RUTGERS
Institutional Planning and Operations

Rutgers Environmental Health and Safety (REHS)

Program Name:	Permit-Required Confined Space Program		
Responsible Executive:	Executive Director of REHS		
Adopted:	January 1, 1998	**Reviewed:**	June 29, 2018

1. **Program Statement**
   It is the policy of Rutgers University to take precautions to eliminate potential hazards in the workplace. Permit-required confined spaces may pose life threatening conditions that must be controlled prior to human entry. This program establishes procedures to control confined space risks and protect Rutgers employees.

2. **Reason for Program**
   This program is designed to protect Rutgers employees by identifying and implementing engineering controls and best practices to minimize or eliminate hazards in permit-required confined spaces. It is also designed to ensure compliance with the following OSHA/PEOSH standards:

   - *Permit-Required Confined Spaces* – 29 CFR 1910.146 (General Industry Standard)
   - *Confined Spaces in Construction* – 29 CFR 1926 Subpart AA 1200-1213 (Construction Industry Standard)

3. **Who Should Read this Program**
   This program applies to all Rutgers employees who may enter confined spaces while performing their assigned duties, typically employees in the Institutional Planning & Operations (IP&O), Utilities, and Contract Services Departments.

4. **The Program**

   I. **Roles and Responsibilities**

   A. Rutgers Environmental Health and Safety (REHS)

   REHS provides program oversight and consultation to Rutgers departments regarding potential risks, exposure prevention and training related to permit-required confined spaces.

   REHS provides technical assistance in identifying, evaluating and controlling sources of atmospheric contamination.

   REHS periodically audits the Permit-Required Confined Space Program.

   B. Institutional Planning & Operations (IP&O), Utilities, Contract Services, and All Other Departments with Confined Spaces

Each Department with Confined Spaces must:

1) Identify confined spaces and determine if they are permit-required confined spaces.

2) Evaluate the hazards associated with the permit-required confined spaces.

3) Inform exposed employees of the existence, location and danger posed by permit-required confined spaces by posting DANGER signs or by other equally effective means.

4) Identify all Entry Supervisors, Attendants and Authorized Entrants in writing.

5) Furnish all equipment (such as monitoring equipment, tools, personal protective equipment (PPE), and retrieval equipment) required for confined space entry and work to be performed in the confined spaces.

6) Ensure that all employees are trained initially, when there is a change in their assigned job duties, yearly and as needed when circumstances indicate additional training is required, such as an unauthorized entry into a confined space.

7) Maintain all recordkeeping requirements. (i.e. training records and permits)

8) Ensure that all requirements of the Permit-Required Confined Space Program are implemented and followed.

9) Develop, maintain and provide access to all required data when using alternate confined space entry procedures. (i.e. monitoring and inspection data)

10) Review the cancelled entry permits yearly and revise the Permit-Required Confined Space Program as necessary.

11) Ensure the applicable components of this program are available to all affected employees and/or contractors.

C. Supervisors

Rutgers employees who supervise personnel who work in permit-required confined spaces must ensure the following:

1) All requirements set forth under Section 4 (I) (B) of this program are met prior to entry.

2) All equipment, PPE and tools are readily available and in good working order.

3) Direct reading air monitoring devices are provided, calibrated and maintained. The air monitoring devices must be capable of monitoring for oxygen (%), flammability (%LFL), carbon monoxide (ppm) and hydrogen sulfide (ppm). Designated employees who perform air monitoring are trained in the use and calibration of the air monitoring equipment.

4) Sources of atmospheric contamination are identified, evaluated and controlled prior to entry with the assistance of REHS.

5) An attendant is provided for each entry.

6) The entry permit system is utilized.

7) Procedures are implemented to coordinate entry operations when employees from more than one department are involved or when working with an outside contractor simultaneously in a confined space. This will help ensure that the authorized entrants do not endanger each other while performing their assigned work.

D. Affected Employees

Employees who work in permit-required confined spaces must:

1) Attend and actively participate in training sessions.

2) Demonstrate comprehension and understanding of the Permit-Required Confined Space Program.

3) Read and understand all information on the entry permit prior to entry into a permit-required confined space.

4) Abide by the requirements set forth in the entry permit.

5) Immediately report any accidents or unsafe conditions to the attendant and/or supervisor.

