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In This Issue

Worldwide Hazard Communication System for the Classification and Labeling of Chemicals Urged

Tom McCarley, Chemist, HTIS

In 1992, the United Nations (UN) Conference on the Environment and Development recommended that *"A globally harmonized hazard classification and compatible labeling system, including national safety data sheets and easily understood symbols, be available, if feasible, by the year 2000*".

After more than ten years, work has been completed in a document calling for such a worldwide "hazard communication" system with internationally recognized hazard symbols and material safety data sheets in a common format. The complete document, "Globally Harmonized System of Classification and Labeling of Chemicals (GHS)" is available for downloading in sections at http://www.unece.org/trans/danger/publi/ghs/officialtext.html. Such an international harmonization for chemical hazard communication corresponds with the international system for hazardous materials in transport that is currently in use and has been practiced for over a decade.

The International system for information on chemical safety and health was adopted Dec 11-13, 2002 in Geneva, Switzerland with the U.S. Occupational Safety and Health Administration (OSHA) participating in the discussions and formulation of the GHS.

GHS is intended:

- To be a common and coherent approach to

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defining and classifying hazards, and communicating information on labels and safety data sheets,

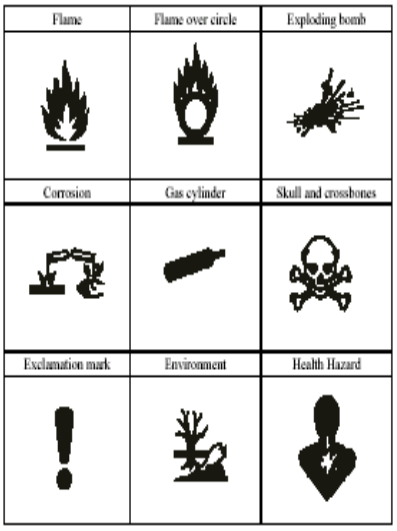
- To be comprehensible to workers, consumers, transport workers, and emergency responders,
- To be an underlying infrastructure for establishment of national, comprehensive chemical safety programs,
- To enhance the protection of human health and the environment by providing an internationally comprehensible system for hazard communication,
- To provide a recognized framework for those countries without an existing system,
- To reduce the need for testing and evaluation of chemicals, and
- To facilitate international trade in chemicals whose hazards have been properly assessed and identified on an international basis.

Section 1.5 of the GHS document contains the outline of the standard format for Safety Data Sheets (SDS) – what we call MSDSs. Further information about minimum acceptable content in each section is given in the document (see specifically http://www.unece.org/trans/danger/publi/ghs/ghs_text-pdf/GHS-PART-1e.pdf). The SDS is divided into the following sections:

1. Identification
2. Hazard(s) identification
3. Composition or information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information.

This 16-part format for a Safety Data Sheet is very similar (sections 2 and 3 are in different order) to the 1993 standard format MSDS approved by the American National Standards Institute (ANSI) – Standard Z400.1-1993. The HTIS Bulletin article on the ANSI standard MSDS appeared in the July-August 1994 HTIS Bulletin.

The following are standard warning label pictograms approved under the GHS



Reference: "Globally Harmonized System of Classification and Labeling of Chemicals (GHS)", United Nations, 2003, http://www.unece.org/trans/danger/publi/ghs/officialtext.html

OSHA's New Hazard Communication Initiative

Abdul H. Khalid,
Chemical Engineer, HTIS

The U. S. Department of Labor's Occupational Safety and Health Administration (OSHA) initiated a new program on hazard communication that would place more attention on workplaces and improve the quality of hazard communication, thereby, helping employers and employees to comply with the " Hazard Communication Standard (HCS)". The agency has reviewed some of the issues pertaining to compliance assistance and enforcement actions to improve the quality of hazard communication and provide assistance to employers and employees to keep places of employment free from hazards.

The HCS became effective in 1986, and is included in the Federal Register at 29 CFR 1910.1200. Under the HCS, employees have the right to know about the hazardous chemicals that they may be exposed to in various workplaces and how to protect themselves against hazards that are associated with those chemicals. The HCS is also referred to as the "Worker Right-to-Know Act or Legislation or the Right-to-Know Law". The scope of the HCS applies to nearly all sectors and the work force. The HCS has guidelines and requirements in the following important six areas:

1. **Chemical Labels and other forms of warning- 29 CFR 1910.1200 (f**): Chemicals in the workplace are to be labeled. The information that must be present includes the name of the chemical and warnings about any hazards the material may present. This requirement may be implemented in a variety of ways. It requires that all containers of hazardous chemicals be labeled or properly marked using an identification system and with the hazardous materials identification guide.

