

Hazard Communication Program

U.S. Geological Survey Kentucky District

March 2008

Signature Page

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Name	Title	Date

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Introduction

One of the major goals of the Occupational Safety and Health Administration (OSHA) is to regulate industries to promote safe work practices in an effort to minimize the incidence of chemically related personnel illnesses and injuries. Relative to this goal, OSHA has enacted the Hazard Communication Standard (HAZCOM), codified as 29 CFR 1910.1200. The purpose of the Hazard Communication Standard is to establish uniform work-place requirements for the communication of hazards and hazardous-chemical information to all site workers. For organizations such as the USGS, the HAZCOM standard calls for the development of a Hazard Communication Program for each of its facilities. Toward that end additional guidance may be found in chapter 20 of the USGS Safety Handbook 445-2-H.

The purpose of the creation of local HAZCOM programs is to better protect personnel from exposure to hazardous materials by defining local procedures, establishing appropriate engineering controls, providing the appropriate personal protective equipment (PPE), and providing personnel with the necessary training and information on site-specific hazardous materials. This written Hazard Communication Program (HCP) details responsibilities and includes all the safety protocols and standard operating procedures for the Kentucky District.

Laboratory safety protocols are managed through the development and administration of Chemical Hygiene Plans (CHP) in accordance with the Laboratory Safety Standard, 29 CFR 1910.1450 and are not covered under the Hazard Communication Program. This HCP is intended to cover all non-laboratory operations and non-laboratory workers subject to exposure to hazardous materials. Each office generating hazardous waste also should have a written hazardous-waste-management plan.

Ensuring Compliance with OSHA Standards

A checklist for ensuring compliance with OSHA Standards appears in the OSHA document "Hazard Communication—A Key to Compliance," which can be found in appendix A.

Chemicals will not be used until the following requirements are met:

- All affected personnel are properly trained to use the chemicals and hazardous substances;

- Workers who do not use chemicals but are subject to exposure due to use of hazardous materials in adjacent spaces, shipping and receiving areas, or as a result of accidental spill or release within the facility also must receive appropriate HAZCOM training;
- A material safety data sheet (MSDS) is obtained for each chemical and hazardous substance;
- Each chemical/hazardous substance is added to the inventory list; and
- Proper personal protective equipment has been selected and issued to affected personnel.

The Kentucky District has developed this written Hazard Communication Program to disseminate pertinent data on the safe handling of hazardous chemicals in the workplace to all appropriate personnel and to outline their rights and responsibilities under the OSHA Hazard Communication Standard. This Program will be available upon request to all personnel and their designated representatives.

I. Authority

- A. OSHA, 29 CFR 1910.1200. Hazard Communication
- B. CFR 1910. 1450, Occupational Exposure to Hazardous Chemicals in Laboratories
- C. USGS 445-2-H, Occupational Safety and Health Program Requirements Handbook

II. Scope

The Hazard Communication (HAZCOM) Program applies to all USGS government and contract personnel who work with hazardous materials as a part of their assigned job duties or who may otherwise have the potential for hazardous exposure to chemicals or materials that pose either a physical or health hazard.

III. Overview

The passage of OSHA's Hazard Communication Standard gives the USGS the responsibility to establish a written, comprehensive program that includes provisions for container labeling, material safety data sheets (MSDS), and personnel information and training. This written program contains a list of the hazardous chemicals and materials in each affected work area, the means used to inform personnel of hazards of non-routine tasks, the hazards associated with chemicals contained in unlabeled conduits in their work area, and methods used to inform contractors in the facility of chemical hazards to which they may be exposed.

This written program shall be reviewed during personnel training.

This document will be reviewed annually for accuracy and completeness as a function of the annual internal audit of this facility and so documented in the USGS Occupational, Safety, Health, and Environmental (OSHE) Management System—WEBCASS. This plan also is subject to examination as part of any audit conducted by a Federal, State or local regulator. USGS OSHE management shall review this document while conducting their regularly scheduled "external" audits of this facility.

The written plan and its elements will be updated in the following situations:

1. New chemicals are introduced into the workplace,
2. When new processes involving chemicals are introduced,
3. When program job duties are changed,
4. When locations mentioned in the program are changed, or
5. When any other elements are changed.

A current version of the Hazard Communication Program booklet will be kept by the District **Collateral Duty Safety Officer** and the **Collateral Duty Environmental Compliance Officer**.

IV. General Program Management

There are seven "categories of responsibility" that are essential to the effective implementation of the USGS Hazard Communication Program. These are

1. The Bureau Safety Manager/Bureau Industrial Hygienist
2. Regional Safety Manager
3. Regional Safety Officer
4. Collateral Duty Safety Program Coordinator
5. Managers/Supervisors/Project Chiefs/Laboratory Supervisors
6. Employees
7. Contracting Officer's Representative

The following sections define the responsibilities of each of these persons in executing the program. Throughout this written program, personnel with specific Hazard Communication Program responsibilities are identified. If, because of promotion or other reasons, a new person is assigned any of these responsibilities, **Collateral Duty Safety Officer** is to be notified of the change so that the records can be updated.

1. Bureau Safety Manager/Bureau Industrial Hygienist

The Bureau will develop HAZCOM Program Policy and Guidance and provide technical advice, guidance, and assistance to the Regional Safety Managers. Additionally, the Bureau Safety Manager will maintain an up-to-date compendium of all chemicals used within the Bureau.

2. Regional Safety Managers

The Regional Safety Managers will provide oversight to the region, including providing technical support and guidance to the Regional Safety Officers. The Regional Safety Managers annually consult with the Regional Safety Officers for suggestions for improving the HAZCOM Program.

3. Regional Safety Officer

The Regional Safety Officers provide assistance in the development and implementation of a HAZCOM Plan to the Hazard Communication Program Administrator and also the managers/supervisors/project chiefs and laboratory supervisors. The Regional Safety Officer conducts periodic reviews of local HAZCOM Plans during routine program audits and assistance visits.

4. Collateral Duty safety Program Coordinator, Collateral Duty Environmental Program Coordinator, Hazard Communication Program (HCP) Administrator

Collateral Duty Safety Officer – Douglas D. Zettwoch

Collateral Duty Environmental Protection Coordinator - Douglas D. Zettwoch

Hazard Communications Program Administrator – Douglas D. Zettwoch

As of June 2001, each USGS office should have appointed a Collateral Duty Safety Officer (CDSO) and a Collateral Duty Environmental Protection Coordinator (CDEPC). One or both of these personnel should be assigned as the HCP Administrator.

The HCP or Hazard Communication Program Administrator will be responsible for overall management and support of the facility's Hazard Communication Program. Responsibilities that are delegated to this position typically include, but are not limited to

- a. Overall responsibility for implementing the Hazard Communication Program for the entire facility;
- b. Develop and administer any additional policies and procedures needed to support the effective implementation of this program;
- c. Revise and update this program whenever necessary;
- d. Collect and maintain a suitable reference library on the Federal Hazard Communication Regulations and chemical safety information;
- e. Act as facility liaison during OSHA inspections;
- f. Maintain the master inventory lists(s) of hazardous chemicals, the MSDS file, and the Written Hazard Communication Program;
- g. Conduct annual facility audits (in conjunction with the WEBCASS internal audit) to maintain an up-to-date hazardous-chemical inventory;
- h. The Hazard Communication Program Administrator will be responsible for the

education and training of all personnel who are exposed to or handle hazardous substances. Responsibilities include

- (1) Maintaining an up-to-date list of facility personnel (in conjunction with facility management),
- (2) Developing suitable training programs,
- (3) Scheduling periodic training seminars for affected personnel,
- (4) Maintaining appropriate training documentation,
- (5) Periodically reviewing the training programs with Supervisors and Management to include appropriate new information.

