

**California Institute of Technology**

**CONFINED SPACE ENTRY  
PROGRAM**



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# CONFINED SPACE ENTRY PROGRAM

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## SCOPE

The purpose of the Caltech Confined Space Entry Program is to protect workers entering confined spaces for maintenance, cleaning, or other work activities while ensuring compliance with Title 8 of the California Code of Regulations (8 CCR Section 5157). This program provides comprehensive guidelines and information for safely working in all classifications of confined spaces.

## DEFINITIONS

### ACCEPTABLE ENTRY CONDITIONS

The conditions that must exist in a permit space to allow entry so that employees involved with a permit-required confined space entry can safely enter into and work within the space.

### ATTENDANT

An individual stationed outside the permit space monitoring the authorized entrants and who performs all attendants' duties assigned in the Confined Space Entry Program.

### BLANKING OR BLINDING

The absolute closure of a pipe, line, or duct by the fastening of a solid plate that completely covers the bore and that can withstand the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

### CONFINED SPACE

A space that meets the following criteria:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (for example, tanks, vessels, storage bins, vaults, pits, and excavations are spaces that may have limited means of entry); and
- Is not designed for continuous employee occupancy.

### EMERGENCY

Any occurrence (including any failure of hazard control or monitoring equipment) or event, internal or external, to the permit space could endanger entrants.

### 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.

### ENTRANT

Employee who is authorized by the employer to enter a permit space.

### ENTRY

Action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and occurs as soon as any part of the entrant's body breaks the plane of the opening into the space.

## ENTRY PERMIT

The written or printed document provided by Caltech allowing and controlling entry into a permit space. If Hot Work will be done inside of the permit space a [Hot Work Permit](#) is also required.

## ENTRY SUPERVISOR

The person (such as the supervisor, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for completing and issuing the permit to authorize entry, overseeing entry operations, and for terminating entry as required by this section.

## HAZARDOUS ATMOSPHERE

An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
- Airborne combustible dust at a concentration that meets or exceeds its LEL;
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent; or
- Atmospheric concentration of any substance for which a dose or a published exposure guideline is available, and which could result in employee exposure in excess of its dose or permissible exposure limit. These may include ACGIH TLV, OSHA PEL, and IDLH

## IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH)

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

## 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, including hydraulic or electric; blocking or disconnecting all mechanical linkages.

## 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.

## PERMIT REQUIRED CONFINED SPACE (PRCS)

A confined space that has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere
- Contains a material that has the potential for engulfing an entrant
- 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
- Contains any other recognized serious safety or health hazard

## RETRIEVAL SYSTEM

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 a person from a permit space.

## PROGRAM ELEMENTS

- Identifies the Roles and Responsibilities under this program.
- Establish processes to Identify and classify the known confined spaces at Caltech and discuss the areas that can be entered with temporary reclassification.
- Identifies the necessary components for entry into confined spaces including monitoring and equipment, which may be required.
- Identifies rescue and emergency procedures of confined spaces and the responsibilities of authorized employees in such instances.
- Describes the Caltech Permit System including preparation, use, and cancellation of permits.
- Provides training requirements for employees involved with confined space work and identifies their duties.
- Provides a review of common operations involving confined spaces and an annual program review, including the review of cancelled permits.

## ROLES AND RESPONSIBILITIES

### ENVIRONMENTAL HEALTH AND SAFETY OFFICE

The Environmental Health and Safety Office is responsible for:

- Maintaining a written Confined Space Entry Program and updating as necessary, in accordance with the latest regulations.
- Communicating any changes to this plan to all identified stakeholders.
- Identifying and documenting the classification of confined spaces known and/or reported at Caltech<sup>1</sup>.
- Ensuring training is provided to all roles involved in this program.
- Reviewing documentation and assessing program effectiveness regularly.

### SUPERVISORS

Supervisors are responsible for:

- Ensuring that all aspects of the Confined Space Entry Program are implemented and adhered to within their departments.
- Coordinating and ensuring that employees receive the necessary training for confined space entry.
- Reporting any confined space-related incidents or near misses to EH&S and participating in post-incident reviews.
- Providing the necessary resources, including equipment, to safely conduct confined space operations.

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<sup>1</sup> Caltech's OVRO facility does not have any identified confined spaces; Palomar Observatory has one identified confined space that is exclusively serviced by a 3<sup>rd</sup> party contractor.

- Ensuring that all documentation under this program is kept and made available to EH&S upon request.
- Discussing Program Review with EH&S and addressing corrective actions, if any.