2. **Material Safety Data Sheets- 29 CFR 1910.1200 (g)** 29 CFR 1910.1200 (f): Material Safety Data Sheets (MSDSs) are documents that provide detailed information on a material, including any hazards associated with the material. MSDSs must be immediately available to employees at locations where hazardous materials are used. Chemical manufacturers and importers are required to obtain or develop a MSDS for each hazardous chemical they produce or import. Employers must have a MSDS in the workplace for each hazardous chemical that they use.

3. **Hazard Determination- 29 CFR 1910.1200 (d)**: The employer must identify and maintain a list of all hazardous chemicals used in the workplace.

4. **Written Hazard Communication Program-29 CFR 1910.1200 (e)**: Employers must develop a written plan under the Hazard Communication Program with details on how the requirements of the HCS are implemented.

5. **Employee information and training- 29 CFR 1910.1200 (h)**: Employers are required to provide training to their employees that covers handling of hazardous materials, use and interpretation of both MSDSs and hazard communication labels, and information about the HCS.

6. **Trade Secrets 29 CFR 1910.1200 (i)**: Chemical manufacturers, importers, or employers may withhold specific

chemical identity of a material if it involves proprietary rights. However, there must be conditions under which such information must be revealed to health care providers or health professionals.

The HCS covers nearly 650,000 hazardous chemical products and more than 30 million American workers. An appropriate and accurate hazard communication is essential to safe chemical management programs in the workplace.

Employers need good information to design protective programs for their employees, and employees need the same information to protect themselves and their work area**.**

The new initiative taken by OSHA on HCS in the work places will definitely improve the conditions under which people work. OSHA has a compliance assistance program which includes compliance assistance materials that help employers to improve the processes and furnishing to each of their employees places of employment which are free from recognized hazards that cause or are likely to cause death or serious physical harm to their employees.

The employers are required to comply with occupational safety and health standards promulgated under the OSH Act. OSHA has developed a new fact sheet on OSHA's hazard communication initiatives of compliance assistance and enforcement. The key features of the compliance assistance and enforcement initiatives are listed below:

A. **Compliance Assistance**

It is a way to help employers develop better and more accurate hazard communication programs. The main aspects of compliance assistance are:

- A new page on OSHA's web site,
- Hazard determination guidance,
- Model training program for hazard communications,
- Guidance for preparing an MSDS,
- Education and outreach, and
- International Chemical Safety Cards

B. **Enforcement**

The HCS remains a focus of OSHA enforcement efforts. **In fiscal year 2003, over 7,000 citations were issued by the agency for violations of the HCS, making it the second most frequently cited OSHA standard. Over $1.3 million in penalties were assessed.**

OSHA is developing an enforcement initiative for compliance officers to review and evaluate the adequacy of MSDSs. This enforcement component includes:

A list of critical information for certain chemicals that compliance safety health officers (CSHOs) will use in reviewing MSDSs during inspections and

Referrals via telephone and fax for situations where employees are concerned about the content of MSDSs.

C. **The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)**

It is a very important addition to OSHA's Hazard Communication Initiative. OSHA is preparing a guide to the GHS to increase public awareness of the system.

OSHA believes that the GHS provides a possible avenue for improving chemical hazard communication in the long term.

OSHA participates in an interagency committee on harmonization, and is working with other agencies that may be affected by the GHS. OSHA's alliance with the Society for Chemical Hazard Communication (SCHC) is also anticipated to serve as a mechanism for increasing awareness of the GHS. OSHA anticipates that these efforts will allow for informed stakeholder participation as the agency determines an appropriate course of action regarding the GHS.

Now is the right time for the DOD safety & health managers and other interested personnel to review areas of concerns related to HCS and make changes in their hazard communication programs under OSHA's new initiative.

DOD personnel interested in the details of OSHA's hazard communication initiative and the "Fact Sheet" may visit OSHA's web site at: http://www.osha.gov/. For further information on this trade news, POC is Layne Lathram, phone: 202-693-1999.