5. Managers/Supervisors/Project Chiefs/Laboratory Supervisors

Facility/Department Managers (Supervisors) will be responsible for the "on-site" management of the Hazard Communication Program. Responsibilities include

- a. Seeing that training is provided to personnel on the proper handling of hazardous substances in their work area and on the use of necessary personal protective equipment;
- b. Maintaining a supply of personal protective equipment (i.e., gloves, face shields, respirators), as needed;
- c. Maintaining an inventory list of hazardous substances in the work area (in conjunction with the HCP Administrator);
- d. Informing the HCP Administrator of any and all new hazardous chemicals in the work area;
- e. Informing the HCP Administrator of all new personnel in the work area;
- f. Ensuring that all containers, including transfer containers, are appropriately labeled (working in conjunction with the HCP Administrator);

- g. Consulting the HCP Administrator regarding any questions concerning the Hazard Communication Program and any new hazardous chemicals in the work area.

6. Employees

As with all USGS activities, our personnel have the most important role in the Hazard Communication Program, because the ultimate execution of the program is their responsibility. In this role they must participate in all training and follow all safety/health instruction, standard operating procedures, and personal protective equipment requirements.

7. Contracting Officer's Representative

The Contracting Officer's Representative is responsible for informing contractor personnel of work-site hazards and enforcing an adequate HAZCOM Program for the contractors. It also is this person's responsibility to provide USGS with copies of any MSDS for any hazardous materials that are brought on site.

V. Locations(s) and contact person(s) for the written program

Locations: (Listed below is each work site location in which a copy of the HCP resides, the contact person, and the phone number of the contact person.)

Location of HCP	Name of Contact Person	Phone Number of Contact Person
Louisville, Kentucky	Douglas D. Zettwoch	502-493-1922
Paducah, Kentucky	Roy S. Darnell	270-443-1252
Williamsburg, Kentucky	Clifford R. Moses	606-549-2406

VI. List of Chemicals

Initial Inventory

An initial inventory of all chemicals and materials will be made of all work areas and facilities. As chemicals are purchased or otherwise obtained, they will be included in the inventory as a matter of daily routine. An annual audit (in conjunction with the internal USGS Environmental Compliance Self-Audit) will be conducted. All hazardous chemicals and materials will be identified and listed. A copy of the listing for each work area will be kept with the MSDS for that area (and in a secure area if the MSDS are in the public areas), and all the lists compiled to make a master list for the facility will be kept in appendix B of this written program. The exception to this guidance is for laboratories that are administered through a Chemical Hygiene Plan (CHP) as these plans already contain an inventory of chemicals for each specific laboratory. In this case, a reference to the CHP and its location should be noted in this section.

Douglas D. Zettwoch, Chemical Hygiene Officer and Angela S. Crain, District Water-Quality Specialist are responsible for maintaining and updating the list of chemicals purchased or used by this facility. The list can be found in appendix B of this program.

Each listing will note at least the following information:

1. Name and contact information for persons responsible for the area or chemicals
2. Date the list was compiled or updated
3. Room/building location of the work or storage area
4. Chemical or product common name and manufacturer
5. Typical maximum quantity of the chemical or material (volume, mass, or weight)
6. General location within the work area where the material is kept (storage cabinet, shelves, etc.)
7. Hazard types

The following classes of material are, however, excluded from the hazard determination requirements contained with this program, as provided by OSHA [Ref. 29 CFR 1910.1200(b)(6)] and, therefore, have not been included on the Hazardous Chemical List:

1. Any Federally regulated Hazardous Waste
2. Tobacco or Tobacco Products
3. Wood or Wood Products
4. Articles (such as clothing)
5. Food, drugs, or cosmetics intended for personal consumption by personnel while in the workplace

Other locations of this list are:

<i>District Water-Quality Laboratory</i>	
<i>District Administrative files</i>	

Procedure for Chemical List Update:

<i>Douglas D. Zettwoch</i>	<i>Chemical Hygiene Officer</i>
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will have a chemical list on file. New chemical products will be immediately reported to

<i>Angela S. Crain</i>	<i>Water-Quality Specialist</i>
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for listing and updating of the hazard communication program list.

VII. Material Safety Data Sheets (MSDS)

Material Safety Data Sheets (MSDS) are the keystone to a successful hazard-communication program. MSDS are designed to provide the information needed to handle chemicals safely. They provide the necessary information on training, hazard evaluation, proper handling, emergency procedures, and personal protective equipment for personnel.

The following procedures will be implemented to ensure that the facility maintains MSDS for all chemicals identified on the hazard communication chemical list and the chemical purchase list.

Chemical manufacturers, importers, or distributors supplying the USGS with products are required by law to send an MSDS with the first shipment. As MSDS are checked off against the chemical inventory, missing MSDS should be requested first by telephone from the manufacturer, importer, or distributor of the chemical. A written record of the phone call, including the name of the contact person, should be kept on file.

1. If the telephone request is not successful, Internet sources should be checked. Be sure that the chemical composition (i.e., % component) is the same as the chemical that is in question. If the exact composition cannot be located, err on the conservative side and obtain the MSDS for the closest, more lethal concentration.
2. If the Internet search is not successful, a formal letter should be written to request the MSDS. A copy should be kept on file. See appendix C for a sample letter.
3. MSDS for chemicals, which are part of a personnel-exposure record but no longer used, should be filed in one location. An exposure record contains information about when an employee is exposed to a chemical. A more complete definition can be found in 29 CFR 1910.20(c)(8) and (10). If the MSDS was involved with a personnel-exposure record, the MSDS must be handled in one of the following methods:
 - a. Kept in an "old MSDS" file with a reference to the exposure record; or

- b. Kept with the exposure record with a reference or copy in the "old MSDS" file.
4. Old MSDS linked to an exposure record must be maintained for at least 30 years. MSDS for chemicals no longer used, and not linked to a personnel-exposure record will be maintained in one of two ways:
- a. Place the old MSDS in a special "old MSDS" file; or
 - b. Make a record of the MSDS and maintain it for 30 years, per 1910.20(1)(ii)(B) and referenced by 1926.33. The following information must be included in the record:
 - (1) Identity (chemical name, if known)
 - (2) Where used (site and building)
 - (3) When used
5. A glossary of MSDS terms will be available at all locations where MSDS are located and will be included in all applicable USGS training.
6. Updated MSDS and new MSDS will be immediately placed in the following locations:

<i>MSDS file in Water-Quality laboratory</i>	
<i>CDSO file – Douglas D Zettwoch</i>	
<i>CDEPC file – Douglas D. Zettwoch</i>	

VIII. Labeling

All Water-Quality and Sediment-Laboratory workers will ensure proper labeling of primary and secondary containers.

1. **Supplier Labeling** - The USGS will rely heavily on chemical suppliers to the requirements of 29 CFR 1910.1200(f) or 1926.59(f). There are three basic requirements of this section.

- a. Identity of the chemical

b. Appropriate hazard warning, including target organs

c. Name and address of the chemical manufacturer

2. **Shipped and Purchased Containers** – With the arrival of each chemical, all containers will be checked to ensure that all labels meet the requirements outlined in this program. The USGS will not accept improperly labeled containers. If there is a problem with the container, the following person should be notified immediately: Angela S. Crain, District Water-Quality Specialist.

3. **Secondary Container Labeling** – Secondary containers of chemicals should be marked in the following situations:

- More than one person uses the container, or
- The container is used longer than one shift or left in a work area.

The secondary label should be of prominent size and firmly attached to the container in such a location as to be easily read and not obstruct other labels or create a hazardous-handling situation.

Stationary vessels, tanks, or pipes that contain hazardous materials have clearly affixed labels, signs, or placards that identify the container contents and have the appropriate hazard warnings.

The **secondary** label should contain the following information, and can be obtained from the original container or the MSDS:

- Identity of the chemical as specified on the MSDS
- Hazard warning - physical hazard or illness.

