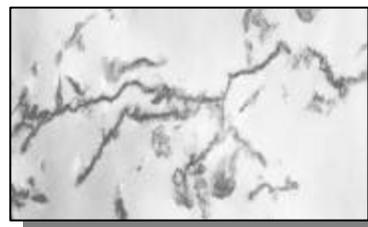
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## Adhesives From Nature: VOC-Free, Non-Structural Adhesives

Robyn Sweitzer  
Principal Engineer,  
Titan Systems Corporation  
EELO, AMSAM-EN

Polymeric adhesives are used in a variety of joining applications. The Army, Navy and Air Force use non-structural adhesives for gaskets, instrument panels, textiles, sealants, and packaging. These adhesives often include toxic volatile organic compounds (VOCs) and pose a significant health hazard. It is estimated that over 1.2 million pounds of adhesive products are purchased on an annual basis by military installations located inside the United States. As the world seeks solutions to environmental problems, the search for strong, environmentally compatible adhesives has turned to such examples of nature as the tenacious adherence of barnacles to rocks. While the properties are spectacular, production of these adhesives on a commercial scale is problematic. Biologically derived adhesives produced by simpler pathways, such as those excreted by

microorganisms are more suitable for commercial development (Figure 1).



**Figure 1 - Bacterial Product**

Elimination of the use of adhesives that contain VOCs can provide the DOD with significant cost savings, generated by minimizing or eliminating costs associated with regulatory requirements for storage, use and disposal of the toxic products currently used in maintenance operations.

The US Army Aviation and Missile Command (AMCOM) Engineering, Environment and Logistics Oversight Office (EELO) has identified a promising new adhesive technology and is currently investigating potential DOD applications in conjunction with the AMCOM Aviation and Materials Directorate Aviation and Missile Research, Development and Engineering Center (AMRDEC). This novel adhesive was discovered by

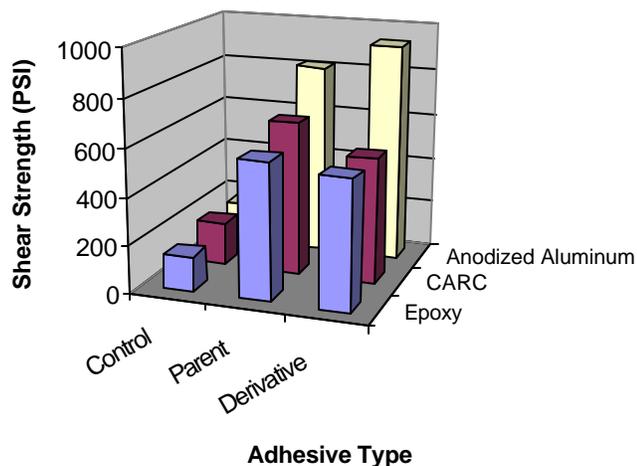
The HTIS Bulletin is designed to keep DOD personnel informed of technical and regulatory developments on the environmentally safe management of hazardous materials and wastes. For technical inquiries, call **DSN 695.5168** or commercial **804.279.5168** or toll free **800. 848.4847**

Montana Biotech Corporation, using funding from the Strategic Environmental Research and Development Program (SERDP). This adhesive is not susceptible to organic solvents, has low flammability, cleans up with ordinary soap and water, and exhibits tensile strength up to 1500 psi on bare aluminum. Derivatization of the parent

compound to develop a family of adhesives with a range of properties to fit various applications has been initiated. In lap shear testing performed at the AMRDEC, adhesively bonded anodized aluminum and aluminum panels coated with epoxy paint and chemical agent resistant paint (CARC) demonstrate adhesive strengths

up to 930 psi. Comparison with a control adhesive, the parent and one derivative is provided in Figure 2. Attenuated Total Reflectance - Fourier Transform Infrared Spectroscopy (ATR-FTIR) indicates that the adhesive composition is largely polysaccharide.

Figure 2- Lap Shear Test Results



Additional strength and temperature/humidity-cycling tests are currently underway at the AMRDEC, Redstone Arsenal. Goals for this testing include verification of the adhesive's strength characteristics, determination of possible failure modes and identification of significant DOD applications.

## New Technologies in Analytical Chemistry: Environmental and Anti-terrorism Service

Tom McCarley  
Chemist, HTIS

At a recent conference on the advances in analytical chemistry, a number of technical presentations were made in advances towards the miniaturization and field "portability" of a new generation of analytical sensors that can be pressed into service for both environmental screening and analysis and the detection of chemical and biological warfare agents. Much of the research has been underway for years and is not necessarily "jumping on the bandwagon" after the tragedies of this past September 11 and the anthrax incidents that followed.

It was scientist and science-fiction writer Arthur C. Clarke who said that "any sufficiently advanced technology is indistinguishable from magic." Quite frankly, much of the current work in analytical chemistry that is marrying chemistry, biology, physics, and microelectronics has a bit of a "magical" flavor for someone (like yours truly) who is not completely conversant in all of the required disciplines. Because

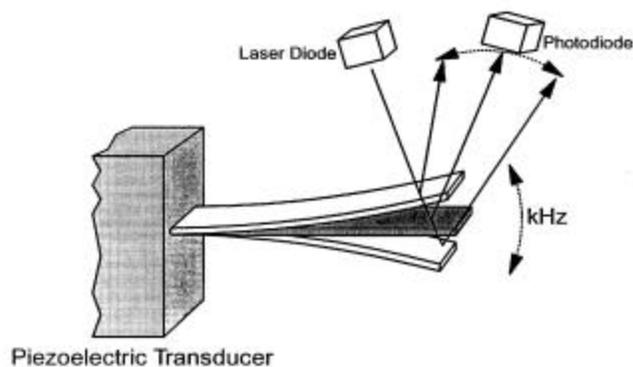
of the required interdisciplinary approach, many of the research efforts are larger scale collaborative approaches and are provided with funding from the Department of Defense (DOD) and the Department of Energy (DOE).