II. Definitions

Acceptable Environmental Condition	The condition that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.
Attendant	An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.
Authorized Entrant	An employee who is authorized by the employer to enter a permit space.
Blanking or Blinding	The absolute closure of a pipe, line or duct by fastening across it a solid plate or cap that completely covers the bore and is capable of withstanding the maximum upstream pressure with no leakage beyond the plate.
Ceiling Limit	The maximum airborne concentration of a toxic agent to which an employee may be exposed.
Combustible Dust	A dust capable of undergoing combustion or burning when subjected to a source ignition.
Confined Space	A space that: (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and (2) Has limited or restricted means for entry or exit (for

	example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and (3) Is not designed for continuous employee occupancy.
Double Block and Bleed	A method used to isolate a confined space from a line, duct or pipe by locking or tagging closed two in-line valves, and locking or tagging open to the outside atmosphere a drain or vent valve in the line between the two closed valves.
Emergency	Any occurrence, including any failure of hazard control or monitoring equipment, or an internal or external event to the permit space that could endanger authorized entrants.
Employee	Any person drawing a Rutgers paycheck.
Employer	Rutgers University
Engulfment	The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.
Entry	The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
Entry Permit (Permit)	The written or printed document that is provided by the employer to allow and control entry into a permit space.
Entry Supervisor	The person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section. NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.
Hazardous Atmosphere	An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following

causes:

(1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

(2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.

(3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

(4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, and which could result in employee exposure in excess of its dose or permissible exposure limit;

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

(5) Any other atmospheric condition that is immediately dangerous to life or health.

NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Hot Work Permit

The employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately Dangerous to Life or Health (IDLH)

Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

NOTE: Some materials -- hydrogen fluoride gas and cadmium vapor, for example -- may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until

	collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.
Inerting	The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.
Isolation	The process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.
Linebreaking	The intentional opening of a pipe, line or duct that is or has been carrying flammable, corrosive or toxic material, inert gas, or any fluid at a pressure or temperature capable of causing injury.
Non-Permit Confined Space	A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.
Not Permitted Condition	Any condition or set of conditions whose hazard potential exceeds the limits authorized by the entry permit.
Oxygen Deficient Atmosphere	An atmosphere containing less than 19.5 percent oxygen by volume.
Oxygen Enriched Atmosphere	An atmosphere containing more than 23.5 percent oxygen by volume.
Permissible Exposure Limit (PEL)	The maximum eight hour time weighted average of any airborne contaminant to which an employee may be exposed.
Permit-Required Confined Space (Permit Space)	A confined space that has one or more of the following characteristics: (1) Contains or has a potential to contain a hazardous atmosphere; (2) Contains a material that has the potential for engulfing an entrant; (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

	(4) Contains any other recognized serious safety or health hazard.
Permit System	The employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.
Purging	The method by which gases, vapors or other airborne impurities are displaced from a confined space.
Rescue Services	The personnel designated to rescue employees from permit spaces.
Retrieval System	The equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.
Testing	The process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space. NOTE: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

III. Procedures

A. Confined Space Entry Procedures

The following minimum procedures must be followed for all permit-required confined space entries. Any additional procedures for a specific confined space will be given by the supervisor:

1) A written permit must be obtained from the supervisor of the employees performing the work prior to entering the confined space. Entry into permit-required confined spaces is prohibited without an entry permit. The entry permit with the attached pre-entry permit will specify the location of the confined space, the type of work to be performed in the confined space, and certify that all existing hazards have been evaluated and protective measures have been implemented to eliminate those hazards (See Appendix A for blank entry permit). Safety Data Sheets (SDS) must be available and on-site when entrants may be exposed to a chemical hazard. The SDS must be given to rescue personnel, if required.

2) For all entries, an attendant must be present (See Section H – Training).

3) The permit must be completed, posted at the job site and read by all authorized entrants and the attendant(s) prior to entry. Any additional procedures specified by the supervisor must be attached to the permit and read by all attendant(s) and authorized entrant(s).

4) The confined space must be ventilated with a clean source of air for at least ½ hour prior to entry. The confined space must be vented continuously for the duration of the entry.

   NOTE: Specific confined spaces may be required to be ventilated for a longer period of time based on the capacity of the ventilation blower, the potential air contaminant in the space and the configuration of the space. The entry permit will specify any additional ventilation requirement.