“Empty” containers are not reused for other than the originally contained substances unless the original labels are removed or defaced and a new label is attached to identify the new contents and associated-hazard warnings.

The USGS is aware that labeling is not required for portable containers into which hazardous materials are transferred when the material is intended for use within the

same work shift and it remains under the immediate control (at all times) of the personnel who performed the transfer. The USGS will label even these "single use" containers whenever possible.

The USGS recognizes that the following materials are exempt from the Hazard Communication Labeling requirement; therefore, these materials will be accepted for delivery without the labeling required by the Standard.

1. Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the U.S. Environmental Protection Agency (USEPA);
2. Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device, including materials intended for use as ingredients in such products (i.e., flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) and regulation issued under that Act, when they are subject to the labeling requirements under that Act by the Food and Drug Administration;
3. Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.), respectively, when subject to a consumer-product-safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission.

IX. Employee Training

Under the Hazard Communication Program, the USGS has instituted a personnel education and training program regarding the handling of hazardous chemicals in the workplace. All non-laboratory personnel will fully participate in the program as it may apply to their work area and work responsibility. Laboratory personnel are to be trained in accordance with 29 CFR 1910.1450 and obtain laboratory-safety training and specialized training reflecting the particulars of the operations spelled out in their CHP. Each supervisor will ensure that those personnel and areas under his/her supervision comply with this program.

The USGS HAZCOM training program includes the following elements:

1. The Hazard Communication Standard;
2. Employee Rights under the Standard;
3. Location and availability of the written hazard-communication program, including the required lists(s) of hazardous chemicals, and material safety data sheets (MSDS);
4. The work area's Hazardous Substance List;
5. Physical and health hazards associated with the types of hazardous chemicals identified on the list;
6. Methods and observations that can be used by personnel to detect the presence of hazardous chemicals in the work area;
7. Recommended work practices that personnel can use to protect themselves from exposure including the use of appropriate personal protective equipment;
8. How to read and interpret information contained on MSDS;
9. How to read and interpret container-labeling information;
10. Emergency procedures and first aid required during an incident involving a hazardous chemical;
11. Review of the "Terminology" used in the Hazard Communication Program, including that found on MSDS.

Available Training Methods

The USGS Education and Training presentations make use of several training techniques including, but not limited to, those listed below:

1. Classroom-type atmosphere with personal instruction;

2. Videotape Programs;
3. Training manuals/personnel handouts;
4. Employee review sessions.

These activities are being conducted/overseen by our facility's Hazard Communication Program Administrator.

Douglas D. Zettwoch, Chemical Hygiene Officer will provide training to personnel in the following situations:

- a. Prior to working with a chemical,
- b. When job duties change with potential exposure to new chemicals,
- c. When new chemicals are introduced into the workplace, and
- d. When job duties change requiring special training for a special process with a chemical.

See appendix D for a sample Hazard Communication Training Program.

The **Training Records** will contain the following information:

- a. Date of training
- b. Name and job title of trainer
- c. Names of trainees
- d. Training topics
- e. Any other information used to document the validity of the training. For example – the credentials of an outside trainer

See appendix E for the **Training Records Form**.

The training records can be obtained by contacting the District training officer, HCP administrator, or the Safety officer in the District office, Louisville, Ky.

See appendix A for a special publication titled, "Hazard Communication—A Key to Compliance." This publication explains, in detail, the intent of the Hazard Communication Standard.

X. Procedures to Assess Hazards of Non-Routine Tasks

Non-routine tasks are those tasks that do not occur on a frequent basis or those tasks that are not identified as a normal production task; however, many of the tasks required of the maintenance personnel will be evaluated on a case-by-case basis to determine if they should be considered non-routine tasks.

Angela S. Crain, District Water-Quality Specialist

should be consulted about non-routine tasks.

Douglas D. Zettwoch, Chemical Hygiene Officer

will train personnel about the chemical hazards of non-routine tasks.

The non-routine tasks performed in this facility are listed below. Employees in the area have been informed of these tasks and their associated hazards during the training sessions they have attended. They also have been informed regarding the required proper personal protective equipment that must be worn when performing these tasks. "Reminders" include

1. Acid dilution
2. Preparation of dye-trace sample
3. Extraction of dye-trace charcoal packet

- a. Handling of lead sounding weight
- 4. Sediment analyses and liquid decantation
- 5. Handling of raw waters from potentially polluted sources

XI. Work Performed by Outside Contractors

A letter announcing compliance with the Hazard Communication Standard, as well as possible hazards in the workplace, will be given to all outside contractors to inform them of the potential hazards present while working on site in this USGS facility. Appendix F is an example of a typical letter used by this facility to outside contractors. In addition to giving this letter to the contractor, a copy will be kept in our files.

Prior to conducting any on-site work, the contractors will be given access to the facility's Written Hazard Communication Program for their review. They also will be given access to the Chemical Inventory Lists and MSDS for the areas in which they will be working.

Douglas D. Zettwoch, Chemical Hygiene Officer

will provide contractors with a list of chemicals used in the work area(s). The contractors also will be provided with copies, or the location, of the facility MSDS.

The USGS requires that all contractors disclose all the hazardous materials they intend to bring into the facility and provide MSDS on those substances.

Douglas D. Zettwoch, Chemical Hygiene Officer

has been designated as our facility's liaison with these contractors and will provide and obtain all the information discussed above.

XII. Unlabeled Conduit Systems

Employees involved with special processes that may involve unlabeled conduits will

be provided with special training. This includes any maintenance workers or contractors who may be involved with maintenance on the conduit systems. For example, waste lines from the analytical process to the waste-storage tanks. Any conduits that contain hazardous chemicals are identified below. With the work practices performed in this area, these conduits should not cause a hazard to our personnel.

Conduit System - None	Chemical
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Appendix A

Hazard Communication – A Key to Compliance

The Hazard Communication Standard (HCS) is based on a simple concept: personnel have both a need and a right to know the hazards and identities of the chemicals they are exposed to while working. Also, they need to know what protective measures are available to prevent adverse effects from occurring. The HCS is designed to provide personnel with the information they need.

Knowledge acquired under the HCS will help the USGS provide safer workplaces for their personnel. When USGS has information about the chemicals being used, they can take steps to reduce exposures, substitute less hazardous materials, and establish proper work practices. These efforts will help prevent the occurrence of work-related illnesses and injuries caused by chemicals.

The HCS addresses the issues of evaluating and communicating hazards to workers. Evaluation of chemical hazards involves a number of technical concepts and is a process that requires the professional judgment of experts. That's why the HCS is designed so that USGS personnel who use chemicals, rather than produce or import them, are not required to evaluate the hazards of those chemicals. Hazard determination is the responsibility of the producers and importers of the materials. Producers and importers of chemicals are then required to provide the hazard information to USGS personnel that purchase their products.

USGS facilities that don't produce or import chemicals need only focus on those parts of the rule that deal with establishing a workplace program and communicating information to their workers. This appendix is a general guide for USGS personnel to help them determine what's required under the rule. It does not supplant or substitute for the regulatory provisions, but rather provides a simplified outline of the steps an average USGS employee would follow to meet those requirements.

I. Becoming familiar with the rule.

OSHA has provided a simple summary of the HCS in a pamphlet titled, "Chemical Hazard Communication," OSHA Publication Number 3084. Some USGS personnel begin to become familiar with the rule's requirements by reading this pamphlet. A copy may be obtained from your local OSHA Area Office or by contacting the OSHA Publications Office at (202) 693-1888.

The standard is long, and some parts of it are technical, but the basic concepts are simple. In fact, the requirements reflect what many USGS personnel have been doing for years. You may find that you are already largely in compliance with many of the provisions and only will have to slightly modify your existing programs. If you are operating in an OSHA-approved State Plan State, you must comply with the State's requirements, which may be different than those of the Federal rule. Many of the State Plan States had hazard communication or Hazard Communication Program laws prior to promulgation of the Federal rule. USGS personnel in State Plan States should contact their State OSHA offices for more information regarding applicable requirements.

