
Hazard Communication Program

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I. BACKGROUND

This written Hazard Communication Program ensures that the University of North Dakota's (UND) employees are effectively informed and meet OSHA requirements concerning potential and existing chemical hazards. Hazard Communication is one important aspect of the University of North Dakota's safety and health program, which includes:

- Management commitment and active support.
- Engineering controls for safety and health hazards.
- Enforcement of safety rules and programs.
- Recognition, evaluation, and control of occupational safety and health hazards.
- Medical surveillance.
- Assigned safety and health responsibility and accountability.

II. PURPOSE

The purpose of this Hazard Communication Program is to provide a means of informing employees of potential or existing chemical hazards.

III. APPROACH

The methods used to inform employees include:

- Container labeling, signs, and other forms of warning.
- Material Safety Data Sheets (MSDSs).
- Employee education and training.

IV. SCOPE/APPLICATION

This Hazard Communication Program applies to all activities that occur on campus or by campus personnel at off campus locations. It only applies to laboratories as follows:

- Labels on incoming containers of hazardous chemicals must not be removed or defaced.
- Copies of any material safety data sheets (MSDSs) that are received with incoming shipments of hazardous chemicals must be readily accessible during each work shift to employees when they are in their work areas. A copy of these MSDSs must also be sent to the Safety and Environmental Health Office (SEHO) as defined in the MSDS section of this standard.
- See the Chemical Hygiene Plan for more information regarding laboratory safety.

V. RESPONSIBILITIES

Department Heads, Directors, and Managers are responsible for:

- Implementation of this program in their departments.

- Making sure employees are trained or otherwise qualified with respect to determining the hazards in their workplace and the measures they must take to protect themselves.
- Determining chemical hazards in their department.
- Making sure the MSDSs are developed for hazardous materials that are created within their department.

Safety and Environmental Health is responsible for:

- Maintaining a central MSDS file for hazardous chemicals.
- Auditing for compliance with this program.
- Acting as a resource on matters relating to this program.

Employees are responsible for:

- Following the requirements of this program.
- Reporting any problems to their supervisor.
- Following the directives of their supervisors.

VI. MATERIAL SAFETY DATA SHEETS (MSDSs)

MSDSs are prepared and distributed by manufacturers and distributors of hazardous materials. All chemical manufacturers and distributors must obtain or develop an MSDS for each hazardous material they produce or import. A hazardous material is one that is either a physical hazard (i.e., flammable, oxidizer, etc.) or a health hazard (i.e., causes acute or chronic health effects). See Appendix A for a detailed description of hazardous materials.

A copy of MSDSs received by Central Receiving or other departments must be sent to the Safety and Environmental Health Office. Upon receipt, the SEHO will enter the MSDS into a master MSDS database. This database will be utilized in the organization and storage of MSDSs and will serve as a list of the hazardous materials present on the UND campus. Hazardous chemicals created at or exported from UND must have a MSDS created to inform potential users of materials potential hazards. Appendix B contains information on the creation of MSDSs.

MSDSs must be in English and contain at least the following information (Appendix B contains additional detail):

- The identity of the chemical.
- The physical and chemical characteristics.
- The physical and health hazards.
- Primary routes of entry.
- Exposure limits.
- Precautions for safe handling.
- Controls to limit exposure.
- Emergency and first aid procedures.
- Name of manufacturer or distributor.

A. MSDS Availability

The SEHO maintains copies of all MSDSs for each hazardous material at UND and makes them accessible. It is important for employees to review the MSDSs for the materials they work with. They also may request a copy of an MSDS if they wish. It is the supervisor's responsibility to make sure that copies of MSDSs for hazardous materials used in each work area, are maintained in or near the work area in an accessible location during each work shift, and are kept current. Supervisors must also make certain that MSDSs are available for work being conducted at off-site locations, unless the employee can immediately obtain the information in an emergency.

MSDSs may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals when it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, it is still the supervisor's responsibility that the required information is provided and accessible for each hazardous chemical during each work shift to employees in their work areas.

