



## Northeast Biomanufacturing Center and Collaborative

### Hazard Communication Program (HCP)

NBC-HCP-000

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**APPLICABLE STANDARD:** 29CFR1910.1200  
OSHA's Hazard Communication Standard

### Document Contents

SECTION	CONTENT
<b>A</b>	<b>Scope and Application</b>
<b>B</b>	<b>Purpose</b>
<b>C</b>	<b>Definitions</b>
<b>D</b>	<b>Equipment</b>
<b>E</b>	<b>Procedures</b>
<b>F</b>	<b>Training</b>
<b>G</b>	<b>Outside Contractors</b>

#### Section

#### A

### Scope and Application

The Northeast Biomanufacturing Center and Collaborative (NBC<sup>2</sup>), under OSHA's Hazard Communication Standard (HCS), requires chemical manufacturers or importers to assess the hazards of all chemicals they produce or import and transmit that information to affected employers and employees. The standard requires the Center to provide employee information about the potential of hazardous chemical exposure under normal use conditions or in a foreseeable emergency; and the transmittal of this information by means of a comprehensive Hazard Communication Program which includes container labeling and other forms of warning, Material Safety Data Sheets, and employee training.

In order to comply with the Hazard Communication Standard, this Hazard Communication Program has been established for NBC<sup>2</sup>. All schools, colleges, and administrative offices operating within the center are incorporated within this program.

Primary responsibility for compliance with the Hazard Communication Program lies with the individual institution, laboratory, or facility operating within the center. Each dean, director, chair, and lab supervisor is responsible for safety performance and hazard communication within their respective institutions and labs. The Environmental Health and Safety Department (EH&S) is responsible development and coordination of policies and procedures. EH&S also

provides technical assistance in establishing procedures and monitoring performance in activities involving the Hazard Communication Program.

NBC<sup>2</sup> is committed to creating, maintaining and promoting a safe and healthful environment for all associated individuals including students, faculty, staff employees, hospital patients, and visitors. A critical component of NBC<sup>2</sup>'s environmental health and safety commitment is integrating information concerning chemical hazards into all academic and operational activities by means of this Hazard Communication Program.

This program outlines the definitions, procedures and training requirements to be utilized by NBC<sup>2</sup> employees and trainees to understand and comply with the Hazard Communication Standard. It is the duty of each employee to become familiar with the contents of this program and ensure compliance with its procedures. Supervisors and instructors shall ensure that employees and trainees understand the details of this program and ensure that employees receive the proper training. Supervisors and instructors are also responsible for maintaining records of this training. These records must be current and readily available for review.

### **ASSOCIATED DOCUMENTS**

NBC-HCP-001: Safety self-audit  
NBC-HCP-002: Guidance Document

## **Section B**

### **PURPOSE**

- The NBC<sup>2</sup> Hazard Communication Program (HCP) was developed to:
- Inform employees of the hazards associated with chemicals in the workplace.
- Ensure safe use, handling and disposal of hazardous chemicals in the workplace.
- Comply with the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (29 CFR 1910.1200)
- A successful Hazard Communication Program will reduce potential incidents of chemical source illnesses and injuries.

## **Section C**

### **Definitions**

**Chemical** means any element, chemical compound or mixture of elements and or/ compounds.

**Chemical manufacturer** means an employer with a workplace where chemical(s) are produced for use or distribution.

**Chemical name** means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules nomenclature, or a name, which clearly identify the chemical for the purpose of conducting a hazard evaluation.

**Combustible liquid** means any liquid having a flashpoint at or above 100 degree F, but below 200 degree F, except any mixture having components with flashpoints of 200 degree F, or higher, the total volume of which make up 99% or more of the total volume of the mixture.

**Common name** means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

**Container** means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical.

**Distributor** means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

**Employee** means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies.

**Employer** means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

**Explosive** means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

**Exposure or exposed** means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential exposure.

**Flammable** means a chemical that falls into one of the following categories:

- “Aerosol, flammable” means an aerosol that, when tested by the method described in 16 CFR 1500.45 yields a flame projection exceeding 18 inches at full valve opening, or a flashback at any degree of valve opening
- “Flammable Gas” means a gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen percent by volume or less; or a gas that at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve percent by volume, regardless of the lower limit
- “Flammable Liquid” means any liquid having a flashpoint below 100 degree F, except any mixture having components with flashpoints of 100 degree F or higher, the total of which make up 99% or more of the total volume of the mixture
- “Flammable Solid” means a solid, other than a blasting agent or explosive as defined in CFR 1971.109, that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard

**Flashpoint means** the minimum temperature at which a liquid gives off a vapor.

**Foreseeable emergency** means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, which could result in an uncontrolled release of a hazardous chemical into the workplace.