The ideal sensor would detect chemicals and biological agents at very low levels and do it quickly, while utilizing few, if any, consumable chemical reagents and little external power. The balance between sensitivity, selectivity, size, and speed is always a compromise. Soldiers in the field need equipment with as little of a logistics footprint as possible in terms of requiring batteries for power and chemical reagents (with shelf-life concerns) for analysis of life-threatening chemical and biological agents. These issues and many more are being aggressively pursued.

Of the many technologies in terms of the development of a "laboratory on a chip," we will describe but one of interest:

Microelectricalmechanical systems (MEMS) are very small (the size of small paperclip for example) and can utilize a sensor system called a microcantilever. Picture this system as that of a *very small* diving board at a swimming pool. As a person walks onto the diving board, the board is bent down, or displaced, and that movement of displacement can be measured. Now picture the micron-sized microcantilever as absorbing some particular chemical molecule (such as a chemical warfare agent or environmental contaminant). The microcantilever will be displaced, and that displacement, as small as it is, can be measured (usually by a laser beam). The displacement could translate into chemical concentration or some other parameter.

### Schematic of a Microcantilever



The microcantilevers can be fashioned from a wide variety of substances. For example, they could be made of polymers that swell and are displaced when absorbing certain substances. They could be fashioned out of thin layers of metals, or alloys, that surface absorb gases or vapors. And for biological systems, they can be coated with the bioreagents that undergo antigen-antibody reactions. Such MEMS systems are being also looked at in terms of medical diagnosis use and in detecting radioactivity. Further developmental efforts are towards making such systems more foolproof and not as dependent on batteries for a source of power. Already, multiple micro- or nano-cantilevers are being assembled in very small groups called sensor arrays that can detect multiple hazards.

For further information on the breadth of research efforts underway, do a web search on "MEMS" and "microcantilever" utilizing your favorite search engine on the Internet. One of the outstanding research programs in this area is a program at Oak Ridge National Laboratory, which is under the direction of Dr. Thomas Thundat (visit <http://www.ornl.gov/reporter/no17/mine.htm>). We thank Dr. Thundat for his review of this article and for supplying the drawing of the microcantilever concept.

Reference:

Presentations at the 53<sup>rd</sup> Pittcon Analytical Chemistry Conference; March 18-22, 2002.

## OSHA's Hot Weather Tips

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

On May 28, 2002, the US Occupational Safety and Health Administration (OSHA) recommended tips and precautions for employers and workers to prevent heat-related disorders or heat illnesses, such as heat cramps, fainting, heat exhaustion, and heatstroke.

Heat and humidity could be life-threatening because high humidity reduces the amount of evaporation of sweat. According to OSHA, 21 workers died from heat-related illnesses in 2000. If workers and employers would just follow the few simple guidelines below, they can avoid most heat-related injuries and illnesses on the job:

- Encourage workers to drink plenty of water (without salt) - about one cup of cool water every 15 to 20 minutes, even if they are not thirsty. Alcohol, coffee and tea, which contribute to dehydration, should be avoided.
- Help workers adjust to the heat by assigning a lighter workload and longer rest periods for the first 5 to 7 days of intense heat. This process needs to start all over again when a worker returns from vacation or absence due to illness or injury.
- Encourage workers to wear lightweight, loose-fitting, light-colored clothing. Workers should change their clothing should their clothing become completely saturated.
- Use general ventilation and spot cooling at points of high heat production. Good airflow increases evaporation and cooling of the skin. Stagnant atmospheric conditions and poor air quality can induce heat-related illnesses.
- Train first-aid workers to recognize and treat the signs of heat stress. Be sure that all workers know who is trained to render first aid. Supervisors should also be able to detect the early signs of heat-related illness and permit workers to interrupt their work if they become extremely uncomfortable.
- Consider a worker's physical condition when determining fitness to work in hot environments. Obesity, lack of conditioning, pregnancy and inadequate rest can increase susceptibility to heat stress.
- Alternate work and rest periods, with longer rest periods in a cooler area. Shorter, but frequent, work-rest cycles are best. Schedule heavy work for cooler parts of the day and use appropriate protective clothing.
- Certain medical conditions, such as heart conditions, or treatments like low-sodium diets and some medications, increase the risk from heat exposure. Seek a physician's advice in these cases.
- Monitor temperatures, humidity, and workers'

responses to heat at least hourly.

- Learn to spot the signs of heat stroke, which can be fatal. The symptoms are mental confusion and/or a loss of consciousness, a body temperature of 106 degrees, and hot, dry skin. If someone has stopped sweating, seek medical attention immediately. Other heat-induced illnesses include heat exhaustion, heat cramps, skin rashes, swelling and loss of mental and physical work capacity.

DOD personnel interested in further information about OSHA's fact sheet, "Protecting Workers in Hot Environments," can contact OSHA's Publication Office or retrieve the information on-line at <http://www.osha.gov>. OSHA's Heat Stress Card in English/Spanish and single copies of all fact sheets are available by calling OSHA Publications, (202) 693-1888 or by writing to: US Department of Labor/OSHA, OSHA Publications, P.O. Box 37535, Washington, D.C. 20013-7535. More information on heat and sun hazards is available on the Centers for Disease Control and Prevention (CDC) web site at <http://www.cdc.gov/NIOSH> (National Institute for Occupational Safety and Health).

Reference:  
OSHA Trade News Release,  
May 28, 2002 at  
<http://www.osha.gov/media/oshnews/may02/trade-20020528.html>.