5) Air monitoring must be conducted in the confined space prior to ventilating the confined space, before an authorized entrant enters the space, and continuously while entrants are working in the confined space unless prior approval to perform periodic air monitoring at specified intervals is obtained from REHS.

   Measurements must be taken in the ambient air outside the confined space, at the opening to the confined space, approximately halfway into the confined space, and at the bottom of the confined space. When initially sampling at the opening to the confined space, sampling should be done near an opening on the cover, or with the cover partially removed to prevent any exposure to possible air contaminants that may be present under the cover. Always perform initial sampling upwind of the opening. The results of the air monitoring must be written on the entry permit. The monitoring equipment must be calibrated to manufacturer's specifications.

6) The order of air monitoring shall be:

   a. Oxygen Concentration – The oxygen concentration must be between 19.5 – 23.5 percent.

   b. Flammability – If any concentration of a flammable atmosphere is detected, the supervisor and REHS must be notified immediately, the confined space must not be entered, and the employees must vacate the area surrounding the confined space (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space "Entry). Since the air monitoring device is not specific for all flammable materials, check with the manufacturer for specific information on the use and calibration of the air monitoring device.

   c. Toxicity – The monitoring device must check for carbon monoxide (CO). If any other toxic material is anticipated, contact REHS for sampling equipment or advice. If any concentration of a toxic atmosphere is detected, the supervisor and REHS must be notified immediately, the confined space must not be entered, and the employees must vacate the area surrounding the confined space (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space Entry). Read the manual for the air monitoring device for information on the detection of toxic materials. An alarm should sound at levels below the PEL. The concentration of the toxic material in air in the confined space must be below the PEL.

7) Entry into the confined space is not permitted and the supervisor and REHS must be notified immediately if any of the following conditions exist:

   a. If an oxygen deficient or enriched atmosphere is detected (less than 19.5% or greater than 23.5% oxygen)

   b. If a flammable atmosphere is detected at any concentration (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space Entry)

c. If a toxic atmosphere is detected at any concentration (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space Entry)

d. If airborne combustible dust is at or exceeds its lower explosive limit (LEL) or at concentration that obscures vision at a distance of 5 feet or less

e. If a condition exists that is immediately dangerous to life or health (IDLH)

8) The attendant must notify his/her supervisor immediately if an atmospheric containment is detected. The supervisor, in conjunction with REHS, must identify, evaluate and control the source of the containment if any of the conditions listed above are present.

9) The attendant must assure through radio contact or other readily accessible communication devices that the Rutgers University Police Department (RUPD) are prepared to summon the rescue team, if required.

10) RUPD must be notified prior to confined space entry and after the entry has been completed. The following information must be given to the police prior to entry:

a. The location of the entry

b. The number of entrants

c. Any potential hazards associated with the entry

d. The time the entry is to commence and approximate time of completion

11) The Attendant must assure that all entrants are protected from vehicle and pedestrian traffic and that non-entering employees and other Rutgers personnel, students, and visitors are protected from any hazard(s) arising from the confined space by using barriers. Barriers may be fencing, railings, vehicles, signs or other effective means.

12) The entrants may only perform assigned work in the confined space for the time period specified on the entry permit.

13) The following equipment must be used during confined space work:

a. A chest or full body harness with a retrieval line attached at the center of the authorized entrant's back near the shoulder level.

b. A mechanical device to which the retrieval line is attached. The mechanical device should have fall protection capability. The retrieval line may be attached to a fixed point outside the confined space if retrieving the entrant(s) from a vertical depth of 5 feet or less. The mechanical device and retrieval line should not be used to raise or lower authorized entrants into confined spaces.

c. A direct reading air monitoring device.

d. Any personal protective equipment or other equipment, such as lighting equipment, required to perform the work.

NOTE: The retrieval line, body harness and the mechanical device should be used for all entries; unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrants.

14) If any work in the confined space may present a hazard, i.e. welding, the supervisor must evaluate and control the hazard, and REHS must be notified prior to entry. All other required procedures, such as hot work procedures, must be followed.

15) The attendant must remain on-site and in contact with the authorized entrants at all times.

16) Entry operations with other departments or contractors must be coordinated prior to entry.