B. Exemptions to MSDSs (MSDSs are not required for the following):

Tobacco or tobacco products:

- Wood or wood products, including lumber which will not be processed, where the chemical manufacturer or importer can establish that the only hazard these products pose to employees is the potential for flammability or combustibility.
- **Note:** Wood or wood products which have been treated with a hazardous chemical and wood which may be subsequently sawed, cut, or generate dust, are not exempted. In addition, steel and similar products that will be cut, ground, etc. to produce dust require MSDSs.
- Food or alcoholic beverages, which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace.
- Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal use by employees while in the workplace.
- Any consumer product or hazardous substance* that is used as intended by the chemical manufacturer or importer of the product. The material must also be used in a fashion that results in a duration and frequency of exposure that is not greater than the range of exposures that could reasonably be experienced by consumers. * As 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.)
- Particulate material (e.g., floor dry) where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard.
- Ionizing and non-ionizing radiation.
- Biological hazards.

VII. LABELS AND OTHER FORMS OF WARNING

Materials known or suspected as being hazardous must be labeled as hazardous. Chemical manufacturers, importers, and distributors provide labels, tags, or other markings for containers of hazardous chemicals. This identification includes the following information:

- Identity of the hazardous chemical (secondary containers must also contain this).
- Appropriate hazard warnings (secondary containers must also contain this, see Appendices C and D).
- Name and address of the chemical manufacturer, distributor, or other responsible parties.
- UND personnel are required to label "Peroxidizable" if material is peroxidizable. All containers used to store peroxidizable compounds must contain a peroxidizable compound label in addition to the previously stated labeling requirements. When the container is opened for the first time, that date must be written on the peroxidizable compound label. Once opened, peroxidizable compounds must be tested for the formation of peroxides at least every three months. Each test date is to be recorded on the container's peroxidizable compound label. Any substance that has formed peroxides to a point of reaching a dangerous limit must be properly treated to inhibit further peroxide formation and immediately processed for disposal. Contact the SEHO for additional information.
- Carcinogens over 0.1% must be labeled as a carcinogen.
- Occasionally, signs, placards, process sheets, batch tickets, operating procedures, or similar accessible written materials may be used instead of affixing labels to individual containers.
- Secondary containers of hazardous chemicals do not have to be labeled if they contain chemicals transferred from labeled containers, which are intended only for the immediate use of the employee who performs the transfer and the secondary container is empty at the end of the shift in which the transfer was made.
- Do not deface labels on incoming containers in any way. Missing or defaced labels must be immediately reported to the supervisor so appropriate labels can be re-applied immediately.
- Empty containers should be promptly disposed of. If an empty container is retained for re-use, it should be stored with the word RESIDUE associated with its label until it is cleaned of hazardous residue. Once cleaned, hazard warnings must be removed, defaced, or covered.

VIII. EMPLOYEE INFORMATION, EDUCATION, AND TRAINING

A. New employees must receive safety and health information and training during their initial assignment. This training includes information about hazardous materials and processes in the workplace. The new employee orientation coordinated by the SEHO provides basic hazard communication information including MSDSs, labeling, signage, and emergency procedures. Supervisors are responsible for additional information not provided during the new employee training. Additional training needs to address the following topics as applicable:

- Operations in their work areas where hazardous chemicals are present.
- General chemical hazards.
- Physical and health hazards of the chemicals in the work area.
- Hazards associated with non-routine tasks.

- Recognition, evaluation, and control of hazardous chemicals.
- Chemical labeling.
- Hazards associated with unlabeled piping and processing systems.
- MSDSs and their location.
- Access to information on hazardous chemicals.
- Compliance with safety and health rules and regulations.
- Requirements of Federal Hazard Communication Regulations.
- Specific hazards present in the work areas.
- The location and availability of the written Hazard Communication Program and all supporting information.
- The measures employees can take to protect themselves from hazards, including pertinent work practices, company emergency procedures, and personal protective equipment.