## **CAMU Interim Authorization-by-Rule States**

*Tom McCarley  
Chemist, HTIS*

Corrective Action Management Units (CAMUs) is an approach that hazardous waste management facilities can use in performing clean-up activities without invoking all of the requirements of the land-disposal restrictions (LDRs) which can pose an onerous barricade to remediation and clean-up activities. Our original report to you on the CAMU rule was in the Spring 1993 edition (Vol. 3, No. 1) of the HTIS Bulletin.

The original CAMU rule was promulgated in 1993 but an amendment on January 22, 2002 allowed authorized States to be granted interim authorization for installation CAMUs by filing a notification letter to the EPA by March 22, 2002 in accordance with 40 CFR 271.27. Our summary of the CAMU amendments is found in the March-April 2002 HTIS Bulletin (<http://www.dscr.dla.mil/htis/marapr02.htm>).

By notice in the June 4, 2002 Federal Register, the EPA announced that 25 States have met the requirements to oversee the CAMU process with the updated amendments as it now exists. Because the amendments are, in general, considered more stringent, the EPA would have had dual authority for clean-up activities in the 1993 CAMU rule authorized States, which resulted in a potentially confusing disruption to on-going remediation activities.

Those States with updated CAMU Authorization-by-Rules are Alabama, California, Delaware, Florida, Georgia, Illinois, Indiana, Louisiana, Missouri, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, Wisconsin, and Wyoming.

The interim authorization for the CAMU amendments rule became effective April 22, 2002.

### References:

1. Original CAMU rule - Federal Register, Vol. 58, No. 29, pp 8658-8685, February 16, 1993.
2. CAMU Amendments Rule - Federal Register, Vol. 67, No. 14, pp 2962-3029. January 22, 2002.
3. Listing of Authorization-by-Rule States - Federal Register, Vol. 67, No. 107, page 38418, June 4, 2002.

## **TRI Reporting of Lead/Lead Compounds**

*Tom McCarley  
Chemist, HTIS*

In the March-April 2001 edition of the HTIS Bulletin (<http://www.dscr.dla.mil/htis/marapr01.htm>), we notified our readers that under the Toxic Release Inventory (TRI) reporting requirements of the Emergency Planning and Community Right-to-Know Act (EPCRA), the threshold quantities of lead and lead compounds which trigger reporting had been drastically lowered. The first "Form R" TRI reports under the new 100-

pound threshold will be due to the EPA and their respective States on July 1, 2002 for manufacturing, processing, or other use of lead and lead compounds during calendar year 2001. Lead that is contained in stainless steel, bronze, and brass are still covered under the original 10,000 or 25,000 pound thresholds. Lead and lead compounds now fall under the EPA's Persistent, Bioaccumulative and Toxic (PBT) chemical initiative.

In February of 2002, the EPA posted the final guidance document for reporting lead and lead compounds, entitled "Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals: Lead and Lead Compounds." (This document was published in December of 2001 and is identified by document number EPA 260-B-01-027.) A Portable Document Format (PDF) version of this is guidance document is available for downloading at [http://www.epa.gov/tri/guide\\_docs/2001/lead\\_doc.pdf](http://www.epa.gov/tri/guide_docs/2001/lead_doc.pdf). The sections of "Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals: Lead and Lead Compounds" are listed as follows:

1. Introduction
2. Guidance for Determining Whether Reporting Thresholds are Exceeded and Reporting Environmental Releases of Lead and Lead Compounds
3. Qualification for Stainless Steel, Brass, and Bronze Alloys that Contain Lead

4. Sources of Lead and Lead Compounds

5. Release and Other Waste Management Calculations

6. References

The following appendices accompany the guidance document:

A. Additional Information On Stainless Steel, Brass, and Bronze Alloys

B. Selected Questions and Answers

C. Emission Factors Compiled From Various Sources

It is expected that this drastic lowering of threshold values will result in more facilities reporting under EPCRA for lead and lead compounds. Installation EPCRA coordinators will need to review their "lead" situation in light of this.

If you are responsible for EPCRA reporting at your installation, you may wish to download this guidance document and its associated appendices.

Reference:  
"Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals: Lead and Lead Compounds," September 2001:  
[http://www.epa.gov/tri/guide\\_docs/2001/lead\\_doc.pdf](http://www.epa.gov/tri/guide_docs/2001/lead_doc.pdf).



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## Calendar Year 2000 Toxic Release Inventory Data Now On-line

*Tom McCarley  
Chemist, HTIS*

The Environmental Protection Agency (EPA) has posted Toxic Release Inventory (TRI) Data on its web site at <http://www.epa.gov/tri/tridata/tri00/index.htm>. The chemical release data reflects the reports that were submitted by July 2001 for chemical activities of the previous calendar year. This web site gives you access to an executive summary showing nationwide trends, State fact sheets, and a search engine for looking up the reports submitted by government and commercial installations by zip code. Installations that submit TRI reports may wish to look up their own facility to ensure that the public report reflects what is actually submitted. In the year 2000, 23,484 facilities submitted 91,513 TRI forms and reported an aggregate on- and off-site transfer of 7.1 billion pounds of reportable substances.

The year 2000 report is the first under the new lower thresholds for a class of substances known as Persistent, Bioaccumulative, and Toxic (PBT) substances (12.1 million pounds of releases in 2000). Three PBT substances dominated the reporting for PBTs:

- Polycyclic Aromatic Hydrocarbons (PAHs) - 45%
- Mercury and mercury compounds - 36%

- Polychlorinated biphenyls (PCBs) - 12%

The Toxic Release Inventory (TRI) is Section 313 of EPCRA, the Emergency Planning and Community Right-to-Know Act, which was enacted in 1986 as a response to the chemical disaster in Bhopal India and related chemical releases in the US.