**Hazardous chemical** means any chemical, which is a physical hazard or a health hazard.

**Hazard warning** means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard including target organ effects, of the chemicals in the containers.

**Health hazard** means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with the established scientific principles that acute or chronic health effects may occur in exposed employees.

**Identity** means any chemical or common name, which is indicated on the material safety data sheet (MSDS) for the chemical.

**Immediate use** means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift it is transferred.

**Label** means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals

**Material Safety Data Sheets (MSDS)** means written or printed material concerning a hazardous chemical.

**Mixture** means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

**Oxidizer** means a chemical other than a blasting agent or explosive as defined in CFR 1910.109(a), that initiates or promotes combustion on other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

**Physical hazard** means a chemical for which there is scientifically valid evidence that it is combustible liquid, compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable or water-reactive.

**Produce** means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

**Responsible party** means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

**Specific chemical identity** means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

**Unstable (reactive)** means a chemical which 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.

**Use** means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

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

**Work area** means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

**Workplace** means an establishment, job site, or project, at one geographical location containing one or more work areas.

**Section  
D**

**EQUIPMENT**

The following equipment will be made available for performing confined space entries:

- Gas monitor
- Power ventilator
- Appropriate respirators as needed, which may include airline respirator system or self contained breathing apparatus (SCBA).
- Safety Tripod w/ safety harness
- Personal-lift (hoist) - required for vertical enters of more than 5 feet.
- Personal Protective Equipment including but not limited to: Hard Hat, Coveralls or other Protective Clothing, Gloves, Half Face Respirators with Chemical and Particulate Cartridges.
- Mobile Radio or communication system

**Section  
E**

**PROCEDURES**

General: Only employees that have received Confined Space Entry Training may enter a confined space or serve as an attendant, entry supervisor or conduct air monitoring. The training will review all information contained within the confined space program.

All affected employees must follow the steps listed below in order to comply with this guideline.

The EHS Director will assist with identifying all permit required confined spaces in their area. All spaces will have been evaluated using NBC<sup>2</sup>'s Confined Space Evaluation Procedure (NBC-CSE-001). Completed confined space evaluations will remain on file with EHS.

**Obtaining a Permit**

Employees whose work requires them to enter a confined space must notify their supervisor to obtain a confined space permit and specific instructions prior to entering. The Entry Supervisor fills out the Entry Permit noting the specific requirements to be followed.

**Supervisor Duties and Responsibilities**

The entry supervisor will:

- Discuss the work to be done, in the confined space, with the employee or employees and go over any special hazards, which might be encountered during work. The supervisor will discuss the procedures for eliminating those hazards from the confined space prior to entry.
- Fill out (completely) the Confined Space Entry Permit form (NBC-CSE-002) and maintain the form for recordkeeping purposes.
- If necessary, contact the EHS Director for input into the confined space entry procedure
- Make sure the employees test the air quality using a four gas monitor before entry, and that the unit is calibrated and operating properly.
- Make sure the employees perform any necessary lockout/tagout procedures before entering the confined space.
- Terminate entry and cancel permits when entry operations are completed or if a new condition exists
- Take appropriate measures to remove unauthorized entrants.

#### Pre-entry Air Quality Testing

Before a permit required confined space is entered, the atmosphere in the confined space must be tested for 1) oxygen levels; 2) flammable gases and vapors and 3) contaminants that could be found in that confined space. In addition, the space will be evaluated for physical hazards such as noise, thermal, engulfment, and other possible threats to the entrant. Initial testing shall be performed by the Director of EHS for any new confined spaces. Existing spaces may be tested by other qualified (trained) personnel.

##### 1. Oxygen

- If oxygen content is less than 19.5 % or greater than 21.5, perform additional ventilation. Then, shut off ventilation equipment and re-test the oxygen content.
- If oxygen content is between 19.5% and 21.5 %, continue the entry.

##### 2. Flammable gas level:

- If the meter is less than 10% of the lower explosive limit, continue entry preparations.
- If the meter reading is above 10% of the LEL, continue ventilation of the confined space. Shut-off the ventilation and have the atmosphere re-tested.
- If the meter reading is above 10% of the LEL, the confined space must be cleaned or purged before entry is permitted.

