**CONFINED SPACE POLICY/PROGRAM**

This program is written to facilitate compliance with the Occupational Safety and

Health Act (OSHA) requirements specified in [OSHA 29 CFR 1910.146.](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9797&p_table=STANDARDS)  The program is available for review at Stevens Environmental Health and Safety in McLean 210

In general, the health and safety of our employees depends upon a thorough knowledge of their operations and the hazards involved.

CONFINED SPACE means a space that has all three of these characteristics

1. Is large enough and so configured that an employee can bodily enter and perform assigned work
2. Has limited or restricted means for entry or exit (for example, tanks, silos, vaults, boilers, pits and poorly ventilated crawl spaces are spaces that may have limited means of entry)
3. Is not designed for continuous employee occupancy

PERMIT-REQUIRED CONFINED SPACE (permit space) means a confined space that has one or more of the following characteristics:

1. Contains or has the 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 small cross-section
4. Contains any other recognized serious safety or health hazard

NON-PERMIT CONFINED SPACE means a confined space that does not contain or, with respect to atmospheric hazards, does not have the potential to contain any hazard capable of causing death or serious physical harm.

SCOPE

Unusual and frequently unexpected and acute hazards may be encountered when personnel must enter a tank or other enclosed space. Typical of such hazards are: oxygen deficiency or enrichment; concentrations of flammable gases or vapor; releases of liquids or gases into the space; accidental activation of agitating equipment; entry and exit restrictions requiring special procedures, especially in the event of emergencies and rescue.

DESCRIPTION

Plant personnel will enter enclosed spaces to inspect, repair, clean and/or perform other duties associated with the equipment or area. Enclosed spaces which are potentially hazardous include:

1. Enclosures with limited access openings for personnel, such as boilers, breaches, and man holes
2. Crawl spaces, sewer pits, attics or other confined spaces with one side open to the air, but so deep or difficult to enter as to require the aid of an assistant in case of an emergency

RESPONSIBILITY

Stevens Environmental Health and Safety will be responsible for the overall implementation and maintenance of this program. Responsibility for safety both at the time of entry and during the entire operation rests with the Manager of Maintenance Operations. This person will make sure that adequate steps have been taken to eliminate or control the hazards. He/she will also make sure that all personnel understand the nature of such hazards which remain and the precautions to follow.

Employees are responsible for accurately completing the CONFINED SPACE ENTRY PERMIT Checklist. The Supervisor will verify that the checklist is complete and inspect the area before entry. The Supervisor’s responsibilities will include the following:

1. Ensure the identification and evaluation of the work area for the appropriate application for confined spaces.
2. An attendant will be stationed outside the entry point as long as someone is inside the confined space.
3. The attendant person will not enter the confined space or leave the area unless relieved by a similarly trained and authorized person.
4. The attendant will allow only authorized persons to enter the space, know who is in the confined space at all times, and maintain communications with the worker(s) inside the confined space via visual contact, voice or two-way communication system.
5. The attendant will maintain safe conditions outside the confined space to ensure that nearby operations do not expose the person(s) inside the confined space to unsafe conditions.
6. The attendant will be knowledgeable in established emergency response and rescue procedures, and be able to quickly summon assistance in case of an emergency
7. The attendant will monitor ventilation equipment and tend lifelines and other safety equipment.

PREPARATION

Preparation includes two basic steps: Isolation/Lockout and Testing.