The HCS requires information to be prepared and transmitted regarding all hazardous chemicals. The HCS covers both physical hazards (such as flammability) and health hazards (such as irritation, lung damage, and cancer). Most chemicals used in the workplace have some hazard potential, and thus will be covered by the rule.

One difference between this rule and many others adopted by OSHA is that this one is performance oriented. That means you have the flexibility to adapt the rule to the needs of your workplace rather than having to follow specific, rigid requirements. Also, it means that you have to exercise more judgment to implement an appropriate and effective program.

The standard's design is simple. Chemical manufacturers and importers must evaluate the hazards of the chemicals they produce or import. Using that information, they must prepare labels for containers along with more detailed technical bulletins called material safety data sheets (MSDS).

Chemical manufacturers, importers, and distributors of hazardous chemicals are all required to provide the appropriate labels and MSDS to each USGS facility receiving chemical shipments. The information is to be provided automatically; every container of hazardous chemicals you receive must be labeled, tagged, or marked with the required information. Your suppliers also must send you a properly completed MSDS at each shipment of the chemical.

You can rely on the information received from your suppliers. You have no independent duty to analyze the chemical or evaluate its hazards. USGS requires that hazardous chemicals "use" must have a program to ensure the information is provided to exposed personnel. "Use" means to package, handle, react, or transfer. This is an intentionally broad scope and includes any situation where a chemical is present in such a way that personnel may be exposed under normal conditions of use or in a foreseeable emergency. The requirements of the rule that deal specifically with the hazard communication program are found in the standard in paragraphs (e), written hazard communication program; (f), labels and other forms of warning; (g), material safety data sheets; and (h), personnel information and training. The requirements of these paragraphs should be the focus of your attention. Concentrate on becoming familiar with them, using paragraphs (b), scope and application, and (c), definitions, as references when needed to help explain the provisions.

There are two types of work operations where coverage of the rule is limited. These are laboratories and operations where chemicals are only handled in sealed containers (e.g., a warehouse). The limited provisions for these workplaces can be found in paragraph (b), scope and application. Basically, USGS facilities having these types of work operations need only keep labels on containers as they are received; maintain MSDS that are received and give personnel access to them; and provide information and training for personnel. USGS facilities do not have to have written hazard communication programs and lists of chemicals for these types of operations.

A distributor may have warehouse operations where personnel would be protected under the limited sealed container provisions. In this situation, requirements for obtaining and maintaining MSDS are limited to providing access to those received with containers while the substance is in the workplace and requesting MSDS when personnel request access for those not received with the containers. As a distributor of hazardous chemicals, the USGS will have responsibilities for providing MSDS to downstream customers at the time of the first shipment and when the MSDS is updated; therefore, although they may not be required for the personnel in the work operation, the distributor may, nevertheless, have to have MSDS to satisfy other requirements of the rule.

II. Identifying responsible staff.

Hazard communication is going to be a continuing program in your facility. Compliance with the HCS is not a "one shot deal." In order to have a successful program, it will be necessary to assign responsibility for both the initial and ongoing activities that have to be undertaken to comply with the rule. In some cases, these activities may already be part of current job assignments. For example, site supervisors are frequently responsible for on-the-job training sessions. Early

identification of the responsible personnel and involvement of them in the development of your plan of action will result in a more effective program design. Evaluation of the effectiveness of your program also will be enhanced by involvement of affected personnel.

For any safety and health program, success depends upon commitment at every level of the organization. This is particularly true for hazard communication, where success requires a change in behavior. This only will occur if the USGS understands the program, is committed to its success, and if personnel are motivated by the people presenting the information to them.

III. Identifying hazardous chemicals in the workplace.

The standard requires a list of hazardous chemicals in the workplace as part of the written hazard communication program. The list will eventually serve as an inventory of everything for which an MSDS must be maintained. At this point, however, preparing the list will help you complete the rest of the program since it will give you some idea of the scope of the program required for compliance in your facility.

The best way to prepare a comprehensive list is to survey the workplace. Purchasing records also may help, and the USGS should establish procedures to ensure that future purchasing procedures result in MSDS being received before a material is used in the workplace.

The broadest possible perspective should be taken when doing the survey. Sometimes people think of "chemicals" only as being liquids in containers. The HCS covers chemicals in all physical forms—liquids, solids, gases, vapors, fumes, and mists—whether they are "contained" or not. The hazardous nature of the chemical and the potential for exposure are the factors that determine whether or not a chemical is covered. If it's not hazardous, it's not covered. If there is no potential for exposure (e.g., the chemical is inextricably bound and cannot be released), the rule does not cover the chemical.

Look around. Identify chemicals in containers, including pipes. Also think about chemicals generated in work operations. For example, welding fumes, dusts, and exhaust fumes are all sources of chemical exposures. Read labels provided by suppliers for hazard information. Make a list of all chemicals in the workplace that are potentially hazardous. For your own information and planning, you may want to note on the list the location(s) of the products within the workplace and an indication of the hazards as found on the label. This will help you as you prepare the rest of

your program.

Paragraph (b), scope and application, includes exemptions for various chemicals or workplace situations. After compiling the complete list of chemicals, you should review paragraph (b) to determine if any of the items can be eliminated from the list because they are exempted materials. For example, food, drugs, and cosmetics brought into the workplace for personal consumption are exempt. Also, rubbing alcohol in the first aid kit would not be covered.

Once you have compiled as complete a list as possible of the potentially hazardous chemicals in the workplace, the next step is to determine if you have received MSDS for all of them. Check your files against the inventory you have just compiled. If any are missing, contact your supplier and request one. It is a good idea to document these requests either by copy of a letter or a note regarding telephone conversations. If you have MSDS for chemicals that are not on your list, figure out why. Maybe you don't use the chemical any more, or maybe you missed it in your survey. Some suppliers do provide MSDS for products that are not hazardous; these do not have to be maintained.

You should not allow personnel to use any chemicals for which you have not received an MSDS. The MSDS provides information you need to ensure proper protective measures are implemented prior to exposure.

IV. Preparing and implementing a hazard communication program.

All workplaces where personnel are exposed to hazardous chemicals must have a written plan that describes how the standard will be implemented in that facility. Preparation of a plan is not just a paper exercise—all of the elements must be implemented in the workplace in order to be in compliance with the rule. See paragraph (e) of the standard for the specific requirements regarding written hazard communication programs. The only work operations that do not have to comply with the written plan requirements are laboratories and work operations where personnel only handle chemicals in sealed containers. See paragraph (b), scope and application, for the specific requirements for these two types of workplaces.

The plan does not have to be lengthy or complicated. It is intended to be a blueprint for implementation of your program—an assurance that all aspects of the requirements have been addressed.

Many trade associations and other professional groups have provided sample programs and other assistance materials to affected USGS facilities. These have been very helpful to many USGS facilities since they tend to be tailored to the particular industry involved. You may wish to investigate whether your industry trade groups have developed such materials.

Although such general guidance may be helpful, you must remember that the written program has to reflect what you are doing in your workplace; therefore, if you use a generic program it must be adapted to address the facility it covers. For example, the written plan must list the chemicals present at the site, indicate who is to be responsible for the various aspects of the program in your facility, and indicate the location of written materials that need to be made available to personnel.

If OSHA inspects your workplace for compliance with the HCS, the OSHA compliance officer will ask to see your written plan at the outset of the inspection. In general, the following items will be considered in evaluating your program.