17) Entry into the confined space may commence when all of the above procedures are met.

18) After work is completed in the confined space, the supervisor must ensure that the space is adequately closed and cancel the entry permit.

19) The supervisor must review the entry operation when he/she has reason to believe that the measures taken under the permit space program may not protect employees, a near miss accident or incident occurred during entry, a change in the use or configuration of the permit space or employees have complaints about the effectiveness of the program. The procedures must be revised to correct deficiencies noted prior to subsequent entries.

B. Alternate Confined Space Entry Procedures

The following alternate procedures may be used for confined space entry:

1) Any condition making it unsafe to remove the entrance cover shall be eliminated before the cover is removed.

2) When the entrance cover is removed, the opening must be guarded by a railing, temporary cover or another barrier that will prevent a person from accidentally falling through the opening and that will protect the authorized entrants working in the space from falling objects.

3) The confined space must be ventilated with a clean source of air for at least ½ hour prior to entry. The confined space must be vented continually for the duration of the entry. The forced air ventilation must be so directed as to ventilate the immediate areas where the authorized entrants are working or will be working within the confined space.

Note: Specific confined spaces may be required to be ventilated for a longer period of time based on the capacity of the ventilation blower, the potential air contaminant in the space and the configuration of the space. The supervisor and/or the written certification form for the confined space will specify any additional ventilation requirement.

4) Air monitoring must be conducted prior to ventilating the confined space, before an authorized entrant enters the confined space, and continuously while entrants are working in the confined space unless prior approval to perform periodic air monitoring at specified intervals is obtained from REHS. Measurements must be taken in the ambient air outside the confined space, at the opening to the confined space,

approximately halfway into the confined space, and at the bottom of the confined space. When initially sampling at the opening to the confined space, sampling should be done near an opening on the cover, or with the cover partially removed to prevent any exposure to possible air contaminants that may be present under the cover. Always perform initial sampling upwind of the opening. The results of the air monitoring must be documented and should be added to the written certification documentation at the completion of the job. The monitoring equipment must be calibrated to manufacturer's specifications.

5) The order of air monitoring shall be:

   a. Oxygen Concentration – The oxygen concentration must be between 19.5 – 23.5 percent.

   b. Flammability – If any concentration of a flammable atmosphere is detected, the supervisor and REHS must be notified immediately, the confined space must not be entered, and the employees must vacate the area surrounding the confined space (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space Entry). Since the air monitoring device is not specific for all flammable materials, check with the manufacturer for specific information on the use and calibration of the air monitoring device.

   c. Toxicity – The monitoring device must check for carbon monoxide (CO). If any other toxic material is anticipated, contact REHS for sampling equipment or advice. If any concentration of a toxic atmosphere is detected, the supervisor and REHS must be notified immediately, the confined space must not be entered, and the employees must vacate the area surrounding the confined space (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space Entry). Read the manual for the air monitoring device for information on the detection of toxic materials. An alarm should sound at levels below the PEL. The concentration of the toxic material in air in the confined space must be below the PEL.

6) Entry into the confined space is not permitted and the supervisor and REHS must be notified immediately if any of the following conditions exist:

   a. An oxygen deficient or enriched atmosphere is detected (less than 19.5% or greater than 23.5% oxygen)

   b. A flammable atmosphere is detected at any concentration (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space Entry)

   c. A toxic atmosphere is detected at any concentration (See exception for hydrogen sulfide (H_2S) in Section C – Additional Procedures for Sewer System Confined Space Entry)

   d. If airborne combustible dust is at or exceeds its lower explosive limit (LEL) or at concentration that obscures vision at a distance of 5 feet or less

   e. If a condition exists that is immediately dangerous to life or health (IDLH)

7) The employees must notify his/her supervisor immediately if an atmospheric contaminant is detected. The supervisor, in conjunction with REHS, must identify, evaluate and control the source of the contaminant if any of the conditions listed above are present.

8) The supervisor must verify that the space is safe for entry and that the pre-entry measures have taken place through written certification that contains the date, location of the space, and signature of the person performing the certification (See Appendix A for sample certification form).

9) If all of the above are met, entry may commence.

10) If entry is required to obtain the supporting data necessary to use the alternate entry procedures, entry procedures under Section E – Permit Required Confined Space must be followed.