Reference: OSHA Trade Release, March 16, 2004 at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=10734

EPA Institutes Notification Procedures for Conducting Lead-Based Paint Activities

Abdul H. Khalid, Chemical Engineer, HTIS

The U. S. Environmental Protection Agency (EPA) has established accredited training programs that provide instructions on how to conduct lead-based paint abatement activities in an environmentally safe manner (safe work practices) during renovation, remodeling, rehabilitation, maintenance, sampling, and evaluation. Work practices and notification requirements for lead-based paint abatement activities and training are referenced in 40 CFR 745.227.

On April 8, 2004, the EPA issued its final rule on the notification procedures for certified lead abatement professionals who conduct lead-based paint abatement activities and accredited training programs providing lead-based activities courses under Section 407 of the Toxic Substances Control Act (TSCA), as amended by the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as ``Title X. An abbreviated notification period is provided for lead-based paint abatement activities conducted in response to an elevated blood lead (EBL) determination and/or a Federal, State, Tribal, or local emergency abatement order. If lead-based paint abatement activities are expected to begin on a date other than that specified in the original notice or if the other reported information changes, an updated notice is required. **The final rule prohibits lead-based paint abatement activities from starting on any date other than the one contained in the applicable notification. Under this rule, notification to EPA is required:**

- Prior to the commencement of lead-based paint abatement activities, and
- Prior to conducting lead-based activities courses.

A five-business day initial notification period for lead-based abatement activities to take care of a lead-based paint problem is set under the final rule.

According to the EPA, these notification requirements are necessary to provide EPA compliance monitoring and enforcement personnel with information necessary to track lead-based paint abatement and training activities and to prioritize compliance inspections. This rule will help to prevent lead poisoning in children under the age of six by supporting the EPA's implementation of the mandate in Title X to ensure that lead professionals involved in inspecting, assessing or removing lead-based paint, dust or soil are trained and certified to conduct these activities. This rule applies only in States and Tribal areas that do not have authorized programs pursuant to 40 CFR 745.324. **The final rule became effective on May 10, 2004.**

For additional information on this final rule contact Barbara Cunningham, Director, Environmental Assistance Division (7408M), Office of Pollution Prevention and Toxics, EPA, 1200 Pennsylvania Ave., NW. Washington, DC 20460; phone: 202- 554-1404; e-mail address: TSCA-Hotline@epa.gov. Technical information is also available from Mike Wilson, National Program Chemicals Division (7404T), Office of Pollution Prevention and Toxics, EPA, 1200 Pennsylvania Ave., NW. Washington, DC 20460; phone: 202-566-0521; e-mail address: wilson.mike@epa.gov.

Reference: Federal Register, April 8, 2004 Vol. 69, No. 68, pages 18489-18496. See details on this final rule online at: http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2004/pdf/04-7980.pdf>

EPA Migrating to New Compliance Information System

Tom McCarley, Chemist, HTIS

In it's nearly thirty-five year history, the Environmental Protection Agency (EPA) has been through many iterations of data tracking and storage systems regarding compliance with various US environmental laws. The EPA is embarking on a program to bring together compliance data from the various media areas – air, water, waste, toxics, as well as creating a more seamless system for data from the EPA headquarters and it's ten regional offices. Known as ICIS (Integrated Compliance Information System), the new data system is designed to support the information needs of the EPA's National Enforcement and Compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program under the Clean Water Act. The ICIS will eventually try and integrate data from a dozen separate data systems. The ICIS will be web-based and allow desktop access by individuals from states, communities, facilities, and the EPA. Information on the ICIS and timelines for its evolving implementation (2005 and beyond) can be found at http://www.epa.gov/compliance/planning/data/modernization/index.html

The EPA indicates that major benefits and features of migrating data to ICIS are:

- Desktop access,
- Web-based,
- Integrated Data,
- Real time entry and retrieval of data,

- Powerful Reporting capabilities, and
- Easy to use.