The written program must describe how the requirements for labels and other forms of warning, MSDS, and personnel information and training are going to be met in your facility. The following discussion provides the type of information compliance officers will be looking for to decide whether these elements of the hazard communication program have been properly addressed:

A. Labels and other forms of warning.

On-site containers of hazardous chemicals must be labeled, tagged, or marked with the identity of the material and appropriate hazard warnings. Chemical manufacturers, importers, and distributors are required to ensure that every container of hazardous chemicals they ship is appropriately labeled with such information and with the name and address of the producer or other responsible party. USGS personnel purchasing chemicals can rely on the labels provided by their suppliers. If the material is subsequently transferred by the USGS from a labeled container to another container, the USGS employee will have to label that container unless it is subject to the portable container exemption. See paragraph (f) for specific labeling requirements.

The primary information to be obtained from an OSHA-required label is an identity

for the material and appropriate hazard warnings. The identity is any term that appears on the label, the MSDS, and the list of chemicals, and thus links these three sources of information. The identity used by the supplier may be a common or trade name ("Black Magic Formula") or a chemical name (1,1,1,-trichloroethane). The hazard warning is a brief statement of the hazardous effects of the chemical ("flammable," "causes lung damage"). Labels frequently contain other information, such as precautionary measures ("do not use near open flame"), but this information is provided voluntarily and is not required by the rule. Labels must be legible and prominently displayed. There are no specific requirements for size, color, or any specified text.

With these requirements in mind, the compliance officer will be looking for the following types of information to ensure that labeling will be properly implemented in your facility:

1.	<i>Designation of person(s) responsible for ensuring labeling of on-site containers;</i>
2.	<i>Designation of person(s) responsible for ensuring labeling of any shipped containers;</i>
3.	<i>Description of labeling system(s) used;</i>
4.	<i>Description of written alternatives to labeling of on-site containers (if used); and,</i>
5.	<i>Procedures to review and update label information when necessary.</i>

USGS personnel that are purchasing and using hazardous chemicals—rather than producing or distributing them—primarily will be concerned with ensuring that every purchased container is labeled. If materials are transferred into other containers, the USGS must ensure that these are labeled as well, unless they fall under the portable container exemption [paragraph (f)(7)]. In terms of labeling systems, you can simply choose to use the labels provided by your suppliers on the containers. These generally will be verbal text labels and usually do not include numerical rating systems or symbols that require special training. The most important thing to remember is that this is a continuing duty—all on-site containers of hazardous chemicals always must be labeled. It is important to designate someone to be responsible for ensuring that the labels are maintained as required on the containers in your facility and that newly purchased materials are checked for labels prior to use.

B. Material safety data sheets.

Chemical manufacturers and importers are required to obtain or develop an MSDS for each hazardous chemical they produce or import. Distributors are responsible for

ensuring that their customers are provided a copy of these MSDS. Each USGS facility must have an MSDS for each hazardous chemical they use. USGS personnel may rely on the information received from their suppliers. The specific requirements for MSDS are in paragraph (g) of the standard.

There is no specified format for the MSDS under the rule, although there are specific information requirements. OSHA has developed a non-mandatory format, OSHA Form 174, which may be used by chemical manufacturers and importers to comply with the rule. The MSDS must be in English. You are entitled to receive from your supplier an MSDS that includes all of the information required under the rule. If you do not receive one automatically, you should request one. If you receive one that is obviously inadequate, for example, blank spaces that are not completed, you should request an appropriately completed one. If your request for an MSDS or for a corrected MSDS does not produce the information needed, you should contact your local OSHA Area Office for assistance in obtaining the MSDS.

The role of MSDS under the rule is to provide detailed information on each hazardous chemical, including its potential hazardous effects, its physical and chemical characteristics, and recommendations for appropriate protective measures. This information should be useful to you as the USGS employee responsible for designing protective programs as well as to the workers. If you are not familiar with MSDS and with chemical terminology, you may need to learn to use them yourself. A glossary of MSDS terms may be helpful in this regard. Generally speaking, most USGS employees using hazardous chemicals primarily will be concerned with MSDS information regarding hazardous effects and recommended protective measures. Focus on the sections of the MSDS that are applicable to your situation.

MSDS must be readily accessible to personnel when they are in their work areas during their work shifts. This may be accomplished in many different ways. You must decide what is appropriate for your particular workplace. Some USGS facilities keep the MSDS in a binder in a central location (e.g., in the pick-up truck on a construction site). Others, particularly in workplaces with large numbers of chemicals, computerize the information and provide access through terminals. As long as personnel can get the information when they need it, any approach may be used. The personnel must have access to the MSDS themselves—simply having a system where the information can be read to them over the phone is only permitted under the mobile work site provision, paragraph (g)(9), when personnel must travel between workplaces during the shift. In this situation, they have access to the MSDS prior to leaving the primary work site, and when they return, so the telephone system is simply an emergency arrangement.

All MSDS should be accessible in a “power-off” situation; therefore, a backup system

is necessary to those facilities that utilize digital (electronic, computer) access only. This means a paper or "hard" copy of the MSDS is readily available to all personnel.

In order to ensure that you have a current MSDS for each chemical in the facility as required, and that personnel access is provided, the compliance officers will be looking for the following types of information in your written program:

1.	<i>Designation of person(s) responsible for obtaining and maintaining the MSDS;</i>
2.	<i>How such sheets are to be maintained in the workplace (e.g., in notebooks in the work area(s) or in a computer with terminal access), and how personnel can obtain access to them when they are in their work area during the work shift;</i>
3.	<i>Procedures to follow when the MSDS is not received at the time of the first shipment;</i>
4.	<i>For producers, procedures to update the MSDS when new and significant health information is found; and,</i>
5.	<i>Description of alternatives to actual MSDS in the workplace, if used.</i>

For USGS personnel using hazardous chemicals, the most important aspect of the written program in terms of MSDS is to ensure that someone is responsible for obtaining and maintaining the MSDS for every hazardous chemical in the workplace. The list of hazardous chemicals required as part of the written program will serve as an inventory. As new chemicals are purchased, the list should be updated. Many companies have found it convenient to include on their purchase orders the name and address of the person designated in the facility to receive MSDS.

C. Employee information and training.

All personnel who may be "exposed" to hazardous chemicals when working must be provided information and trained prior to initial assignment to work with a hazardous chemical and whenever the hazard changes. "Exposure" or "exposed" under the rule means "all personnel are subjected to hazardous chemicals in the course of employment through any route of entry (inhalation, ingestion, skin contact, or absorption, etc.), including potential (e.g., accidental or possible) exposure." See paragraph (h) of the standard for specific requirements. Information and training may be done either by individual chemical or by categories of hazards (such as flammability or carcinogenicity). If there are only a few chemicals in the workplace, then you may want to discuss each one individually. Where there are large numbers of chemicals or the chemicals change frequently, you will probably want to train generally based on the hazard categories (e.g., flammable liquids, corrosive materials, carcinogens). Employees will have access to the substance-specific

information on the labels and MSDS.

Information and training is a critical part of the hazard communication program. Information regarding hazards and protective measures are provided to workers through written labels and MSDS; however, through effective information and training workers will learn to read and understand such information, determine how it can be obtained and used in their own workplaces, and understand the risks of exposure to the chemicals in their workplaces as well as ways to protect themselves.

A properly conducted training program will ensure comprehension and understanding. It is not sufficient just to read material to the workers or simply hand them material to read. You want to create a climate where workers feel free to ask questions. This will help you to ensure that the information is understood. You must always remember that the underlying purpose of the HCS is to reduce the incidence of chemical source illnesses and injuries. This will be accomplished by modifying behavior through the provision of hazard information and information about protective measures.

If your program works, you and your coworkers will better understand the chemical hazards within the workplace. The procedures you establish regarding, for example, purchasing, storing, and handling of these chemicals will improve and thereby reduce the risks posed to personnel exposed to the chemical hazards involved. Furthermore, your workers' comprehension also will be increased and proper work practices will be followed in your workplace.