C. Additional Procedures for Sewer System Confined Space Entry

In addition to following all of the permit-required confined space entry procedures (Section A), the following procedures should be followed:

1) All entrants and attendants should be familiar and knowledgeable in sewer system entries and the hazards associated with sewer system entries.

2) All entrants and attendants must be trained in sewer system entry procedures and demonstrate that they follow and understand these procedures.

3) In addition to the requirements for air monitoring contained in Section-E, the entrants or attendants should monitor for hydrogen sulfide (H_2S). The concentration of H_2S must be less than 10 ppm. If H_2S concentration is greater than 10 ppm, the procedures for hazardous atmospheres specified in Section E must be followed.

4) Continuous air monitoring must be conducted in the areas where the entrants are located.

5) All entrants must wear a harness and be connected to a retrieval system or a fixed point outside the confined space.

6) The supervisor or department should develop and maintain liaisons with the local weather bureau and fire and emergency services in the area so that sewer work may be interrupted or delayed whenever the sewer lines may be suddenly flooded by rain or fire suppression activities, or whenever hazardous materials are released into sewers during emergencies by industrial or transportation accidents.

7) All other equipment or supplies which may be required to adequately perform the work safely must be provided.

D. Permit System

The permit system must be used when entering permit-required confined spaces. The permit system ensures the following:

1) That all measures to eliminate hazards have been implemented;

2) Supervisory awareness and authorization to enter the confined space;

3) That employees are aware that all pre-entry preparations have been completed;

4) That work activities and the duration of the work activities are specified;

5) That entry is terminated or cancelled, if required; and

6) That the cancelled permits are retained for at least 1 year after entry to facilitate review of the Confined Space Program.

E. Entry Permit

An entry permit is required for all permit-required confined space entries. The permit will authorize entry only by authorized entrants into a specific confined space, for a specific purpose and for the time period specified on the permit.

The entry permit must contain the following information:

1) The location of the permit space to be entered

2) The purpose for the entry

3) The date and the authorized duration of the entry

4) A description of all hazards expected in the confined space

5) The specified minimum acceptable environmental conditions (atmosphere), the air monitoring to be conducted and the results of the monitoring

6) Any control techniques used to control identified hazards, i.e. ventilation, isolation or purging

7) A description of any hazards that may be generated by work conducted in the confined space

8) Any special procedures that must be followed, i.e. hot work procedures

9) All required PPE and other equipment, including rescue equipment

10) The communication procedures that will be used by authorized entrants and attendants to remain in contact with each other during entry

11) The name(s) of the supervisor(s), attendant(s), and entrant(s)

12) Documentation that the police have been notified, given the required information and the availability of communication equipment to contact the police in case of an emergency

13) Any other information required for the particular confined space to ensure employees' safety

14) Any problems encountered during the entry operation so that appropriate revisions to the permit space program can be made

15) The pre-entry checklist must be attached to the entry permit.

An entry permit and pre-entry checklist are included in Appendices A & B.

F. Review of Confined Space Program, Cancelled Permits and Written Certifications

All permits must be retained for at least 1 year so that a review of the permit-required confined space program can be accomplished.

Each department must review the previous year's cancelled permits on an annual basis and record the findings on the form in Appendix D.

The cancelled permits and written certifications must be used to determine the effectiveness and adequacy of the confined space program. The confined space program must be revised, as necessary, to ensure that employees participating in entry operations are protected from hazards in the confined spaces.

G. Duties

Supervisor

- Know the hazards that may be encountered during entry, including information on the mode, signs or symptoms, and consequence of exposure to chemical and physical hazards;
- Ensure that the pre-entry checklist and permit are completed, and all required air monitoring has been conducted prior to allowing entry;
- Ensure that all rescue personnel have been notified;
- Ensure that communication between the attendant and rescue personnel is operable;
- Terminate the entry upon any condition that violates the entry permit;
- Remove unauthorized individuals who enter or attempt to enter a permit space during entry operations; and
- Determine that entry operations remain consistent with the terms of the entry permit and that acceptable environmental conditions are maintained.