Federal facilities were not required to report under the various provisions of EPCRA until former President Clinton issued Executive Order 12856 on August 3, 1993. The main premise of EPCRA is that communities, and the nation-at-large, have a right to know what hazardous chemicals are being stored, manufactured, processed, and used by the nation's commercial enterprises (and since calendar 1994, the nation's military and other government facilities as well). The applicable regulations under EPCRA Section 313 are found at 40 CFR 372.65.

Reference:  
2000 Toxic Release Inventory (TRI) Data at <http://www.epa.gov/tri/tridata/tri00/index.htm>.

## Readiness and Range Preservation Initiative

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

On April 19, 2002, the Department of Defense (DOD) released documents on its readiness and range preservation initiative. These documents clarify and recommend several provisions of environmental laws as they are applied towards the

readiness and range preservation initiative. The environmental laws that are included in the legislative package that was transmitted to Congress are as follows:

- Endangered Species Act
- Marine Mammal Protection Act
- Migratory Bird Treaty Act
- Clean Air act (CAA)
- Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) commonly known as Superfund
- Cooperative Buffer Zone Acquisition Authority
- Conveyance of Surplus Property for Conservation Purpose

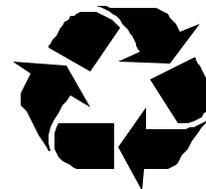
The proposed clarifications or changes to these environmental statutes are a part of DOD's efforts to improve readiness for present and future battles and wars or wars against terrorism. According to the DOD, the proposed clarifications and changes are made to solve some of the training and testing issues that are being dealt with due to new technologies and high-tech weapons at DOD's operational ranges.

The following documents are references for the "Readiness and Range Preservation Initiative:"

- Readiness for the 21st Century: The Readiness and Range Preservation Initiative
- Final Legislative Language as Sent to the Hill
- Final Sectional Analysis as Transmitted
- Readiness and Range Preservation Initiative Summary
- Readiness and Range Preservation Abstract
- Readiness Legislative Summary
- Readiness and Range Preservation Myths and Facts

These documents can be obtained from the Defense Environmental Network and Information exchange (DENIX) at <https://www.denix.osd.mil/denix/denix.html>. A password is required to visit this web site.

Reference:  
Defense Environmental Network and Information eXchange (DENIX) at <https://www.denix.osd.mil/denix/denix.html>.



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## The International Program on Chemical Safety

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

In 1972, the World Health Organization (WHO) undertook the responsibility of finding the harmful effects of chemicals on human health and the environment. In 1980, the International Program on Chemical Safety (IPCS), which is a joint program the United Nations Environment Program (UNEP), the International Labor Organization (ILO) and WHO, was established. WHO is the executing agency of the IPCS.

On April 26, 2002, WHO announced the availability of updated assessments for commonly used chemicals. According to WHO, each assessment undergoes an extensive peer review by internationally selected experts to ensure its completeness, accurate representation of the original data, and validity of conclusions. Five of the chemicals that were assessed are:

- Chlorine dioxide (CAS No. 10049-04-4)
- Formaldehyde (CAS No. 50-00-0)
- N-Nitrosodimethylamine (CAS No. 68-12-2)
- Acrylonitrile (CAS No. 107-13-1)

- Diethyleneglycol dimethyl ether (CAS No. 111-96-6).

(Summaries of these chemicals can be found at [http://www.who.int/pcs/cicad/docs/cicad\\_progress\\_report.htm](http://www.who.int/pcs/cicad/docs/cicad_progress_report.htm).)

The assessments summarize relevant scientific information concerning the potential effects of chemicals on human health and the environment. The assessments provide information on the hazards of certain chemicals and the doses at which health problems may occur. The chemical safety program also includes examples of exposure estimations and risk characterization to help authorities make decisions based on locally measured or predicted exposure scenarios.

DOD personnel can visit Concise International Chemical Assessment Documents (CICADs) at [http://www.who.int/pcs/pcs\\_pubs.html](http://www.who.int/pcs/pcs_pubs.html) or at [http://www.who.int/pcs/pubs/pub\\_cicad.htm#](http://www.who.int/pcs/pubs/pub_cicad.htm#).

Reference:  
World Health Organization (WHO) at <http://www.who.int/pcs/index.htm>.

## Fact Sheets: Project SHAD

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

Project SHAD stands for Shipboard Hazard and Defense. It is a part of the Department of Defense (DOD) joint service chemical and biological warfare

test program conducted on six Cold War-era chemical and biological warfare tests.

This project includes chemical and biological tests that are designed to identify the vulnerabilities of US warships to attacks with chemical or biological warfare agents. Most of the information about these tests are classified, but DOD is trying to declassify some of the relevant information from a medical point of view because the information is needed by the Department of Veterans Affairs to respond to claims of exposure to chemical and biological warfare agents.

On May 23, 2002, DOD released detailed fact sheets on six Cold War-era chemical and biological warfare tests. According to a DOD news release regarding the six tests, three of the tests employed live nerve agents, one used a live biological agent, and one used a stimulant that was found to be hazardous, while the sixth test employed a non-hazardous stimulant. A list of personnel assigned to the ships and units involved, including information on these tests, were provided to the Department of Veterans Affairs.

An investigative team located and searched records to identify which ships and units were involved in the tests, when the tests took place, and to what substances their crews and other personnel may have been exposed. This required the declassification of test-related ship and personnel information, without the release of military information that remains classified for valid operational security reasons. The SHAD

tests were intended to show the vulnerability of Navy ships to chemical and biological warfare agents. By learning how the agents would disperse, military planners could improve procedures to protect crewmembers and decontaminate ships.

At present, DOD's investigation into SHAD tests continues, and additional fact sheets will be released when more is known. Veterans who believe they were involved in SHAD tests and desire medical evaluations should call the VA's Helpline at (800) 749-8387.

DOD personnel interested in SHAD fact sheets may access them on line at [http://deploymentlink.osd.mil/current\\_issues/shad/shad\\_intro.shtml](http://deploymentlink.osd.mil/current_issues/shad/shad_intro.shtml).