If you are going to do the training yourself, you will have to understand the material and be prepared to motivate the workers to learn. This is not always an easy task, but the benefits are worth the effort. More information regarding appropriate training can be found in OSHA Publication No. 2254, which contains voluntary training guidelines prepared by OSHA's Office of Training and Education. A copy of this document is available from OSHA's Publications Office at (202) 693-1888.

In reviewing your written program with regard to information and training, the following items need to be considered:

1.	<i>Designation of person(s) responsible for conducting training;</i>
2.	<i>Format of the program to be used (audiovisuals, classroom instruction, etc.);</i>
3.	<i>Elements of the training program (should be consistent with the elements in paragraph (h) of the HCS); and,</i>

4. <i>Procedure to train new personnel at the time of their initial assignment to work with a hazardous chemical, and to train personnel when a new hazard is introduced into the workplace.</i>

The written program should provide enough details about the USGS plans in this area to assess whether or not a good faith effort is being made to train personnel. OSHA does not expect that every worker will be able to recite all of the information about each chemical in the workplace. In general, the most important aspects of training under the HCS are to ensure that personnel are aware that they are exposed to hazardous chemicals, that they know how to read and use labels and MSDS, and as a consequence of learning this information they are following the appropriate protective measures established by the USGS. OSHA compliance officers will be talking to personnel to determine if they have received training, if they know they are exposed to hazardous chemicals, and if they know where to obtain substance-specific information on labels and MSDS.

The rule does not require USGS to maintain records of personnel training, but many USGS facilities choose to do so. This may help you monitor your own program to ensure that all personnel are appropriately trained. If you already have a training program, you may have to supplement it with whatever additional information is required under the HCS. For example, USGS construction personnel that are already in compliance with the construction training standard (29 CFR 1926.21) will have little extra training to do.

USGS can provide personnel information and training through whatever means found appropriate and protective. Although there would always have to be some training on site (such as informing personnel of the location and availability of the written program and MSDS), personnel training may be satisfied in part by general training about the requirements of the HCS and about chemical hazards on the job which is provided by, for example, trade associations, unions, colleges, and professional schools. In addition, previous training, education, and experience of a worker may relieve the USGS of some of the burdens of informing and training that worker. Regardless of the method relied upon, however, the USGS is always ultimately responsible for ensuring that personnel are adequately trained. If the compliance officer finds that the training is deficient, the USGS will be cited for the deficiency regardless of who actually provided the training on behalf of the USGS.

D. Other requirements.

In addition to these specific items, compliance officers also will be asking the following questions in assessing the adequacy of the program:

1.	<i>Does a list of the hazardous chemicals exist in each work area or at a central location?</i>
2.	<i>Are methods the USGS will use to inform personnel of the hazards of non-routine tasks outlined?</i>
3.	<i>Are personnel informed of the hazards associated with chemicals contained in unlabeled pipes in their work areas?</i>
4.	<i>Is the written program made available to personnel and their designated representatives?</i>

V. Checklist for compliance.

The following checklist will help to ensure you are in compliance with the rule:

Checklist for Compliance	
<i>Obtained a copy of the rule.</i>	
<i>Read and understood the requirements.</i>	
<i>Assigned responsibility for tasks.</i>	
<i>Prepared an inventory of chemicals.</i>	
<i>Ensured containers are labeled.</i>	
<i>Obtained MSDS for each chemical.</i>	
<i>Prepared written program.</i>	
<i>Made MSDS available to workers.</i>	
<i>Conducted training of workers.</i>	
<i>Established procedures to maintain current program.</i>	
<i>Established procedures to evaluate effectiveness.</i>	

Appendix B

Chemical Inventory, Kentucky WSC, 2007

Chemical Inventory, Kentucky Water Science Center office, December 2007

[WQL, water-quality laboratory; FC, flammables cabinet; BC, base cabinet; SC, standard cabinet; AC, acid cabinet; Sed. Lab, sediment laboratory; frig., refrigerator]

Chemical Name	Amount		Location	Project(s)	Responsible individual (initials)	Expiration date	Inventory date	Remarks
	Count	Measure						
Acetone, 100 percent	750	milliliters	WQL FC	Label removal	CJT/EAS	--	12/03/07	1-500 ml glass bottle; 1-250 ml plastic bottle
Alkaline-Iodide-Azide powder pillows	170	grams	WQL SC	All	ASC	August 2007	12/03/07	Two 50-packs in foil, 85 grams each
Ammonium Hydroxide	9	liters	WQL BC	Dye tracing	CJT	--	12/03/07	Six 2.5-liter glass bottles
Ammonia in Isopropanol Dye Elutant solution	3	liters	WQL FC	Dye tracing	CJT	--	12/03/07	5-percent ammonia in Isopropanol in 1-gallon container
Cobalt Chloride	25	grams	WQL SC	All	ASC		12/03/07	Zero DO Buffer
Formizon Turbidity standard	6.5	liters	WQL SC	NASQAN	ASC	August 2009	12/03/07	Thirteen 500-milliliter amber plastic bottles
Hydrochloric Acid, 5 percent	48	liters	WQL AC	NASQAN/SedLab	ASC/EAS	--	12/03/07	Twelve 4-L plastic jugs to rinse equipment
Hydrogen Peroxide, 30 percent	3.5	liters	WQL BC	Sed Lab use	EAS	--	12/03/07	Seven 500-ml plastic bottles
Isopropanol, 99 percent	3	liters	WQL FC	Dye tracing	CJT	--	12/03/07	Three 1-liter glass bottles
Isopropyl alcohol, 70 percent	4.5	liters	WQL FC	Dye tracing	CJT	--	12/03/07	One 4-liter and one 500-milliliter plastic bottles
Manganous Sulfate powder pillows	220	grams	WQL SC	ALL	ASC	August 2009	12/03/07	Two 50-packs in foil, 110 grams each
Methanol	9	liters	WQLFC	NASQAN	ASC	--	12/03/07	Two 4-liter glass jugs; one 1-liter glass bottle
Nitric Acid, 7.7N	96	milliliters	WQL AC	NASQAN	ASC	05/29/08	12/03/07	Two boxes of 24 each 2-milliliter poly vials
Potassium Hydroxide pellets	25	kilograms	WQL BC	Dye tracing	CJT	--	12/03/07	Five 500-gram jars
Salicylic Acid/Starch Indicator	100	milliliters	WQL SC	All	ASC	August 2009	12/03/07	One 100-ml bottle
Sodium bicarbonate	33	kilograms	WQL locker	To neutralize acid	DDZ	--	12/03/07	47 1-lb boxes; 2 12-lb bags
Sodium carbonate	1000	grams	Sed. Lab cabinet	Sed Lab use	EAS	--	12/03/07	Two 500-gram plastic bottle
Sodium Hexametaphosphate	500	grams	Sed. Lab cabinet	Sed Lab use	EAS	--	12/03/07	One 500-gram jar
Sodium Sulfate	500	grams	WQL SC	All	ASC	12/01/07	12/03/07	Zero DO Buffer

Chemical Name	Amount		Location	Project(s)	Responsible individual (initials)	Expiration date	Inventory date	Remarks
	Count	Measure						
Sulfamic Acid powder pillows	250	grams	WQL SC	All	ASC	August 2009	12/03/07	50 pillows in plastic jar
Sulfuric Acid, .16N	78	milliliters	WQL NASQAN cabinet	NASQAN	ASC	10/07 08/08 03/09	12/03/07	Six 13-milliliter plastic titration cartridges
Sulfuric Acid, 4.5N (1:7)	48	milliliters	WQL AC	NASQAN	ASC	05/29/08	12/03/07	Two boxes of 24 each 1-milliliter poly vials
Sulfuric Acid (1:1)	126	milliliters	WQL AC	NASQAN	ASC	05/29/08	12/03/07	126 1-ml glass vials in 8 boxes