## **NOTIFYING EH&S ABOUT NEW CONTRACTORS ENTERING PERMIT-REQUIRED CONFINED SPACES TO ENSURE THEY ARE PROPERLY VETTED BY THE DEPARTMENT.EMPLOYEES**

### **EMPLOYEES**

Employees are responsible for:

- Adhering to procedures and following all safety procedures and protocols when working in or around confined spaces.
- Reporting any hazards or unsafe conditions related to confined spaces to their supervisor or EH&S.
- Attending and participating in all required confined space training sessions.
- Properly using and maintaining personal protective equipment (PPE) required for confined space entry.
- Notifying campus security when entering a permit-required space.

### **CAMPUS SECURITY**

Campus Security is responsible for:

- Acknowledging receipt of the confined space entry notification as well as readiness to activate the Pasadena Fire Department for timely rescue services.
- Coordinating with emergency services, such as the Pasadena Fire Department, in the event of a confined space emergency.
- Notifying relevant personnel, including EH&S and supervisors, of any confined space incidents or emergencies.
- Keeping a log of the entry notification(s) and making the log available to EH&S for review.

## **SPACE EVALUATION**

### **IDENTIFICATION AND CLASSIFICATION**

The Confined Space evaluation identifies and classifies all known and recognized spaces assessed at Caltech for confined space hazards.

All confined spaces are evaluated, with each space or group of similar spaces being named, hazards identified, and the methods of controlling these hazards documented. The evaluation includes classifications (permit-required space or reclassified space) and key factors such as if there is a hazardous atmosphere. Additionally, the potential for engulfment, internal configuration hazards, and other serious safety hazards are considered.

This comprehensive assessment not only documents the status of each space, including any necessary reclassifications, but also records who performed the evaluation.

The classifications of confined spaces are:

- PERMIT REQUIRED
- RECLASSIFICATION OF PERMIT SPACE

A list of all evaluated spaces is available by contacting [EH&S](#).



## PERMIT REQUIRED ENTRY

Confined Spaces that contain known or potential safety and health hazards to entrants require a permit and an entry procedure or space review prior to entry, **on every single occasion the space is entered**. These areas are PERMIT REQUIRED CONFINED SPACES. **Entry is allowed to trained and authorized individuals only, after the permit is issued (AiM form, linked to specific Work Order).**

### RECLASSIFICATION OF PERMIT SPACE

Permit Required Confined Spaces may be temporarily reclassified as Non-Permit spaces (EH&S maintains a list of Confined Spaces and Reclassified Spaces, contact [safety@caltech.edu](mailto:safety@caltech.edu) for more information). Reclassification occurs when all hazards and potential hazards are removed. Neutralization of dangerous moving parts (by lockout for example) may allow temporary reclassification to Non-Permit status and is documented on the EH&S space designation table. Each space or group of similar spaces is named, hazards are identified, as well as how these hazards are controlled. The list of spaces also documents the status of the space, including reclassification if applicable, and who performed the assessment.

**Every time the space is entered under a reclassification process, specific entry procedures must be followed. Procedures must be dated with the entry date, signed, and kept on record for at least one year.** Once the hazard(s) return (unlocked for example), have the potential to return, or new hazards arise, the space shall be returned to the Permit Required Confined Space status for subsequent entries.

**If a space that qualifies for reclassification cannot be entered following the reclassification procedures, then a full permit must be obtained and filed for the space.**

## NON-PERMIT REQUIRED

Spaces classified as Non-Permit do not contain known hazards or do not involve hazards considered serious and therefore have reduced requirements for entry.

- Non-Permit spaces do not require a written permit or attendant for entry.
- Non-Permit spaces do not require any special testing or training,

To determine whether a permit is required for entry into a confined space, consult with EH&S.

## PROCEDURES AND EQUIPMENT ASSOCIATED WITH CONFINED SPACES

### POSTING

Permit-required spaces, which could be inadvertently entered, will be labeled as a permit-required confined space. A sign reading: **“DANGER – PERMIT – REQUIRED CONFINED SPACE, DO NOT ENTER”** or using other similar language would satisfy the requirement for a sign.

Obvious confined spaces, such as manholes, or confined spaces that are not permit-required, will not be labeled.

## VERIFICATION TESTING

Before entering a permit space that may have a hazardous atmosphere, the atmosphere must be tested using the steps identified on the permit. Verification testing makes sure that the chemical hazards that may be present are below the levels necessary for safe entry, and that they meet the conditions identified on the permit.

**The testing results (the actual test concentrations) must be recorded on the permit by the entry supervisor.**

## DURATION AND APPROACH TO TESTING

For each test required on the permit, entry supervisor must allow enough time for the air from the space to be drawn into the equipment and for the sensor (or other detection devices) to detect the chemical if it is present. This is considered the “minimum response time” and it will be noted by the manufacturer in the operator’s manual.

- Additional time may be needed to this minimum response time if using an attached hose or a probe extension to the inlet.
- Additional time may be needed to allow the air from the different depths of the space to be pulled into the equipment inlet.

For spaces that are deep or have areas leading away from the entry point, the atmosphere may be layered or different in remote areas of the space. For these spaces, testing must be done in the area surrounding the worker, which is considered four (4) feet in the direction of travel and to each side.