Documentation of any additional supervision training must be sent to the SEHO. Definitions related to hazardous chemicals can be found in Appendix A.

B. Retraining

It is necessary for additional employee training when:

- New materials or processes are introduced into the workplace.
- Process or work practices are introduced or changed, which could cause changes in employee's exposure.
- Personnel are transferred from one work area to another where different hazards are present.

A record of all employee training is maintained by Safety and Environmental Health. Supervisors must forward a copy of departmental training to the SEHO.

C. Hazardous Materials Safety- General

Assume all chemicals are hazardous until you know otherwise. The number of hazardous materials and the number of reactions between them are so large that prior knowledge about their potential hazards is paramount. Use hazardous materials in as small of quantities as possible to minimize exposure and reduce possible harmful effects. Below are some general safety recommendations that are important when working with hazardous materials:

- Read and understand Material Safety Data Sheets.
- Substitute less toxic materials whenever possible.
- Do not underestimate the risks of hazardous materials particularly when they are mixed.
- Limit the volume of hazardous materials to only that which is needed for the operation.
- Keep incompatible materials segregated.
- Use appropriate safety equipment.
- Avoid ingestion. Do not eat, drink, or apply cosmetics in areas where hazardous materials are used. Wash hands with soap and water immediately after working with hazardous materials, even if gloves have been worn.

- Do not deface labels and hazard warnings placed on containers by the manufacturer.
- Label all containers that have had hazardous materials transferred into them with all the appropriate information.
- Be prepared for accidents. Know what action to take, how to warn others, and the location of safety equipment in case an accidental release of hazardous material occurs.
- Provide secondary containment for hazardous materials whenever feasible. Make sure appropriate spill control equipment is readily available when secondary containment cannot be used.
- Keep work areas clean and orderly.

IX. NON-ROUTINE TASKS

The supervisor of an employee performing a non-routine task, such as cleaning process equipment, is responsible for properly training the employee concerning the potential hazards associated with the task. Personnel also share in this responsibility by making sure that their immediate supervisor knows that the non-routine task will be performed.

X. CONTRACTORS AND WORKING VISITORS

Information regarding this Hazard Communication Program must be conveyed to contractors and working visitors who will have reasonable potential for exposure to hazardous materials used and stored at UND while performing their duties. UND personnel have the right to know about the hazards of materials that will be brought into their work area by contractors and working visitors as well. Therefore, when hazardous materials are present, the UND employees who are coordinating the work activity are responsible for facilitating the exchange of the following information:

- A brief description of the work that will be performed.
- Physical and health hazards that will be in the work area.
- Location of MSDSs (when work will be performed by the contractor/visitor in work areas where hazardous materials in the area are of concern).
- A list of the hazardous materials that will be brought on-site by the contractor/visitor.
- Location of MSDSs for hazardous materials the contractor/visitor will have on-site and how to obtain copies. A copy of a MSDS for each hazardous material brought onto the site should be requested if the contractor/visitor does not maintain a readily obtainable field set.
- Recommended personal protective equipment that must be worn for personnel to adequately protect themselves.
- Evacuation and emergency procedures.

Without prior notification, exposure to hazards may not be able to be avoided. Copies of MSDSs for all hazardous materials the contractor's employees may be exposed to are available to the contractor upon request through the SEHO. Please see Appendix E for an example of a form that can be filled out to inform contractors of on-campus chemical hazards in their work area.

XI. HAZARDOUS CHEMICAL EMERGENCIES

Hazardous Materials Response:

- Call 911 when the situation poses immediate danger to people, property, or process.
 - Notify others in the area that a release has occurred.
 - Evacuate the area if necessary.
 - Attend to injured and exposed people.
 - Identify the hazardous material.
 - Contact the Safety and Environmental Health Office for assistance or consultation.
-

APPENDIX A: Hazardous Material Definitions

Hazardous Chemical - Any chemical which is a physical hazard or a health hazard.

Physical Hazard - Refers to a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive.