Chemical Inventory, Paducah field office, December 2007

Chemical Name	Amount		Location	Project(s)	Responsible individual (initials)	Expiration date	Inventory date	Remarks
	Count	Measure						
Formazin Turbidity standard, 5%	3	500 milliliters	Laboratory shelf	Little River	RSD	August 2005	02/02/04	One 500-milliliter amber plastic bottle
Hydrochloric Acid	7	liters	Laboratory shelf	NASQAN/Little River	RSD	June 2005	02/02/04	In 1-gallon plastic jugs
Methanol	5	liters	Laboratory shelf	NASQAN	RSD	None	02/02/04	In two glass bottles
Nitra Ver 6	100	grams	Laboratory shelf	NASQAN	RSD	February 2004	02/02/04	100 foil packs, 1 gram each, Nitrate Reagent
Nitri Ver 3	100	grams	Laboratory shelf	NASQAN	RSD	November 2005	02/02/04	100 foil packs, 1 gram each, Nitrite Reagent
Nitric Acid	32	milliliters	Acid cabinet	NASQAN	RSD	None	02/02/04	Sixteen 2-milliliter poly vials
Sulfuric Acid	1	liter	Acid cabinet	NASQAN	RSD	None	02/02/04	In 1-liter plastic bottle
Sulfuric Acid	61	milliliters	Acid cabinet	NASQAN/Little River	RSD	None	02/02/04	Sixty-one 1-milliliter poly vials
Sulfuric Acid .16N	65	milliliters	Laboratory refrigerator	NASQAN/Little River	RSD	February 2005	02/02/04	Five cartridges, 13-milliliters each, Alkalinity Titrations
Sulfuric Acid 1.6N	65	milliliters	Laboratory refrigerator	NASQAN	RSD	None	02/02/04	Five cartridges, 13-milliliters each, Alkalinity Titrations

Chemicals for disposal, Kentucky District office, December 2007

[WQL, water-quality laboratory; BC, base cabinet; mL, milliliter; FC, flammables cabinet; lab, laboratory; AC, acid cabinet; MSDS, Material Safety Data Sheet]

Chemical Name	Amount		Location	Project(s)	Responsible individual (initials)	Expiration date	Inventory date	Remarks
	Count	Measure						
Alkaline Iodide-Azide powder pillows	75	1-gram powder pillows	WQL BC	Past MSD project	DDZ	--	12/03/07	Three boxes of 25 each; 1 pillow = 1 gram; contains Li K Na
Hach Mercuric Nitrate	100	mL	WQL BC	Past project	ASC	--	12/03/07	100 mL in glass bottle
Hach Nessler Reagent	200	mL	WQL BC	Past project	DDZ	--	12/03/07	Two 100-mL plastic bottles (contains Hg, NaOH)
Hydrochloric Acid (38%)	20	liters	WQL AC	Past project	DDZ	--	12/03/07	Eight 2.5-liter bottles
Manganous Sulfate powder pillows	450	grams	WQL BC	Past MSD project	DDZ	--	12/03/07	Nine boxes of 25 pillows; 1 pillow = 2 grams
Mercury batteries, four	4-AA	batteries	WQL BC	Past project	ASC	--	12/03/07	Four AA-batteries Hg.
Mercury (liquid)	4	pounds	WQL BC	From Monometers	DDZ	--	12/03/07	Two 1.5-pound bottles; one 1-pound calibration vessel
Mercury thermometers	552	grams	WQL BC	Lab use	DDZ	--	12/03/07	Thermometers in 2 bags, glass included
Mercury thermometers (2 large lab)	100	grams	WQL BC	Lab use	DDZ	--	12/03/07	One 16-inch lab thermometer One 24-inch lab thermometer
Methanol (Rinsate)	12	liters	WQLFC	NASQAN	ASC	--	12/03/07	Three 4-liter glass jugs
Nitra Ver 6	200	grams	WQL BC	NASQAN	ASC	--	12/03/07	200 foil packs, 1 gram each, Nitrate Reagent
Nitrate test-kit waste	3	liters	WQL AC	Distler	CJT	--	12/03/07	Three 1-liter bottles
Nitri Ver 3	200	grams	WQL BC	NASQAN	ASC	--	12/03/07	200 foil packs, 1 gram each, Nitrite Reagent
Nitric Acid Potassium Dichromate	20	10-mL spent vials	WQL AC	Past project	DDZ	--	12/03/07	Spent vials in 1-liter Nalgene bottle
Resin 2-X8 (anion)	150	grams	WQL BC	NASQAN	ASC	--	12/03/07	In 1-liter Nalgene jar (see MSDS)
Resin 50W=X8 (cation)	150	grams	WQL BC	NASQAN	ASC	--	12/03/07	In 1-liter Nalgene jar (see MSDS)
Sulfamic Acid powder pillows	2,500	grams	WQLAC	Past project	DDZ	--	12/03/07	Five jars of 100 pillows; 1 pillow = 5 grams
Sulfuric Acid (51%)	2.5	liters	WQL AC	Past project	DDZ	--	12/03/07	One 2.5-liter bottle

Reagents from old Hach Kits for disposal, Kentucky District office, December 2007

[WQL, water-quality laboratory; BC, base cabinet]

Chemical Name	Amount		Location	Project(s)	Responsible individual (initials)	Expiration date	Inventory date	Remarks
	Count	Measure						
Hach Amino Acid	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Brom Cresol Green Methyl Red	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Bromophenol Blue	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Cal Ver II	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Chlorine Reagent	100	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 100 each powder pillows
Hach Chroma Ver III	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Citrate Buffer	50	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 50 each powder pillows
Hach Citric Acid	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Copper Reagent	50	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 50 each powder pillows
Hach Diphenylcarbazone	50	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 50 each powder pillows
Hach Dissolved Oxygen I	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Dissolved Oxygen II	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Dissolved Oxygen III	25	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 25 each powder pillows
Hach Ferro Ver	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Hydrogen Sulfide	100	grams	WQL BC	Past project	ASC	--	12/03/07	100 test papers in jar
Hach Man Ver II	50	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 50 each powder pillows
Hach Nitri Ver III	50	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 50 each powder pillows

Chemical Name	Amount		Location	Project(s)	Responsible individual (initials)	Expiration date	Inventory date	Remarks
	Count	Measure						
Hach Phenolphthalein	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach Phenylarsine Oxide	10	milliliters	WQL BC	Past project	ASC	--	12/03/07	One digital titration cartridge with arsenic
Hach Phos Ver II phosphate	25	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 25 each powder pillows
Hach Potassium Persulfate	50	grams	WQL BC	Past project	ASC	--	12/03/07	One box of 50 each powder pillows
Hach Sodium Hydroxide	10	milliliters	WQL BC	Past project	ASC	--	12/03/07	Two digital titration cartridges
Hach Sodium Periodate	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows
Hach SPADNS Reagent	9	milliliters	WQL BC	Past project	ASC	--	12/03/07	Contains Arsenic and Hydrochloric acid
Hach Sulfa Ver IV, contains Barium	100	grams	WQL BC	Past project	ASC	--	12/03/07	Two boxes of 50 each powder pillows

Appendix C

Form Letter for Obtaining an MSDS

Letterhead

Date

Name and address of MSDS supplier, (manufacturer, importer, or distributor)

Mr. or Ms.:

The USGS recently purchased your product (**product identifier**) and a Material Safety Data Sheet (MSDS) did not arrive with the first delivery.

Please send me an appropriate MSDS that will meet the requirements set forth in OSHA standards 29 CFR 1910.1200 and 29 CFR 1926.59.

Thank you for your cooperation.

Sincerely,

Employee name

Job title

Appendix D

Sample Hazard Communication Training Program

Hazard Communication Program Administrator

1. OSHA regulations require four basic items for hazard communication:
 - a. A written hazard communication program;
 - b. Material safety data sheets on each chemical;
 - c. Labels on all chemical containers; and
 - d. Training on the hazards of the chemicals used by personnel.