Reference: Environmental Protection Agency - Integrated Compliance Information System (ICIS) http://www.epa.gov/compliance/planning/data/modernization/index.html

Re-evaluation of the Hazardous Waste Generator Program Underway

Tom McCarley, Chemist, HTIS

The Environmental Protection Agency (EPA) is taking a look at the Hazardous Waste Program under the Resource Conservation and Recovery Act (RCRA) in an attempt to see "what works" and "what doesn't work" for generators of regulated hazardous waste. In conjunction with several nationwide stakeholders meeting to solicit public input, the EPA published an Advanced notice of proposed rulemaking (ANPR) in the April 22, 2004 Federal Register which details some of the issues that are being examined for potential changes in the RCRA regulatory scheme. This re-evaluation of RCRA Generators issues was given a kickoff session at the August 2003 RCRA National Meeting in Washington, D.C.

RCRA program issues that EPA will be addressing from the Generator's perspective are:

1. Program effectiveness - is the existing RCRA hazardous waste generator regulatory program meeting its goal of protecting human health and the environment?

2. Program improvements, including potential changes to the regulations addressing the following issues of which the EPA is already aware:

Waste accumulation times for both large and small quantity generators. Should there be different regulatory requirements for accumulating hazardous wastes other than the current specified time periods? If so, why?

Waste generation quantity thresholds and counting rules for LQGs, SQGs, and CESQGs.

Episodic generator requirements; i.e., where the volume of hazardous waste generated in any given month fluctuates, for example due to equipment maintenance, such that a generator switches back and forth between generator categories from month to month. What requirements apply to episodic generators, such as submission of a Biennial Report, preparation of Contingency Plans, changes in training requirements, etc.?

Waste sampling and testing; when is the use of grab sampling more appropriate than representative sampling? When is the use of analytical testing more appropriate than use of generator knowledge?

Waste management standards for LQGs, SQGs and CESQGs. Are the regulations clear and effective?

Satellite accumulation; what activities are allowed and what activities are prohibited within the specific regulatory provisions of 40 CFR 262.34 (c)? What are the requirements that generators must comply with when moving wastes between a satellite accumulation area and a consolidation area?

Generator accumulation and treatment in containers or tanks; what constitutes a ``closed" container? What tank standards apply to generators? What types of treatment are allowed and

not allowed in containers or tanks; clarifying if treatment is allowed in satellite accumulation areas?

Closure standards for generator accumulation areas; what requirements are generators responsible for under 40 CFR 265.111 and 265.114?

Co-generator requirements; who must comply with generator requirements when a hazardous waste is generated by a contractor working (e.g., providing maintenance services) at the generator's facility?

RCRA identification numbers; should wastes from different locations be allowed to be consolidated into one reporting and/or identification number? To what extent should a RCRA ID number be tied to the site definition?

Waste minimization; are there more efficient and effective mechanisms other than the hazardous waste manifest for generators to certify that they have a waste minimization program in place? Are there options that would not violate the RCRA statute?

Land disposal restriction requirements applicable to generators; is applicability clear? What notification requirements apply? What are the different requirements for listed vs. characteristic wastes?

3. Program redundancy - Are there certain parts of the RCRA hazardous waste generator regulatory program that overlap, duplicate, or conflict with other federal rules?

4. Program innovations - With time and technology marching on for a 25-year old regulatory program, are there new management approaches and technologies that would benefit generators by a change in the regulations?

5. Performance Track Program -The National Environmental Performance Track (NEPT) is a voluntary program that recognizes and rewards facilities for beyond-compliance environmental performance.

6. State programs - Are changes in the State RCRA authorization program warranted at this time?

7. Compliance assistance - What can the EPA do to better help generators understand and comply with the hazardous waste generator regulations?

8. Measuring program performance and environmental results.

9. Burden reduction - EPA is also seeking ways to reduce the record keeping and reporting burden on generators.

10. Fostering pollution prevention and recycling.

11. Program priorities because the EPA will probably not be able to address all stakeholder concerns immediately.

Whatever changes derive from these EPA efforts will certainly affect the many hundreds of hazardous waste generators within the Department of Defense. Stay tuned!

Reference: 1. Federal Register, Vol. 69, No. 78, pp 21800-21804, April 22, 2004 2. Initial Stakeholder kickoff meeting at the RCRA National Meeting. August 15, 2003.