Health Hazard - Refers to a chemical for which acute (short term) or chronic (long term) health effects may occur in exposed employees. The term Health Hazard includes chemicals which are carcinogens, toxic agents, reproductive toxins, irritants, corrosives, sensitizers, neurotoxins, agents which act on the hematopoietic (blood and blood-forming) system, and agents which damage the lungs, skin, eyes, or mucous membranes. Carcinogen: A chemical that has been proven, or is suspected to cause an increased likelihood of the development of cancer. There are thirteen chemicals listed by OSHA, but many others are suspected.

Carcinogen - A chemical is considered to be a carcinogen if:

- It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen.
- It is listed as a carcinogen or potential carcinogen in the Annual Report Carcinogens published by the National Toxicology Program (NTP) (latest edition).
- It is regulated by OSHA as a carcinogen.

Highly toxic - A chemical falling within any of the following categories:

- A chemical that has a median lethal dose (LD(50)) of 50 milligrams or less per kilogram of body weight administered orally to albino rats weighing between 200 and 300 grams each.
- A chemical that has a median lethal dose (LD(50)) of 200 milligrams or less per kilogram 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 between two and three kilograms each.
- A chemical that has a median lethal concentration (LC(50)) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

Toxic - A chemical falling within any of the following categories:

- A chemical that has a median lethal dose (LD(50)) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- A chemical that has a median lethal dose (LD(50)) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram 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 between two and three kilograms each.

- A chemical that has a median lethal concentration (LC(50)) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

Corrosive - A highly toxic chemical that causes visible destruction or irreversible alterations in living tissue by chemical action at the site of contact. These chemicals include acids with a pH of 0-7, bases with a pH of 7-14. Both acids and bases are commonly used as cleaning agents.

Irritant - A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

Sensitizer - A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction after repeated exposure.

Target Organ effects (Toxic substances) -

- *Cutaneous Hazards*: Chemicals which affect the dermal layer of the body (e.g., defatting of the skin; rashes). Irritation chemicals: ketones; chlorinated compounds
- *Hepatotoxins*: Chemicals which produce liver damage (e.g., jaundice; liver enlargement). Chemicals: Carbon tetrachloride; nitrosamines
- *Eye Hazards*: Chemicals which affect the eye or visual capacity (e.g., conjunctivitis, corneal damage). Chemicals: Organic solvents; acids
- *Nephrotoxins*: Chemicals which produce kidney damage (e.g., edema; proteinuria). Chemicals: Halogenated hydrocarbons; uranium
- *Neurotoxins*: Chemicals which affect the nervous system (e.g., narcosis; behavioral changes; decrease in motor functions). Chemicals: Mercury; carbon disulfide
- *Hemato-poietic agents*: Decrease hemoglobin function; deprive body tissues of oxygen (e.g., cyanosis; loss of consciousness). Chemicals: Carbon monoxide; cyanides
- *Agents which damage the lung*: Irritate or damage pulmonary tissue (e.g., cough; tightness in chest; shortness of breath). Chemicals: Silica; asbestos
- *Reproductive toxins*: Affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis) (e.g., birth defects; sterility). Chemicals: Lead
- *Route of Entry*: The pathway by which a harmful substance enters the human body. The four routes of entry include:
 - *Inhalation*: The most common route of exposure for most health hazards. This includes breathing in dust, fumes, oil mist, and vapors from solvents and various gasses.
 - *Absorption*: The route of exposure where chemicals are absorbed into the body through skin contact. Wearing protective clothing is important to prevent chemicals from being absorbed through the skin.

- *Ingestion*: The swallowing (ingestion) accidental or otherwise of chemicals that are health hazards.
- *Injection*: The route of exposure where the chemicals enter the body due to a puncture or an object penetrating the skin.

APPENDIX B: MSDS Information

Information in this section is provided as a reference for the preparation of an MSDS. The use of existing MSDSs may be helpful for wording in preparation of several sections. A sample form and MSDS are attached for examples. Contact the SEHO for additional MSDS samples.