Reference:  
DOD News: DOD Releases  
Project SHAD Fact Sheets:  
[http://www.defenselink.mil/news/May2002/b05232002\\_bt264-02.html](http://www.defenselink.mil/news/May2002/b05232002_bt264-02.html).

## Guidance on Packaging and Shipper Responsibilities

*Tom McElwee  
Environmental Protection Specialist,  
HTIS*

The Department of Transportation (DOT) Office of Research and Special Programs (RSPA) has published a Special Notice in the Federal Register on May 13, 2002 (Volume 67, Number 92) (NOTICE 02-05), entitled, "Hazmats: Advisory

Guidance on Packaging and Shipper Responsibilities."

The summary to the notice reads as follows:

**"This advisory document is to remind shippers of hazardous materials in commerce, particularly by aircraft, of their responsibilities to properly identify, package, and communicate the hazards of those materials in conformance with the Hazardous Materials Regulations. The intent of this action is to enhance the safety of hazardous materials in Transportation."**

This notice can be accessed on-line at <http://hazmat.dot.gov/rulemake.htm> - misc.

Many incidents result from noncompliance with the requirements in the Hazardous Materials Regulations (HMR). They frequently stem from a shipper's lack of awareness of the HMR's requirements, rather than a deliberate violation. The safety of hazardous materials in transportation depends on persons engaged in day-to-day transportation-related activities making a concerted effort to comply with the HMR.

HTIS strongly urges all persons involved in the packaging and offering of hazardous materials to access this document and carefully examine all of their procedures to ensure compliance.

Reference:  
Federal Register: May 13, 2002, Volume 67, Number 92, Rules and Regulations, pp 31974-31978.

## Hazardous Material Indicator Codes

*Tom McElwee  
Environmental Protection Specialist,  
HTIS*

HTIS receives frequent questions concerning National Stock Numbers (NSNs) that have a Hazardous Material Indicator Code (HMIC) code of "Y" but when reviewed by the user, are determined not to be hazardous.

There is a misunderstanding in the field that a "Y" entry in the HMIC field means that the NSN is hazardous. THIS IS NOT TRUE. A "Y" entry indicates ONLY that technical data (i.e., MSDSs, Product Spec Sheets, etc.) pertaining to the NSN are available in the Hazardous Materials Information Services (HMIS) (now called the Hazardous Materials Information Resource Service (HMIRS)) and that information may or may not indicate that the NSN is hazardous.

The HMIC code is merely an indicator as to whether MSDS data are available in the HMIRS or the possibility of an MSDS being required, based on the Federal Stock Class (FSC) being listed in Table I or II of Federal Standard 313. It should be noted that there is no HMIC code to show an item as being hazardous or non-hazardous because that is not the purpose of the HMIC field.

There is also the distinct possibility that a product that produced by multiple manufacturers (based on a performance specification) can be either hazardous or non-hazardous, depending on the

unique formulation of the manufacturer. The requirement for an MSDS is dependent on a hazard determination of the supplier or the intended end use of the product.

A more accurate indicator of an NSN's nature is the 2-position Hazardous Characteristic Code, which is defined in Appendix B of the Joint Service Publication, "Storage and Handling of Hazardous Materials," DLAI 4145.11, TM38-410, NAVSUP PUB 573, AFJMAN 23-200 and MCO 4450.12A. This instruction may be accessed at <http://www.dlaps.hq.dla.mil/i414511.pdf>. Also the HMIC Code and the HCC Code appear in Segment A of the Total Item Record (TIR).

Below is a direct copy of the definitions of the HMIC codes as represented in DOD 4100.39-M, Volume 10, CHAPTER 4, TABLE 179:

DOD 4100.39-M  
Volume 10  
CHAPTER 4  
TABLE 179  
HAZARDOUS MATERIAL  
INDICATOR CODES

A table of codes instructing the user on the type of hazardous material when required.

Code: Y  
Definition: Indicates information is in the Hazardous Materials Information System (HMIS).

Code: D  
Definition: Indicates there is no information in the HMIS; however, the NSN is in an FSC in Table I of Federal Standard 313 and an MSDS should be available to the user.

Code: P  
Definition: Indicates there is no information in the HMIS; however, the NSN is in an FSC in Table II of Federal Standard 313 and an MSDS may be required by the user. The requirement for an MSDS is dependent on a hazard determination of the supplier or the intended end use of the product.

Code: N  
Definition: Indicates there is no data in the HMIS and the NSN is in an FSC that is not generally suspected of containing hazardous materials.

#### NOTES:

1. HMIC code input restricted to Defense Logistics Information Service (DLIS) and Defense Supply Center Richmond (DSCR).
2. Mandatory data element for all items except FSC 11 and/or an Item Name Code of 97991 or 07991. The HMIC is not permitted on nuclear ordnance items.
3. HMIC cannot be deleted, only added or changed by Document Identifier Codes (DIC), LAD (DLIS) or LCD (DSCR).
4. See Volume 12, Data Record Number (DRN) 0865.
5. Items with an Item Name Code of 07991 do not require HMIC code.

Having indicated all of the above, HTIS is still very much aware of the confusion in the field caused by the HMIC codes as they exist today. Personnel wishing to draft and submit a Systems Change Request (SCR) to amend the definitions of, or add additional codes to the manual, should forward the SCR to DLIS-S, Attn: A. Sharpe, 616-961-4446.