Attendant

- Know the hazards that may be encountered during entry, including information on the mode, signs or symptoms, consequence of exposure to chemical and physical hazards and possible behavioral effects to the authorized entrants when exposed to such hazards;
- Remain outside the confined space at all times and not leave his/her post, unless another attendant is present;
- Maintain continuous communication with all authorized entrants by voice, radio or other types of communication;
- Maintain awareness of the location of any entrant when direct communication cannot be maintained;
- Order all authorized entrants to exit the confined space immediately if any of the following exist;
    a. Air monitoring indicates an oxygen deficient or enriched atmosphere, any detection of a flammable atmosphere or any detection of a toxic atmosphere (See exception for H_2S in sewer System Entry – Section C);

b. Any unusual conduct or behavioral effects from exposure to hazards by the authorized entrants;

c. Any non-permitted condition;

d. Any unexpected hazard,
e. Any condition outside the confined space which could endanger the authorized entrants; or

f. He/she is unable to perform their required duties;

- Know the proper procedure for summoning rescue personnel;

- Order all authorized entrants to exit the confined space if he/she must leave his/her post and a replacement attendant is unavailable;

- Not perform any duties that might interfere with his/her primary duty to monitor and protect the authorized entrants;

- Warn unauthorized persons not to enter or exit immediately if they have entered a confined space; and

- Notify his/her supervisor immediately if authorized entrants are required to exit the confined space or of any unauthorized entry.

<u>Authorized Entrant</u>

- Know the hazards that may be encountered during entry, including information on the mode, signs or symptoms, and consequence of exposure to chemical or physical hazards;

- Read and follow all instructions on the entry permit;

- Follow all instructions of the attendant or the supervisor;

- Communicate with the attendant as necessary to enable the attendant to monitor authorized entrant status and to enable the attendant to alert the authorized entrants of the need to evacuate the space;

- Report any condition or hazard not specified on the permit, or any signs or symptoms of exposure to a dangerous situation to the attendant;

- Use all required equipment, wear and use personal protective equipment (PPE) properly;

- Exit the confined space as quickly as possible if ordered to do so by the attendant or supervisor, if any warning signs or symptoms of exposure to a dangerous situation, if an evacuation alarm is activated or any prohibited condition is detected; and

- Follow all confined space procedures.

H. Training

Confined space training will be provided based on job duties and may include classroom lectures, hands-on training for equipment and PPE and/or on-site training at confined space locations. Specific training for certain job duties is described below:

All Employees Who Encounter Confined Spaces (including Supervisors)

1) Appropriate procedures and controls for entry;

2) Unauthorized entry in confined space is forbidden and could be fatal; and

3) Their senses are unable to detect and evaluate the severity of atmospheric hazards.

Authorized Entrants (including Supervisors, Attendants and Rescue Personnel)

1) The duties of the authorized entrants;

2) The understanding of the nature of the hazardous environments and the need to monitor the environment to determine if the confined space is safe to enter;

3) The proper use of all equipment and personal protective equipment (PPE);

4) The procedures for exiting from the confined space as rapidly as they can without assistance;

5) The effects of hazardous materials that may be encountered if inhaled or absorbed through the skin;

6) The procedure for notifying the attendant and exiting the confined space without help if a hazardous situation or non-permitted condition is detected;

7) Any modifications of normal work practices when working in confined spaces; and

8) The proper use and calibration of air monitoring equipment, if required to use the air monitoring equipment.

Attendants (including Supervisors)

1) The duties of the attendant;

2) The proper use of communication equipment, including communication with the authorized entrants and rescue personnel;

3) The proper procedures for summoning rescue personnel; and

4) The recognition of early behavioral signs of intoxication, i.e. staggering or incoherence, caused by a contaminant or asphyxiants whose presence may be anticipated in the confined space.

Supervisors

1) The duties and requirements of the entry supervisor; and

2) The recognition of the effects of exposure to hazards reasonably expected to be present, (i.e. H_2S or sewer gas in a sewer system entry);

All employees exposed to confined spaces in their assigned duties will be trained according to the following:

- Initially prior to any entry
- When there is a change in their assigned job duties
- When there is a change in the permit space operations that presents a hazard about which an employee has not been previously trained
- When the department or supervisor has reason to believe that there are deviations from the permit space entry procedures or there are inadequacies in the employee's knowledge or use of these procedures
- Yearly refresher training.

Written certification of the training subject matter, the date of the training, the name and signature of the trainer(s), and the employees' names and signatures must be retained.

The training must establish employee proficiency in the duties required and introduce new or revised procedures.