Material Safety Data Sheets (MSDSs) will usually be made up of 16 sections if they comply with the voluntary ANSI (American National Standards Institute) standard Z400.1, with each section describing a specific detail about the product. Not all the MSDSs conform to this standard. Most MSDSs that do not conform will usually be organized in a manner similar to the standard that is discussed below, although the section numbers and heading will not usually match. In addition, some sections may be included, but their section numbers will not be exactly the same as those listed below, although they will usually be in the order specified below even if the numbers are different (for example, section 12's data, entitled "Ecological information" may not exist on your sheet, so section 13 (if present) becomes section 12).

Below is a listing of what each ANSI standard Z400.1 compliant MSDS section usually contains. Sections 3, 4, and 5 are typically the most important for you to be familiar with, although, you should review the entire sheet as a standard practice. These sections detail the hazards identification, first aid measures, and fire fighting measures specific to the product.

When creating a MSDS, never leave a section blank. Fill out each section as completely as possible. If no information is available for a section, denote by using:

NA- Not Applicable

ND- Not Determined

NT- Not Tested

The American National Standards Institute (ANSI) recommends the following 16 sections in their MSDSs:

- **Section 1 - Chemical Product and Company Identification** –
The name on the label and any synonyms; and the manufacturer or distributor's name, address, emergency telephone number, date MSDS was prepared or revised.
- **Section 2 - Composition, Information on Ingredients** –
The composition of mixtures; the identity of the hazardous ingredient(s) including both chemical and common name(s); Chemical Abstracts Registry Number (CAS); PEL (permissible exposure limit); and TLV (threshold limit values), any other recommended limits.
- **Section 3 - Hazard Identification** –
Appearance of material; health effects; signs and symptoms of exposure; mode of entry (inhalation, skin, ingestion); and target organs.
- **Section 4 - First Aid Measures** –
Provides instructions to be taken if accidental exposure requires immediate treatment. May also include instructions to medical professionals.

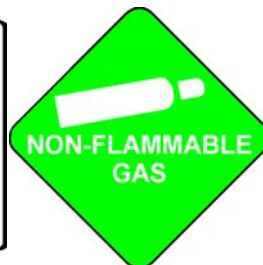
- **Section 5 - Fire-Fighting Measures** –
Extinguishing agents; danger of explosion; special fire fighting procedures; flash point and method of determination; flammable limits, including lower explosion limit (LEL) and upper explosion limit (UEL).
- **Section 6 - Accidental Release Measures** –
How to respond to spills, leaks, and air release including containment and type of equipment to be used.
- **Section 7 - Handling and Storage** –
Precautions to prevent overexposure and instructions for hygiene.
- **Section 8 - Exposure Controls and Personal Protection** –
Information on engineering controls (including equipment and ventilation - local or mechanical); personal protective equipment (eye, skin, gloves and clothing, respiratory, including type of device); and work and hygiene practices.
- **Section 9 - Physical and Chemical Properties** –
Appearance; odor; physical state; pH, vapor pressure; vapor density; evaporation rate; boiling point; melting point; solubility in water; and density or specific gravity.
- **Section 10 - Stability and Reactivity** –
Stability; hazardous by-products of decomposition or burning; possible hazardous reactions; conditions to avoid; incompatibilities; possibility of hazardous decomposition or polymerization; and descriptions of the conditions to be avoided or other materials that may cause a reaction that would change the intrinsic stability of the material.
- **Section 11 - Toxicological Information** –
Data used to identify hazard; acute data; carcinogenicity (National Toxicological Program (NTP), Occupational Safety and Health Administration - OSHA, International Agency for Research on Cancer - IARC); reproductive effects; target organ effects; acute and chronic health hazards; and medical conditions aggravated by exposure.
- **Section 12 - Ecological Information** –
Impact on the environment should release occur.
- **Section 13 - Disposal Considerations** –
Disposal; recycling; and reclamation.
- **Section 14 - Transport Information** –
Hazard materials description; hazard class; and ID number (UN or NA)
- **Section 15 - Regulatory Information** –
Information from: Occupational Safety and Health Administration (OSHA); Toxic Substances Control Act (TSCA); Comprehensive Environmental Response, Composition, and Liability Act (CERCLA); and Superfund Amendments and Reauthorization Act (SARA).
- **Section 16 - Other Information** –
Hazard rating; preparation and revision of MSDS; label or any other additional information.