References:  
1. DOD 4100.39-M  
2. DLAI 4145.11

## DOD Issues New Environmental Policy

*Tom McCarley  
Chemist, HTIS*

The Department of Defense (DOD) has recently announced an important step forward in its approach to environmental stewardship by issuing a policy requiring the implementation of Environmental Management Systems (EMS). The policy calls for a systematic integration of environmental management into all missions, activities, and functions of DOD. The policy requires current processes to be continually reviewed to identify better ways to reconcile national defense and environmental stewardship missions. In taking this step, DOD is re-emphasizing its commitment to the environment and its position that simply complying with environmental laws and regulations is not enough.

EMS is not a new requirement: it is a change in management practices. DOD's approach is to adapt existing management processes so it can systematically identify and reduce the environmental risks that are inherent in mission activities. This systematic approach is intended to make compliance with environmental laws simpler, less costly, and a routine part of mission planning and execution. DOD believes that EMS will enhance mission performance while it

reduces environmental costs and liabilities. "Balancing our training and operational needs with the demands of sound environmental stewardship is an increasingly complex challenge, one in which we must succeed to accomplish our mission," said Deputy Under Secretary of Defense for Installations and Environment Raymond DuBois. "Environmental management systems are a proven tool for defining and achieving this balance," he said.

EMS is a recognized best management practice that is currently being implemented by leading corporations worldwide. In industry, it is recognized as a more effective management approach than traditional environmental compliance-based approaches, because it helps to align business and environmental goals. DOD will use EMS to align defense mission and environmental goals.

The White House supports DOD for adopting this policy. "EMS is an important part of President Bush's management and stewardship agenda," said White House Council on Environmental Quality (CEQ) Chairman James L. Connaughton. "I applaud the Department of Defense for being a leader in EMS and for taking this step today," he said.

The new DOD policy is available on the Internet at [https://www.denix.osd.mil/denix/Public/Library/EMS/Documents/dod\\_ems-040502.pdf](https://www.denix.osd.mil/denix/Public/Library/EMS/Documents/dod_ems-040502.pdf).

Reference:  
Defense Link:  
[http://www.defenselink.mil/news/Apr2002/b04232002\\_bt201-02.html](http://www.defenselink.mil/news/Apr2002/b04232002_bt201-02.html).

## EPA Proposes RCRA Burden Reduction

*Tom McCarley  
Chemist, HTIS*

Over the past few years, the Environmental Protection Agency (EPA) has been reviewing the regulatory burden of the hazardous waste regulations under the Resource Conservation and Recovery Act (RCRA). With over 20 years of experience with the hazardous waste regulations and their implementation, the EPA believes that they have identified several areas where the regulations are overly burdensome.

In a proposed rule that was published on January 17, 2002, the EPA outlines several areas of regulatory burden reductions that they hope can be implemented without any compromise to RCRA's goal of protecting human health and the environment. Several of these changes, for example, is the reduction in the frequency of tank and container inspections, which will be of significant benefit to our military installations and their environmental staffs. If fully implemented, the EPA estimates saving 929,000 hours across the regulated community (total estimated burden of the RCRA regulations is given as 12,600,000 hours). Some of the proposed changes are:

- Major reductions in the paperwork burden of RCRA. The EPA is examining the need for 334 different types of notifications, reports, certifications, etc.,

under RCRA. A major portion of the proposed rule discusses changes that could be made to the paperwork burden.

- Reduce the self-inspection frequencies for hazardous waste tanks from daily to weekly.
- Allow facilities the opportunity to adjust the frequency of their self-inspections on a site-specific basis for containers, containment buildings, and tanks (in addition to moving their inspection frequency from daily to weekly).
- Drop the RCRA training requirements and have facilities comply with OSHA's emergency response training requirements instead.
- Streamline the land disposal restrictions (LDR) paperwork requirements.
- Eliminate treatability study reports.
- Streamline groundwater monitoring requirements.
- Encourage consolidation of facility contingency plans, as required, by various environmental statutes.
- Allow Certified Hazardous Materials Managers (CHMMs) to make RCRA

certifications where required (regulations currently specify that only registered professional engineers be used).

- Reduce the record retention time for operators of burners and industrial furnaces (BIFs) to 3 years.

We await the final rule to see what relief from the "RCRA Burden" will actually occur. Certainly Defense Reutilization and Marketing Office (DRMO) facilities that handle hazardous waste, as well as military bases which are large quantity generators, and those holding storage/treatment/disposal permits, would benefit the most. However, the big *IF* in the case of RCRA regulations is the stance that authorized States will take on any relaxation of RCRA regulations and requirements.

If you are responsible for EPCRA reporting at your installation, you may wish to download this document and its appendices from the EPA's web site at <http://epa.gov/tri/report/index.htm>.

The author expresses a sincere "thanks" to Mr. Ronald Scherer at the Defense Reutilization and Marketing Service headquarters for his thoughts and analysis of this proposed rule.

Reference:  
TRI Reporting guidance at <http://epa.gov/tri/report/index.htm>.

## INFO ON THE WEB

### EPA's New Website: The RCRA Brownfields Prevention Initiative

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

On April 11, 2002, the US Environmental Protection Agency (EPA) initiated a new web site called the *Resource Conservation and Recovery Act (RCRA) Brownfields Prevention Initiative*. This new web site will promote the cleanup and re-use of brownfield properties across the nation that are regulated under RCRA.

The EPA started RCRA's Brownfields Prevention Initiative on June 11, 1998. The main goal of this web site is to encourage the re-use of potential RCRA brownfields so that the land would serve the needs of the community either through more productive commercial or residential development or as greenspace (undeveloped property). A potential RCRA brownfield is a RCRA facility that is not in full use. The real concerns are the actual or potential contamination, legal liability, and RCRA requirements before such sites are brought to their full use.