2. Some personnel work with or near hazardous chemicals. The USGS wants affected personnel to be aware of this and the personal protective equipment used including face shields, glasses, splash goggles, respirators, gloves, rubber boots, full-body suits, aprons, or possibly only one or two of the above. In case of an accident, the USGS wants the personnel to know what to do to protect themselves from these hazardous chemicals.

Special training and hazard assessment for the use of personal protective equipment will be conducted as specified in 29 CFR 1910.132 through 29 CFR 1910.138.

3. Many of you do not work with hazardous chemicals. Nevertheless, you need to be advised about the chemicals used by the USGS. This information may be helpful in the use of chemicals in your homes, yards, and gardens, because there are many hazardous chemicals used in those areas.

4. Part of our program relates to what we call MSDS, which stands for Material Safety Data Sheets. If you aren't a chemist, there will be much on this data sheet that you won't understand. We're not chemists and some of this data is new to us. There are parts we do understand, and those parts deal with how we use the chemicals and the personal

protective equipment in case of an accident; therefore, discussing how to read an MSDS is a vital part of this program.

5. You may breath chemicals into your lungs. Chemicals also can enter through the skin, nose, mouth, eyes, and elsewhere.
6. Chemicals may affect your lungs, heart, skin, kidneys, brain, nervous system, liver, eyes, and other parts of your body.
7. If you work with chemicals, learn or post emergency procedures, emergency telephone numbers, and instructions on how to read labels. If you transfer to another work location with new chemicals, learn how to safely use those chemicals.

If new chemicals are brought into your workplace, learn their associated hazards and how to safely handle them, what protective equipment to use, and what to do in case of an emergency. If you encounter a new chemical that you are not familiar with, contact your supervisor about proper training before using the chemical.

8. Each of you has been presented with a MSDS. We will discuss the information on this sheet.

(Complete discussion on all data on the MSDS)

9. We will discuss the location(s) in the facility where hazardous chemicals are used and the proper and safe work procedures for these chemicals. The proper use of personal protective equipment will be discussed. Also, in case of an accident, you will be advised about safety precautions to take to protect yourself from serious injury.
10. We also will advise you of the location within the facility where the MSD sheets are kept, along with the USGS written program for hazardous chemicals. Any time you want to know about the chemicals in your workplace, you are entitled to look at these records. You should contact your supervisor in cases where you want to see these records.
11. We also will advise you about how the USGS is labeling these materials and how to detect hazards by visibility and odors.

12. Generally speaking:

- a. Know if you are working with hazardous materials.
- b. Know how to recognize them by sight, by labels, by odors, etc.
- c. Know how to use the chemicals safely.
- d. Know what to do in case of a chemically related accident.

13. There also are other training programs available from:

Clyde J. Sholar, Regional Safety Manager

14. Hazard Determination

In general, the USGS has elected to rely on the data contained on the manufacturer's MSDS for evaluating the hazards associated with any chemical processed, used, or stored on site. In the event a MSDS is not available from the manufacturer or supplier, or the information on the MSDS is insufficient, the following information will be used for the proper evaluation of a chemical or substance in the workplace. Any chemical, chemical mixture, or material shall be considered hazardous for the purpose of this Hazard Communication Program when evaluation of the available chemical data demonstrates that the substance meets any of the following criteria:

- a. **Carcinogen**: A chemical is considered a carcinogen if:
 - 1) It has been evaluated by the International Agency on Research for Cancer (IARC) and found to be a carcinogen or potential carcinogen;
 - 2) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP), latest edition; or
 - 3) It is regulated by OSHA as a carcinogen.
- b. **Corrosive**: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact.

- c. **Highly Toxic:** A chemical falling within any of the following categories:
- 1) A chemical that has a medial lethal dose (LD_{50}) of 50 milligrams (mg) or less per kilogram (kg) of body weight when administered orally to albino rats weighing from 200 to 300 grams (g) each,
 - 2) A chemical that has an LD_{50} of 200 mg or less per kg of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing from 2 to 3 kg each,
 - 3) A chemical that has an LD_{50} in the air of 200 parts per million (ppm) by volume or less of gas or vapor, or 2 mg per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within 1 hour) to albino rats weighing from 200 to 300 g each.
- d. **Irritant:** A chemical that is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact (see 16 CFR 1500.41 and 16 CFR 1500.42).
- e. **Sensitizer:** A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.
- f. **Toxic:** A chemical that has an LD_{50} in the air of more than 200 ppm but not more than 2,000 ppm by volume of gas or vapor, or more than 2 milligrams per liter (mg/L), but not more than 20 mg/L of mist, fume, or dust when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing from 200 to 300 g each.
- g. **Target Organ Effects:** The following is a target organ categorization of effects that may occur after chemical exposure. This categorization of effects is not intended to be all-inclusive:
- 1) **Hepatoxins:** chemicals that produce liver damage.
 - 2) **Nephrotoxins:** chemicals that produce kidney damage.
 - 3) **Neurotoxins:** chemicals that produce their primary toxic effects on the nervous system.

- 4) **Agents**: damage the lungs; chemicals that irritate or damage the pulmonary tissue.
- 5) **Teratogens**: chemicals that affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses.
- 6) **Cutaneous hazards**: chemicals that affect the dermal layer of the body.
- 7) **Eye Hazards**: chemicals that affect the eye or visual capacity.

h. **Toxic Hazardous Substances**: A chemical is considered hazardous if:

- 1) It is listed in 29 CFR 1910 Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), or
- 2) It is listed in "Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment," American Conference of Governmental Industrial Hygienists (ACGIH), latest edition.

Physical Hazards

Materials that display any of the following characteristics or conditions should be considered hazardous:

1. **Combustible Liquids**: Any liquid having a flashpoint at or above 100°F (37.8°C), but below 200°F or higher, the total volume of which make up 99% or more of the total volume of the mixture.
2. **Compressed Gas**: Any gas or mixture of gases having, in a container, either an absolute pressure exceeding 40 pounds per square inch (lb/in²) at 70°F (21.1°C), or an absolute pressure exceeding 104 lb/in² at 130°F (54.4°C), or both.
3. **Explosive**: A chemical that causes a sudden, almost instantaneous, release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.
4. **Flammable liquid**: Any liquid having a flash point below 100°F (37.8°C) except any mixture

having components with flash points of 100°F (37.8°C) or higher, the total of which make up 99% or more of the total volume of the mixture.

5. **Organic Peroxide**: An organic compound that contains the bivalent -O-O- structure and that may be considered to be a structural derivative of hydrogen atoms that has been replaced by an organic radical.

6. **Oxidizer**: Substance that readily yields oxygen to stimulate combustion.

7. **Pyrophoric**: A chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

8. **Unstable (reactive)**: A chemical that in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense or will become self-reactive under conditions of shocks, pressure, or temperature.

9. **Water-reactive**: A chemical that reacts with water to release a gas that either is flammable or presents a health hazard.

Appendix E

Hazard Communication Program Training Record

Trainer(s):

Name	Affiliation/Certification

Employee(s) receiving training:

Date of training	Employee name	Job title

Appendix F

Sample Letter to Outside Contractors

Date

To: All Contractors

Subject: OSHA HAZARD COMMUNICATION STANDARD

A list has been developed of all hazardous materials in use at this facility. Copies of this list and the Material Safety Data Sheets (MSDS) for these hazardous materials are available to you and your personnel upon request. This information is made available to you and your personnel in compliance with the OSHA Federal Hazard Communication Standard.

Please be advised that you are required to submit to Douglas D. Zettwoch, CDEPC of our facility an MSDS for any hazardous product that you plan to bring into our workplace. These MSDS must be submitted **before** the material is brought into our facility. Your cooperation in this matter is required by law and appreciated.

Respectfully submitted,

Employee name

Job Title