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Comprehensive Procurement Guideline IV Promulgated

Tom McCarley, Chemist
HTIS

Under the Resource Conservation and Recovery Act (RCRA) and the Executive Order ``Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition,", the EPA is required to designate items that are or can be made with recovered materials and to recommend practices that procuring agencies can use to procure such designated items. Once the EPA designates an item, any procuring agency (Defense Logistics Agency; General Services Administration etc.) which uses appropriated federal funds to procure that item must purchase the item containing the highest percentage of recovered materials practicable. Part of the thinking behind these Comprehensive Procurement Guidelines (CPGs) is that the government's huge purchasing power can be leveraged to encourage markets for materials recovered from what would otherwise be solid waste.

CPG IV becomes effective May 2, 2005 and designates the following seven new items to be sought from recovered materials:

- Modular threshold ramps
- Non-pressure pipe
- Roofing materials
- Office furniture
- Rebuilt vehicular parts
- Bike racks
- Blasting grit

In addition to the above seven new items, the EPA is revising the designations for three existing items on the CPG, "including cement, concrete, railroad grade crossing surfaces, and polyester carpet. For cement and concrete, the EPA is adding cenospheres and silica fume as recovered material options. For railroad grade crossing surfaces, the EPA is adding recovered wood and plastic as recommended recovered materials. For polyester carpet, the EPA is revising its designation to designate polyester carpet for moderate end-uses only, as defined by the Carpet and Rug Institute".

The CPG IV and accompanying guidance known as a Recovered Materials Advisory Notice (RMAN) were published in the April 30, 2004 Federal Register.

Reference: 1. CPG IV – Federal Register, Vol. 69, No. 84, pp 24028-24038, April 30, 2004. 2. RMAN IV - Federal Register, Vol. 69, No. 84, pp 24039-24050, April 30, 2004.

First Five Chemicals Under Executive Order 13148 Set for Federal Reduction

Tom McCarley, Chemist, HTIS

After four years of deliberation, the first five chemicals set for targeted reduction by the Federal Government under Executive Order 13148 have been announced: The five substances are:

- Cadmium
- Lead
- Polychlorinated biphenyls (PCBs)
- Mercury
- Naphthalene

The goal is for the Federal community to reduce the usage of these substances by 50% by December 31, 2006. The later half of 2004 will be used to develop the baseline usage against which the

reduction goals will be measured. The announcement of the five chemicals is on the web site of the Federal Environmental Executive at http://www.ofee.gov/wpr/chemical.htm

It was on April 21, 2000 that former President Clinton signed Executive Order 13148 "Greening the Government Through Leadership in Environmental Management". That Executive Order directed that the EPA should develop a list of substances that are harmful to human health and the environment and for which there are readily available substitutes that are less harmful. Readers can think of EO 13148 as an extension of the 1993 EO 12856 which called for Federal Facilities to first report under the Emergency Planning and Community Right to Know Act (EPCRA) and called for an initial target of a 50% reduction in toxic releases from 1994-1999. That goal was exceeded ahead of time. The initial goal of EO13148 was to designate 15 priority chemicals for reduction. Stay tuned.

References: 1. EPA announces five priority chemicals used by the Federal government that are targeted for reduction in accordance with Executive Order 13148 - http://www.ofee.gov/wpr/chemical.htm 2. Executive Order 13148 of April 21, 2000 – Federal Register, Vol. 65, No. 81, pp24593-24606, April 26, 2000.

OSHA's Brief Guidance on Mold in the Workplace

Abdul H. Khalid, Chemical Engineer, HTIS

The U.S. Occupational Safety and Health Administration (OSHA) issued a new mold safety and health information bulletin entitled, "A Brief Guide to Mold in the Workplace". This bulletin provides information and recommendations to prevent mold growth. Information, recommendations, and preventive measures described in this bulletin are very helpful to protect the health of building occupants and workers who are involved in mold cleanup and prevention. Building managers, custodians and others responsible for building maintenance can find this bulletin quite useful and can be used as a basic reference for those involved in mold remediation. It describes basic information on mold, health effects, prevention, remediation plans and equipment, sampling, cleanup methods and proper personal protective equipment (PPE).

According to OSHA, this bulletin is considered to be an advisory in nature for building managers, custodians, and others who are responsible for building maintenance. At present, there is no legal OSHA standard for mold in the workplace that requires employers to comply with hazards specific to mold. OSHA can cite employers for violation under the "General Duty Clause" if there are recognized hazards and the employers do not take reasonable steps to prevent or abate the hazards due to mold. Section 5(a)(1) which is a General Duty Clause, requires employers to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm.