Any employee who will use the air monitoring equipment must be trained in its use and calibration. Arrangements should be made with the manufacturer or their representative to train the employee(s).

RUPD must be trained in the procedures for summoning rescue personnel.

I. Rescue & Emergency Services

The following fire departments will serve as the rescue teams for Rutgers:

1) **New Brunswick Fire Department** - Cook, Douglass and College Avenue Campuses

2) **Edison Fire Department** - Busch and Livingston Campuses

3) **Newark Fire and Emergency Services** - Newark Campus

4) **Camden Fire and Emergency Services** - Camden Campus

Rutgers will provide the following to the rescue service departments:

1) Information regarding the hazards they may encounter when called to perform rescue services.

2) Access to all permit spaces from which rescue may be necessary.

3) SDS for chemical hazards or chemicals used in the confined space.

The department hiring an outside contractor to perform confined space entry work must notify RUPD prior to and after each entry, and provide them with the following information to facilitate rescue:

- The location of the entry
- The number of entrants

- Any potential hazards associated with the entry
- The time the entry is to commence and approximate time of completion

J. Reclassification of Confined Spaces

When there are changes in the use or configuration of Non-Permit Confined Spaces that may increase the hazards to entrants, the department or supervisor must re-evaluate the space and, if necessary, reclassify the space as a Permit-Required Confined Space.

A confined space classified as a Permit-Required Confined Space may be reclassified as a Non-Permit Confined Space if the following is met:

1) The space poses no actual or potential atmospheric hazards

2) All hazards within the space are eliminated without entry into the space

3) The non-atmospheric hazards remain eliminated during the entry; and

4) The department or supervisor must document the basis for determining that all hazards have been eliminated through a certification that contains the date, location of the space and the signature of the person making the determination (See Appendix C). The written certifications must be maintained by the department, be completed prior to entry and be made available to all entrants.

If hazards arise within a permit space that has been reclassified as a non-permit space, each employee must exit the confined space immediately, and their supervisor and REHS must be notified immediately. The supervisor and REHS must re-evaluate the space and determine if the space must be classified as a Permit-Required Confined Space.

If it is necessary to enter the permit space to eliminate hazards, the entry to control or eliminate the hazards must be performed following the permit-required confined space entry procedures. If testing procedures and inspection during the entry demonstrate that the hazards within the space have been eliminated, the permit space may be reclassified as a Non-Permit Confined Space for as long as the hazards remain eliminated. Written documentation certifying the above information must be maintained and be made available to all entrants.

K. Contractors

The department hiring an outside contractor to perform work that involves confined space entry must perform the following:

1) Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program

2) Inform the contractor of any known hazards or elements that may be anticipated in the confined space

3) Inform the contractor of any precautions or procedures that the University or department has implemented, such as notification to campus police, for the protection of employees in or near permit spaces

4) Coordinate entry operations with the contractor when both the contractor and the department will be working in or near the permit spaces

5) Debrief the contractor at the conclusion of the entry operation regarding the permit space program followed and any hazard confronted or created in permit spaces during the entry operation.

All contractors must be informed of the confined space program and other safety rules of the University.

IV. Appendices

A. Confined Space Entry Permit
B. Confined Space Pre-Entry Checklist
C. Written Certification for Non-Permit Confined Space Entries & Reclassification of Confined Spaces
D. Annual Review of the Confined Space Program

APPENDIX A

CONFINED SPACE ENTRY PERMIT

Permit # _____ Date: _____
Location of Work: _____ Entry Time: _____
Permit Expiration Time: _____ Completion Time: _____

Description of Work: _____
_____
_____

Supervisor: _____ Attendant: _____
Employee(s) assigned: _____ _____
_____ _____
_____ _____
_____ _____

Pre-Entry Questions to be completed by Issuer	Yes	No	N/A	Comments
1. Have all expected hazards been identified (See pre-entry checklist)?				
2. Have all required additional procedures been implemented (See pre-entry checklist)?				
3. Has a description of any hazard that may be generated by work in the confined space been identified (See pre-entry checklist)?				
4. Is all required equipment available?				
5. Is attendant present?				
6. Has rescue team been notified?				
7. Is atmosphere test required?	X			