Material Safety Data Sheet Sample Form -

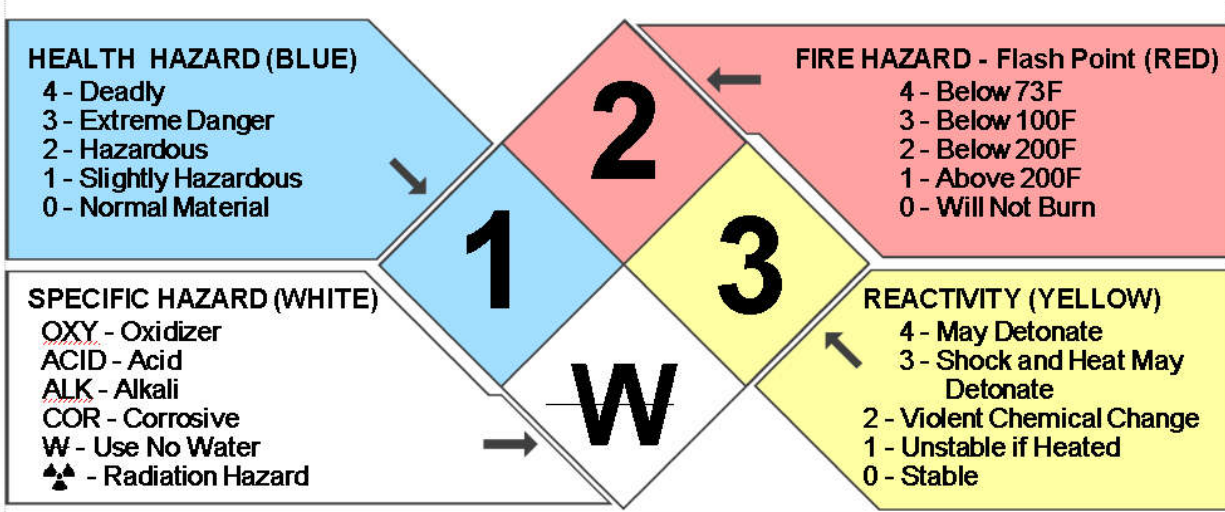
http://www.safety.und.edu/policy/programs/hazcom/msds_form.htm

Appendix C: Material Label Samples -

http://www.safety.und.edu/policy/programs/hazcom/appendix_c.htm



Appendix D: National Fire Protection Association's 704 Marking System -
http://www.safety.und.edu/policy/programs/hazcom/appendix_D.htm



Appendix E: Hazard Communication Contractor/Working Visitor Form -
http://www.safety.und.edu/policy/programs/hazcom/appendix_E.htm

(UND Department Name)

(Contractor/Working Visitor)

It is UND policy that facilities using hazardous materials inform contractors and working visitors of the chemical and physical hazards presented in the areas where contractors/working visitors may be working. The following is a guide that may be used to transfer this information.

Brief Description of the Work to be Performed:

Potential Hazards (Physical and Health) in the Work Area:

Material Safety Data Sheet (MSDS) Locations (both UND and Contractor/Working Visitor):

MSDSs Supplied by UND (not required unless requested):

MSDSs Supplied by Contractor (not required unless requested):

Recommended Personal Protective Equipment:

- Hard Hat
- Gloves
- Safety Glasses
- Boots
- Chemical Splash Goggles
- Coveralls

- Apron
- Slicker Suit
- Respiratory Protection: _____
- Other: _____

UND Signature _____

Contractor/Working Visitor Signature _____