Mold and its health effects, mold remediation or cleanup methods were popular topics at the recent 2004 American Industrial Hygiene Conference & Exposition. One of the podium sessions # 106 was exclusively on "Mold Exposure Assessment". The following topics may be of some interest to our readers:

- Designing an Effective Mold Sampling Strategy (Richard Kopp -- #32).

- Using National Allergy Bureau Guidelines as Action Levels for Airborne Mold Exposure Concentrations (Robert Brounstein -- #35).

- Mold by the Numbers: The Strengths and Weaknesses of the Scientific Literature to Provide Mycotoxin-related IAQ Risk Assessment (Michael Lumpkin -- #38).

For additional information on mold visit the AIHA website at: http://www.aiha.org/aihce04/aihce.htm. DOD personnel can view this bulletin online at: www.osha.gov/dts/shib/shib101003.html.

Reference: OSHA web site at: www.osha.gov/dts/shib/shib101003.html.

Concerns Growing over Health Effects of Nanoparticles

Tom McCarley, Chemist, HTIS

Nanotechnology holds tremendous promise for all of our lives. Being able to assemble atoms and molecules on an almost individual basis for the first time into useful chemical structures lead many scientists to believe that we are on the threshold of another scientific and technological revolution reminiscent of the space race of the 1960s. The US government alone is funding research to the tune of nearly a billion dollars per year on nanotechnology.

Nanoparticles are those solid particles where at least one dimension is less than 100 nanometers or so in size. A nanometer is one billionth of a meter and at this size you are talking about small finite number of individual atoms or molecules. The promises for the new technologies are great: - smaller, faster microprocessors, anti-terrorism sensors, whole new classes of superior fabrics and maybe most important of all far superior medicines. Drugs that are water insoluble can be made soluble at the nanometer-sized regime. See our first HTIS article on Nanotechnology in the July-August 2001 issue http://www.dscr.dla.mil/htis/julaug01.htm .

But all is not well in the "buckyball" world of nano-structured materials and worrisome concerns about nanoparticles and nanotechnology in general are emerging. The concerns can be categorized in two ways.

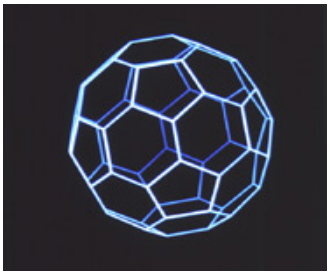
Societal mistrust over new technology and growing mistrust of science and scientists and mistrust of government. Global misgivings over genetically modified crops are a recent science example that leaves a sobering message for government and science working on nanotechnology. Then there is the blurring of science fact and science fiction. Michael Crichton's bestseller "Prey" with its vision of nanotechnology run amok is what many in the public will "know" about nanotechnology.

Serious occupational health concerns are now receiving government, academic and industrial attention. At a recent national meeting of the American Chemical Society, a symposium on "Nanotechnology and the

Environment" made it clear that workers in the nanotechnology field face special concerns due to the very small inhalable size of nanoparticles and to the enhanced reactivity of such particles.

One of the most produced and studied of nanostructures is known as a C-60 Fullerene, popularly called a "Buckyball" because its soccer ball molecular shape resembles the geodesic domes of architect Buckminster Fuller. Initial research into the health effects of these new compounds is disconcerting.

C-60 Fullerene



First of all there is the issue that Fullerenes and related carbon nanotubes etc. are unique forms of carbon much as graphite and diamond are different in their properties. Yet C-60 has the same identifying Chemical Abstracts Service registry number (CAS) as bulk graphitic carbon. Initial Material Safety Data Sheets (MSDS) were copies of graphite MSDS.

The matter of proper chemical nomenclature for all forms of nanomatter is another issue that is just starting to receive proper attention in the chemical community.

Because nanosized "chunks" of matter have very large surface area to volume ratios, they can be highly reactive and being explored as potentially new generation catalysts for everything from waste remediation agents to fuel cell catalysts. But that reactivity has a flip side. Fullerenes have a very high electron affinity, which results in the formation of free radicals, free radicals such as those formed when your body to be undergoes lipid peroxidation. Because of their very small size, such particles of fullerene are easily respirable and it is not known whether these compounds cause tumors or inflammation.