### 3. Toxicity of atmosphere:

The entry Supervisor will determine the toxicity of the atmosphere as planned and discussed in training. If a toxic atmosphere is present, no person should be permitted to enter the confined space at a level exceeding the Permissible Exposure Limit without proper personal protective equipment. Environmental Health and Safety should be notified to assist in identifying proper precautions and protective measures to be taken.

### 4. Testing Procedures

- All testing Equipment Shall be calibrated by supervisor or authorized employee as instructed by the manufacturer.
- All of the manufacturer's operating instructions must be followed.
- The test equipment should be tested in a known atmosphere to insure its accuracy.
- Ventilation equipment must be shut off before conducting any atmospheric tests.
- The atmosphere must be tested at the bottom, top, and middle of all confined spaces.
- The atmosphere must be continuously monitored while work is being conducted in the confined space.
- If the confined space is left for any reason, the atmosphere must be re-tested before re-entering the space.

### 5. Monitoring The Confined Space:

Record the levels on the permit and continually monitor while the space is open. If the monitoring indicates an unacceptable atmosphere after either ventilating or waiting for a short time period the entry supervisor needs to be notified. An acceptable atmosphere is defined on the permit. If the atmosphere is not acceptable then employees are **NOT PERMITTED TO ENTER THE SPACE AND THE PERMIT WOULD NOT BE VALID.**

### **Entrant Duties**

Confined space qualified (trained) entrants must ensure that all "special requirements" have been provided and established and that environmental testing results are acceptable. In addition, the entrant must:

- Know the hazards associated with the confined space and their effects
- Properly use the required equipment for entry

- Maintain a continuous means of communication with the attendant
- Alert the attendant in the event of an emergency
- Evacuate the space if an emergency occurs

### **Attendant Duties**

A confined space qualified (trained) attendant must be in position at all times while workers are in the confined space. The attendant shall:

- Know the hazards associated with the confined space and their effects
- Maintain an accurate count of all persons in the space
- Remain at their assigned station until relieved by another attendant or until all entrants leave
- Know how, and have the means, to summon emergency assistance
- Order the workers out of a confined space if:
  - hazardous conditions exceed those set by the permit
  - an unexpected hazard presents itself
  - workers in the confined space show signs of toxicity
  - a situation occurs outside the confined space that could pose a hazard to the workers,
  - the attendant must leave the area
- Perform non-entry rescue procedures

**NOTE: UNDER NO CIRCUMSTANCES IS THE ATTENDANT TO ENTER THE CONFINED SPACE UNLESS EQUIPED AND INVOLVED IN EMERGENCY RESCUE AND THERE IS A QUALIFIED PERSON TO TAKE THEIR PLACE AS ATTENDANT**

### **Post-Entry Procedures**

Entrants – shall remove all equipment and materials from the space, return the space to its planned operating condition, and secure the space

Attendant – shall account for all entrants and return all paperwork to the supervisor

Supervisor – shall ensure that all appropriate steps have been taken and return a copy of the permit to the EHS Director

Remove locks and/or tags following the NBC<sup>2</sup> lockout/tagout policies and procedures.



- For a person to be qualified (trained) for confined space entry work, they must participate in NBC<sup>2</sup>'s Confined Space Entry Training Program. This training will include:
  - Defining and characterizing confined space hazards
  - A review of the written Confined Space Entry Program
  - A review of the Confined Space Evaluation form
  - A review of the Confined Space Entry Permit
  - Atmospheric testing equipment including its use, calibration, and maintenance
  - Atmospheric testing protocol and interpretation of results
  - Methods for the control and/or elimination of confined space hazards (atmospheric and physical)
  - The use of confined space entry equipment
  - The roles and responsibilities of the confined space entry personnel, including the qualified entrant, attendant, and entry supervisor.

**Section  
G**

**OUTSIDE CONTRACTORS**

When contractors are involved in permit confined space entry work at NBC<sup>2</sup>, a qualified (trained) confined space entry supervisor will:

- Inform the contractor that the work place contains permit-required spaces and entry is allowed only through compliance with a "Permit-Required Confined Space Program."
- Inform the contractor of the hazards of the space and precautions or procedures that must be followed
- Coordinate entry in accordance with this procedure
- Debrief the contractor at the conclusion of entry operations