1. Isolation/Lockout
   1. Pipes, hoses and ducts are to be disconnected, blanked, or valves closed and locked.
   2. Drive shafts or belts are to be disconnected.
   3. Electrical power switches and/or breakers are to be locked out according to the Stevens lockout/tagout procedure.
   4. All mechanical, electrical, pneumatic, or hydraulic equipment associated with the confined space will be physically locked out or otherwise de-energized according to Stevens lockout/tagout policy and procedures.
   5. All isolation and lockout points will be recorded on the confined space entry permit checklist during the pre-planning stage and checked off as isolation and lockout is completed prior to entry.
2. Testing
   1. All pre-entry testing will be completed from outside the confined space. This will require the use of instrumentation with remote sampling capabilities.
   2. All air testing will be done by a supervisor or under the supervision of a person knowledgeable in air sampling techniques. This knowledge will include the use, calibration, and limitations of the instrumentation, as well as the ability to reliably interpret the results.
   3. The air testing being performed is to be appropriate to the hazards of the space being entered. Sufficient tests will be performed to obtain a true representation of all areas in the confined space. These tests may include:
      * 1. Oxygen. When testing is performed, the first test to be conducted is for oxygen concentration. Test results below 19.5% are considered to be an oxygen deficiency. Concentrations above 23% are considered to be an oxygen enriched environment. Results between 19.5% and 21% are acceptable for confined space entry.
        2. Flammability - this test is to be performed if there is any possibility for the presence of flammable or combustible gases or vapors. Test results below 10% of the lower flamable limit are acceptable for confined space entry.
        3. Toxic Substances - Tests for toxic substances will be performed whenever the presence of a toxic substance within the confined space is possible. The specific toxic substance to be tested is to be determined during the pre-planning stage.
        4. Carbon Monoxide - This test will be performed as part of the protocol before entering a confined space.
   4. Whenever atmospheric testing indicates that the confined space is not safe to enter, remedial action will be taken to render the space safe. This may include ventilation, purging, additional cooling/warming, and other techniques.

MISCELLANEOUS SAFETY EQUIPMENT

1. Instruments for atmospheric testing will be calibrated and checked before use.The lower limit of sensitivity will be well below harmful levels of concentration.
2. Two-Way communication system will be checked before use and more than one set will be available.
3. Hoisting equipment used in locations with potential for an explosive concentration of flammable gases is to be non-spark producing.
4. Lifelines and Safety Harness
   1. Workers entering confined spaces will be provided with safety harness, safety belt, or wrist harness attached to a safety line
   2. The free end of the lifeline will be affixed outside the confined space in a manner which will prevent it from being pulled into the space
   3. The free end of the lifeline will be affixed outside the confined space in a manner which will prevent it from being pulled into the space
5. Personal protective equipment will be provided for example: Tyvek suits, gloves, respirators, safety glasses, hearing protection, etc.

**STEVENS INSTITUTE of TECHNOLOGY**

**CONFINED SPACES**

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| LOCATION | PERMIT REQUIRED |
| Burchard Bldg. (Sidewalk/2 Manholes Steam Tunnel) | Yes |
| Carnegie  (Crawl Space leads to EAS Anechoic Chamber Yes  floor access) | Yes |
| Carnegie (Base of Stack) | Yes |
| Carnegie (Blow Down Tank) | Yes |
| Carnegie (Common Breaching) | Yes |
| Carnegie (Crawl Space to Lieb Bldg./floor access) | Yes |
| Carnegie (Deaireator Tank) | Yes |
| Carnegie (Makeup/Condensate Tank) | Yes |
| Carnegie Power House/Boilers #1 & #2 Yes  Steam Drums (2) on each drum  “  Mud Drums (2) on each drum  “ Breaching (1) on each breaching “  Wind Box/Fire Box (1) on each | Yes |
| Davidson Laboratory (Crawl Space under tank #2) | Yes |
| Davis Hall (Crawl Space in Basement Boiler Rm.) | Yes |
| E.A. Stevens Bldg. (Crawl Space NE corner) | Yes |
| E.A. Stevens Bldg. (Under Auditorium) | No |
| Field House Road (N.E. Corner of Kidde Bldg.) | Yes |
| Howe Center (Crawl Space Basement Fresh Air Vent Rm.) | Yes |
| Humphrey’s Hall (Attic) | No |
| Humphrey’s Hall (Crawl Space in Basement) | No |
| Humphrey’s Hall (Crawl Space in Sub basement) | No |
| Jonas Hall (1st floor Main Sewer/House trap) | Yes |
| Kidde Building (Ground Floor/Math Dept./Mech. Rm.) | No |
| Morton Bldg. (6th St. Manhole Steam Tunnel) | Yes |
| Ninth Street Water Pump Pit | No |
| Palmer Hall (Crawl Space in Basement Boiler Rm.) | Yes |

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