Although these fullerenes are mostly insoluble in water, what does get in to aquatic systems seems to do no good to the aquatic life which has been studied as reported by news outlets the day after the March 28, 2004 symposium.

Finally, we mention that research is ongoing as to the effects of nanoparticles in the atmosphere where it is now shown that people living close to busy highways are breathing a nanoparticle soup from diesel exhaust that is quite different from the particulate concentration of air further distance from busy highways. Living in such proximity to major highways may result in higher incidences of asthma and other ailments.

Nanotechnology has a very bright future but the "Caution Flag" has been raised and we need to be alert to the known and potential problems of working and living with such small chunks of stuff.

The concerns discussed in this article have not gone unnoticed by government regulators and researchers. Under the Toxic Substances Control Act (TSCA), the EPA is examining the question of whether or not such new, smaller forms of existing substances constitute "new" or "existing" chemicals for purposes of regulation as well as invoking other authorities under TSCA for reporting on deleterious health or environmental effects. The National Toxicology Program (NTP), the National Institutes for Occupational Safety and Health (NIOSH), and the Food and Drug Administration are all involved in researching

aspects of the effects of nanoscaled materials.

Reference: 1. 227th National Meeting of the American Chemical Society, March 2004 – symposium on "Nanotechnology and the Environment" 2. News Reports March 29, 2004 in the New York Times and Washington Post.

California Establishes the Nation's First Statewide Biomonitoring Program

Abdul H. Khalid, Chemical Engineer, HTIS

On May 26, 2004, the California Senate voted to support bio-monitoring legislation. The California Senate Bill # 1168 (SB 1168), known as "Healthy Californians Biomonitoring Program", passed the Senate by vote of 23-13.

California is the first state in the nation to establish a statewide biomonitoring program to measure the pollution in people similar to the environmental pollution that requires monitoring of air, water, and land to protect public health. The biomonitoring program is designed to help scientists, medical professionals, and community members who often make policies and decisions to better protect public health.

The California Senate Bill called for the creation of a statewide program to monitor certain toxic chemicals in human breast milk, blood, hair, urine, body fat, and other body tissue. Senator Deborah Ortiz wrote this Bill. The California Medical Association, California Nurses Association, American Federation of State, County, and Municipal Employees (AFL-CIO), Latino Issues Forum and Women's Foundation of California are among the organizations that have signed on in support of this bill.

Biomonitoring and conducting research on chemical pollution in people determine the levels of chemicals in people's urine, blood or in human breast milk. The information gathers by this boimonitoring program or research sets priorities for reducing dangerous chemical exposures that is injurious to individuals and the environment.

The implementation of biomonitoring programs will start with monitoring breast milk in diverse communities throughout California. Biomonitoring is a type of research that measures the "pollution in people" to identify the toxic chemicals each individual carries as a result of exposure to environmental toxicants (known as chemical "body burden").

Diseases such as breast cancer, autism, asthma and birth defects have risen at startling rates in recent years, and mounting evidence links incidence and severity of these diseases to environmental exposures. Using biomonitoring data, officials from public and private sectors will be able to better understand the connection between exposure to certain chemicals and the diseases mentioned above.

Starting January 1, 2006, the Division of Environmental and Occupational Disease Control of the California Health Services Department would establish the "Healthy Californians Biomonitoring Program" to assess a fee upon manufacturers or individuals who directly produce toxic chemicals that are listed in this bill.

For additional materials on biomonitoring and SB1168, including fact sheets, frequently asked questions, and press

coverage, visit the CalBBC website at: http://www.breastcancerfund.org/calbbc.

Reference: Senate Bill 1168, pollution in people at: http://www.breastcancerfund.org/calbbc/fs_SB1168.htm.

CDC Issues Exposure Guidelines for Workers Destroying Sulfur Mustards

Tom McCarley, Chemist, HTIS

Sulfur mustards are known blister agents having first been deployed in the trenches of World War I with lethal and incapacitating results. As the United States moves to destroy stockpiles of such agents (also known as "H" and "HD"), the Centers for Disease Control and Prevention (CDC) has been looking at what constitutes an acceptable exposure level for such materials.

In the Federal Register of May 3, 2004, the CDC issued Interim Recommendations for Airborne Exposure Limits for Chemical Warfare Agents H and HD (Sulfur Mustard). The effective date for these standards is July 1, 2005 which will give the Defense Department time to make whatever program changes are necessary and to apply for or modify required environmental permits.