RCRA gives the EPA the authority to control hazardous waste from "cradle-to-grave," including generation, treatment, storage and disposal. The RCRA Brownfields Prevention Initiative includes the preservation of these greenspaces, the cleanup of contamination, the revitalization of communities destroyed by brownfields and increased

greenspace in communities. For more information about this initiative, DOD personnel can visit the following web sites:

1. EPA's Brownfields Economic Redevelopment Initiative:  
<http://www.epa.gov/swerosps/bf/>.
2. EPA's UST Fields Initiative:  
<http://www.epa.gov/swerstl/ustfield/index.htm>.
3. EPA's Superfund Redevelopment Initiative:  
<http://www.epa.gov/superfund/>.

Further information is also available from the EPA's Brownfield Initiative Office by calling (202) 260-4039 or by FAX at (202) 260-6606.

Reference:

RCRA Brownfields Prevention Initiative web site at <http://www.epa.gov/swerosps/rcrabf/index.html>.

### NIOSH New Publication: Guidance For Protecting Building Environments

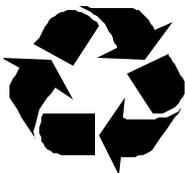
*Abdul H. Khalid, PhD  
Chemical Engineer, HTIS*

On May 10, 2002, the US Department of Health and Human Services (DHHS) National Institute for Occupational Safety and Health (NIOSH) issued a guidance document entitled "Guidance for Protecting Building Environments From Airborne

Chemical, Biological, or Radiological Attacks" (publication No. 2002-13). This document provides guidance and quick references for building owners and facility managers on how to **implement and enhance occupant protection from airborne chemical, biological, or radiological (CBR) attacks.** (Higher risk facilities such as industrial facilities, military facilities, subway systems, and law enforcement facilities require special considerations and are not discussed in this manual.)

"Guidance for Protecting Building Environments From Airborne Chemical, Biological, or Radiological Attacks" identifies action areas such as physical security, ventilation, filtration, maintenance, administration, and training. DOD facility managers and maintenance personnel can seek information from this publication and take preventive measures against potential hazards that are associated with chemical, biological, or radiological contaminants and mitigate the impact of terrorist threats. DOD personnel can access this document from NIOSH at <http://www.cdc.gov/niosh/bldvent/2002-139.html>.

Reference:  
NIOSH:  
<http://www.cdc.gov/niosh/bldvent/2002-139.html>.



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## **New CAMEO Software Available for Emergency Planners and Responders**

*Tom McCarley  
Chemist, HTIS*

The Environmental Protection Agency has announced that a new version of the Computer Aided Management of Emergency Operations software (CAMEO) is now available for download at <http://www.epa.gov/ceppo/cameo>. (This web site is a joint effort between the EPA and the National Oceanic and Atmospheric Administration (NOAA)).

After the tragic events of September 11, 2001, emergency planning for chemical or other toxic releases has taken on much increased attention and urgency, and CAMEO is one of the primary modeling tools for use by emergency planners and responders.

CAMEO is a suite of three integrated software applications: CAMEO, MARPLOT®, AND ALOHA®. This suite of software applications is used in the planning of, and response to, chemical emergencies. It is sponsored by the EPA's Chemical Emergency Preparedness and Prevention Office (CEPPO) and NOAA's Office of Response and Restoration. CAMEO allows emergency planners and responders to perform critical evaluations with respect to the development of emergency plans, or in an emergency to plan, for evacuations in a real chemical emergency. CAMEO is also used by regulators and

environmentalists in examining environmental justice issues and other issues that are related to the Emergency Planning and Community Right-to-Know Act (EPCRA). CAMEO contains a database of some 6000 chemicals and 80,000 synonyms and is available for both users of Microsoft Windows software and Macintosh computers. The Three software programs are described as follows:

### **MARPLOT® - Mapping Applications for Response, Planning, and Local Operational Tasks**

MARPLOT® is the mapping application. It allows users to "see" their data (e.g., roads, facilities, schools, response assets), display this information on computer maps, and print the information on area maps. The areas contaminated by potential or actual chemical release scenarios also can be overlaid on the maps to determine potential impacts. The maps are created from the US Bureau of Census TIGER/Line files and can be manipulated quickly to show possible hazard areas.

### **ALOHA® -Areal Locations of Hazardous Atmospheres**

ALOHA® is an atmospheric dispersion model that is used for evaluating the releases of hazardous chemical vapors. ALOHA® allows the user to estimate the downwind dispersion of a chemical cloud based on the toxicological and/or physical characteristics of the released chemical, atmospheric conditions, and specific circumstances of the release. Graphical outputs include a "cloud footprint"

that can be plotted on maps with MARPLOT® to display the location of other facilities storing hazardous materials and vulnerable locations, such as hospitals and schools. Specific information about these locations can be extracted from CAMEO information modules to help make decisions about the degree of hazard posed.

### **CAMEO - Computer Aided Management of Emergency Operations**

CAMEO contains a chemical database of over 6,000 hazardous chemicals, 80,000 synonyms, and product trade names. CAMEO provides a powerful search engine that allows users to find chemicals instantly. Each one is linked to chemical-specific information on fire and explosive hazards, health hazards, firefighting techniques, cleanup procedures, and protective clothing. CAMEO also contains basic information on facilities that store chemicals.

Additionally, there are templates where users can store EPCRA information. CAMEO connects the planner or emergency responder with critical information to identify unknown substances during an incident.

### **Hardware/Software Requirements**

#### *CAMEO for Windows*

- IBM or Compatible 486 (Pentium recommended)
- Microsoft Windows 95/98/NT
- VGA Color Monitor

- 8 MB RAM (16 MB recommended)
- 50 MB free hard disk space

#### *CAMEO for MAC 4.5*

- Hypercard
- 5 MB RAM
- System 7.x 50 MB free hard disk space
- Math co-processor for ALOHA® (not required for Power PCs)

### **Ordering CAMEO**

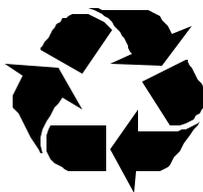
You may order a free copy of the most recent version of the CAMEO on the Internet.