ADDITIONAL EQUIPMENT REQUIRED

Rescue		Ear Protection		Head Protection		Foot Protection	
Hand Protection		Eye Protection		Lighting		Communication (rescue)	X
Life line/harness		Ventilation	X	Other (specify):			

CONFINED SPACE ENTRY PERMIT
(Page 2)

AIR MONITORING RESULTS				
Location	Oxygen % (19.5% - 23.5%)	Flammability % (0%)	Other PPM % (specify) (0%)	Time
Ambient Air	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____
Entrance to Confined Space	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____
Middle of Confined Space	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____
Bottom of Confined Space	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____

Signature of person conducting monitoring: _____

I have reviewed the pre-entry checklist, the monitoring results, completed the entry permit, and inspected the work area and consider the confined space safe for entry:
Attendant Print Name: _____ Signature: _____

I have read the pre-entry checklist and entry permit, reviewed the work authorized by this permit, and understand all the information and directions contained here within:
Entrant Print Name: _____ Signature: _____
_____ _____
_____ _____
_____ _____
_____ _____

Note any problems, changes to the use of the space or any unknown hazards discovered during entry:
_____
_____
_____
_____

APPENDIX B

CONFINED SPACE PRE-ENTRY CHECKLIST

Entry Permit:		YES	NO
1.	Did the survey of the surrounding area show it to be free of hazards such as drifting vapors from tanks, piping, or sewers? Specify any hazard: _____ _____ _____	( )	( )
2.	Have all expected hazards been identify? Specify any expected hazard: _____ _____ _____	( )	( )
3.	Does your knowledge of possible discharges in this area indicate it is likely to remain free of dangerous air contaminants while work is being performed? Specify any possible discharge: _____ _____ _____	( )	( )
4.	Is the person responsible for air monitoring certified in the operation of the air monitoring device?	( )	( )
5.	Has the air monitoring device been calibrated?	( )	( )
6.	Has the atmosphere of the confined space been tested prior to entry?	( )	( )
7.	Did the atmosphere check as acceptable?	( )	( )
8.	Will the atmosphere be monitored periodically while the space is occupied?	( )	( )

NOTE: If any of the above questions were answered “NO” do not enter the confined space. Contact your supervisor immediately.

Specify any additional procedure(s) that is required while performing work in the confined space:

_____
_____
_____

RESCUE NUMBERS IN CASE OF AN EMERGENCY	
New Brunswick Campuses call	911 or 6-911 from a university phone
Newark Campus	5111 from a university phone
Camden Campus	6111 from a university phone

Permit #: _____ Date: _____
Supervisor / Attendant: _____ Signature: _____
(person in charge)

APPENDIX C

WRITTEN CERTIFICATION FOR
NON-PERMIT CONFINED SPACE ENTRIES &
RECLASSIFICATION OF CONFINED SPACES

Location of Confined Space:

Description of Space: _____
_____
_____

Equipment/Processes Contained in Space: _____
_____
_____

All Know Physical/Chemical Hazards in Space: _____
_____
_____

Control Procedures to be used to Control Hazards in Space: _____
_____
_____

Atmospheric Monitoring Results During Assessment

Location	Oxygen % (19.5% - 23.5%)	Flammability % (0%)	Other PPM % (0%) (specify)	Time
Ambient Air	_____	_____	_____	_____
Entrance to Confined Space	_____	_____	_____	_____
Middle of Confined Space	_____	_____	_____	_____
Bottom of Confined Space	_____	_____	_____	_____

NOTE: The supervisor, attendants or entrants will cancel entry if any of the above conditions have changed or a hazardous atmosphere is detected.

This certification must be made available and read by all attendants and entrants prior to Performing any work in the above specified confined space.

Person Making Assessment: _____ Date of Assessment:_____

Signature: _____

APPENDIX D

ANNUAL REVIEW OF THE CONFINED SPACE PROGRAM

_____ has reviewed the cancelled entry permits for permit-required confined spaces for the year of _____.

Does the current confined space program protect employees participating in entry operations from permit space hazards?

YES ☐ NO ☐

If no, the department has attached the deficiencies that were noted, incorporated the changes into the Program and re-trained affected employees as required prior to any subsequent entries.

Names of employees reviewing the confined space program:

Name: _____ Signature: _____

_____ _____

_____ _____

_____ _____

Date of the review: _____