Public Law 99-145 (50 U.S.C. 1521) mandates that the Secretary of Defense carry out the destruction of the United States' stockpile of lethal chemical agents and munitions. Public Laws 91-121 and 91-441 (50 U.S.C. 1512) mandate that, prior to the disposal of any such agent within the United States, the Secretary of Defense implement precautionary measures recommended by the Secretary of the Department of Health and Human Services (HHS) to protect the public. The May 3, 2004 notice provides CDC's interim recommendations for worker and general population airborne exposure limits (AELs) for sulfur mustard; these recommended limits superseded limits previously issued in 1998. The CDC is issuing the limits as "interim" pending improved characterization of carcinogenic potential associated with sulfur mustard.

The interim limits are:

- General Population: 0.00002 mg/m3 (milligrams per cubic meter) averaged over 12 hours.
- Worker Population Limit: 0.0004 mg/m3 averaged over 8 hours.
- Short-term Exposure Limit (STEL): 0.003 mg/m3 (less than or equal to 15 minute exposure).
- Immediately dangerous to life or health (IDLH): 0.7 mg/m3 (less than or equal to 30 minutes).

Reference: Federal Register, Vol. 69, No. 85, pp 24164-24168, May 3, 2004.

Children Sleeping Through Smoke Alarms

Beverly Howell, Industrial Hygienist, HTIS

Recent information from broadcast news programs demonstrated that children can sleep right through the sound of a smoke alarm. While smoke alarms have proven to be effective lifesavers, the U.S Consumer Products Safety Commission is concerned that children can sleep right through the sound of a smoke alarm and that the elderly, many of whom live alone, may not hear an alarm. CPSC has already

begun a two-year project on the Sound Effectiveness of Smoke Alarms. CPSC's study will look into why children and older adults sleep through or do not hear the sound of a smoke alarm and whether new technologies can improve the effectiveness of smoke alarms. Researchers hope to find ways to assure that all consumers can hear the alarm quickly enough to begin their escape from danger. Because children, older people, and those with special needs may not wake up to the sound of a smoke alarm, parents and caregivers must incorporate this possibility into the home fire escape plan. When practicing your home fire escape plan, make sure all escape routes are clear. Correct such problems as blocked exits, jammed locks or barred windows.

Excerpted from a written article of material provided by the Consumer Product Safety Commission

Hot Environment and Safety Risks

Abdul H. Khalid, Chemical Engineer, HTIS

Hot environments and their related safety risk factors are a source of concern during the summer months. Research study by the NIOSH indicates that **there is a relation between hot environment, mental alertness and physical performance**. Heat stress lowers mental alertness that can lead to poor performance, which ultimately may result in injuries and illnesses. High temperatures and humidity are the leading causes of heat stress. Heat related illness become somewhat special concerns during hot weather. There are three major forms of heat illnesses: (1) Heat Cramps (2) Heat exhaustion (3) Heat stroke. **Among them heat stroke is the most serious and is life threatening.**

OSHA's Publication No. 3154 titled "Heat Stress Card" provides useful information on how to prevent heat stress illnesses or injuries. This publication is available in English and Spanish and lists precautions that can prevent many heat-related deaths and injuries. It offers quick information on heat-related injuries, including warning signs, symptoms and early treatment. The publication may be viewed at: http://www.osha.gov/Publications/osha3154.pdf.

Hazardous Technical Information Services (HTIS) published an article titled " Heat –Related Occupational Injuries and Illnesses" in the May-June 2003 HTIS Bulletin, Vol. 13, No. 3. This article is available online at http://www.dscr.dla.mil/htis/htissrch/mayjun03.htm.

For additional information on protecting workers in hot environments contact OSHA's Publication Office or retrieve the information on-line at: http://www.osha.gov/. For publications, call OSHA, phone: (202) 693-1888 or write 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 also available on the Centers for Disease Control and Prevention (CDC) web site at: http://www.cdc.gov/niosh/topics/heatstress

References: HTIS Bulletin Vol. 13, No. 3, May-June 2003. 2. OSHA's web site at: http://www.osha.gov/Publications/osha3154.pdf, and http://www.osha.gov/SLTC/heatstress/index.html

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