### **Contacts**

For more information on emergency preparedness, planning, and prevention programs mentioned in this article contact: Emergency Planning and Community Right-to-Know Hotline Monday through Friday 9 AM to 6 PM EST (800) 424-9346, (703) 412-9810, (800) 535-7672 TDD, or on-line at: [www.epa.gov/ceppo](http://www.epa.gov/ceppo).

#### Reference:

1. CAMEO software announcement at <http://www.epa.gov/ceppo/cameo/>.



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## **EPA's New Rule on Handling Cathode Ray Tubes**

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

On May 17, 2002, the US Environmental Protection Agency (EPA) Administrator, Christie Whitman, signed a proposed rule to regulate the disposal and recycling of cathode ray tubes (CRTs), which are contained in computer monitors and television sets. This rule will be published in the Federal Register soon. **The proposed rule sets Federal guidelines for when a CRT is considered hazardous and how the recovered parts would have to be labeled. It is an important step in dealing with the life span of electronic equipments.** Mercury-containing devices are a part of the "Federal Universal Waste" rule. This new proposed rule streamlines the hazardous waste management rules for used CRTs and glass removed from CRT-containing products that are removed from television sets and computer monitors. It is expected that it would promote better collection and management of products that contain mercury.

Currently, CRTs and mercury-containing devices are regulated under the Resource Conservation and Recovery Act (RCRA) rules for hazardous waste management, provided that waste items are categorized as originating from household use or from a conditionally exempt small-quantity generator.

CRTs are a major source of lead and mercury that can be found in the nation's waste stream. The proposed rule will ease the steps taken towards their disposal and how to deal with the growing electronic waste stream. According to the EPA, the purpose of this proposed rule is to classify the used products and to see whether or not CRTs can be recycled. Under this rule, most CRT products would be exempt from RCRA **unless they are being thrown away**. Those who use their computers at home can now send them for recycling when they wish to dispose of them without RCRA protocol.

The EPA has implemented new procedures for publishing public comments. The new system will allow the EPA to publish public comments on its web site within 48 hours from the receipt of comments and a 60 to 90 day comment period before the EPA takes any final action on these comments. **This is the right time for DOD environmental personnel to bring anything to the EPA's notice for their consideration before this rule is finalized.**

For further information, DOD personnel can contact Marilyn Goode of the EPA by phone at (703) 308-8800 or by e-mail at [goode.marilyn@epa.gov](mailto:goode.marilyn@epa.gov).

Reference:  
DENIX:  
<https://www.denix.osd.mil/denix/denix.html>.

## HTIS TIDBITS

### PSN Omitted From 49 CFR 172.101 Table

*Tom McElwee  
Environmental Protection Specialist,  
HTIS*

The proper shipping name Batteries, Wet, Filled With Alkali, Electric Storage, 8, UN 2795 was inadvertently omitted from the current edition of the table in 49 CFR. It will be reinserted in the next update and remains a good PSN. The DOT addressed this in a letter of interpretation dated January 11, 2002 (Ref. No. 01-0256).

### ITRC Documents Cleanups at Radioactively Contaminated Sites

*Beverly Howell  
Industrial Hygienist, HTIS*

The DOE, NRC, EPA Superfund, and DOD currently maintain numerous sites that are potentially contaminated with radionuclides. Many of these contaminants have very long half-lives and can adversely affect human health and the environment - even when not in direct contact - so cleanup of these sites remains a priority.

In an effort to increase consistency in the cleanup level development process and ultimately improve remediation of these sites, a State-led team has compiled case studies from 12 radiologically-contaminated sites into a document entitled "Determining Cleanup Goals at Radioactively Contaminated Sites: Case Studies." This

document discusses the background, history and nature of contamination, remedial actions that have occurred, and contact information. The first press run was quickly exhausted, but a second printing is anticipated and is currently available on-line at <http://www.itrcweb.org>.

The Interstate Technology Regulatory Council (ITRC) publication asserts that cleanup levels vary from site to site due to differences in physical settings, regulatory authorities, land-use assumptions, risk assessment methodologies, etc. The report concludes that the differences in cleanup levels can be understood only by understanding the context in which the decisions in each cleanup level development process were made. A common understanding among States, stakeholders, sites, and agencies of how various cleanup levels have been or could be derived, should make that process more efficient, defensible, and consistent.

In conjunction with the US EPA, the ITRC Radionuclides team is developing an updated radiation risk assessment training module, which will be offered initially on the Internet. For more information on the ITRC's Radionuclides Team initiatives, contact Carl Spreng, Colorado Department of Public Health and Environment at [carl.spreng@state.co.us](mailto:carl.spreng@state.co.us).



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### **EPA Updates the Pesticide Product Label System (PPLS)**

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

Recently, the US Environmental Protection Agency (EPA)'s Office of Pesticide Programs (OPP) has updated and approved the Pesticide Product Label System (PPLS). It is a collection of images, in a multi-page TIFF format under Section 3 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The collection contains the initially approved label for pesticide products registered under FIFRA Section 3 as well as subsequent versions of labels, which have changed by amendment or notification. DOD personnel can access the PPLS from the EPA at [http://www.epa.gov/pesticides/pest\\_labels/index.htm](http://www.epa.gov/pesticides/pest_labels/index.htm).

Reference:  
Pesticide Product Label System (PPLS), EPA:  
[http://www.epa.gov/pesticides/pest\\_labels/index.htm](http://www.epa.gov/pesticides/pest_labels/index.htm).

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BG James P. Totsch, USAF

Director, Product Development  
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Chief, Standardization & Hazardous Materials Information Division  
Allen J. Osborne

Chief, Hazardous Technical Information Services Branch  
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Fred J. Tramontin, Ph.D.

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