If a hazardous atmosphere is detected during entry:

- Each employee shall leave the space immediately and report to their supervisor and EH&S.
- The space shall be evaluated to determine how the hazardous atmosphere developed, and
- Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

## ACCEPTABLE ENTRY CONDITIONS

Because of the dangers associated with flammable, explosive, toxic or oxygen deficient atmosphere within Permit Required Confined Space, the space may require purging before employees can enter. Precautionary steps such as source isolation, ventilation, purging, flushing, and atmospheric level testing may be required prior and during entry. Acceptable entry conditions for specific areas are contained in Entry Permits.

The permit required space must be tested prior to entry and routinely during entry to make sure that atmospheric conditions continue to be safe for entry.

## ISOLATION

Lockout/Tagout of all sources of hazardous energy (mechanical, chemical, etc.) must follow the requirements described in the Caltech [Lockout/Tagout Program](#).

## PURGING AND FLUSHING

If a confined space contains a flammable, explosive, toxic or oxygen deficient atmosphere, the area will require purging before employees can enter. Continual forced air ventilation and atmospheric monitoring are necessary to keep some areas safe during and throughout entry.

## VERIFICATION MONITORING

Requirements of entry are listed on Entry Permits. Monitoring of hazardous conditions is required prior to receiving entry authorization. Conditions that must be monitored include atmospheric, mechanical, and physical hazards. Ongoing monitoring may be periodic or continuous as required by the permit. Only personnel trained in the proper use of the equipment and interpretation of the results are authorized to perform required air monitoring.

## BARRIERS

Barriers must be placed around Permit Required Confined Spaces when conditions may cause injury. Conditions requiring the use of barriers include:

- Unauthorized entry.
- Objects or pedestrians falling into the space.
- Vehicular hazards around the space.

## CONFINED SPACE ENTRY EQUIPMENT

Equipment that may be required during entry operations must be listed on the permit and may include:

- Testing and Monitoring Equipment
- Ventilation Equipment
- Communications Equipment
- Personal Protective Equipment
- Lighting Equipment
- Barriers and Shields
- Ingress and Egress Equipment
- Rescue and Emergency Equipment
- Any other equipment necessary for safe entry and rescue

Entry equipment will be maintained by their respective owners. Only trained and authorized employees are to use the equipment.

## RESCUE AND EMERGENCY SERVICES PROCEDURES

An emergency is an event in or near the Permit Space that could endanger entrants. Emergency rescue services during entry by Caltech employees will be provided by the Pasadena Fire Department.

**Entry supervisors must notify Campus Security of the location of the planned confined space entry prior to entry to facilitate rescue service response in the event of an emergency.**

## EVACUATION AND RESCUE PROCEDURES

- Attendant will notify all Entrants to evacuate.

- Attendant will notify 626-395-5000 / x 5000 if the emergency involves serious injury or fire.
- Attendant will request emergency rescue services from Pasadena Fire Department, if needed.
- Attendant will execute any "non-entry" rescue procedures appropriate to the situation.
- Rescue involving space entry will not be performed by Caltech employees and will be coordinated by Pasadena Fire Department.
- The Entry Supervisor will immediately cancel the Entry Permit.

## **SUPERVISOR AND ATTENDANT RESPONSIBILITIES DURING AN EMERGENCY**

- Provide the Rescue Services group with information on the work being done.
- Provide the Entry Permit to Rescue Services personnel.
- Provide Rescue Services with any observations or information about the emergency.
- Keep unauthorized personnel out of the area.
- Forward information on any chemicals involved in exposures to the medical facility treating exposed victims (if applicable).
- Notify [EH&S](#)

## **PERMIT SYSTEM**

A screenshot of the Caltech Confined Space Entry Permit is in [Appendix B](#). Cancelled Entry Permits are kept in the AiM for a minimum of one year.

### **PREPARATION**

If the area is a Non-Permit space, work may proceed without a permit or notification. To determine if a space requires a permit for entry, use the Caltech Confined Spaces Program Decision Flowchart in [Appendix A](#).

If the Permit-Required Confined Space qualifies and is entered following a reclassification procedure, the reclassification procedures document must be obtained and signed by the entrant.

Prior to Permit-Required Confined Space entry, an applicable, new, permit form must be created in AiM and completed in full by the entry supervisor and communicated to attendants and entrants. Additional requirements may apply to Permit-Required areas based upon entry testing results. A final authorization signature is required by the Shop/Unit Supervisor for "Permit-Required" spaces.

### **ISSUE/USE**

Work performed in the entered confined space must not deviate from the requirements of the permit, including the time required to complete the assignment. Permits must be active in AiM during entry. It is the responsibility of the Entry Supervisor to see that permits are completed and active in AiM. In addition, if there is any hot work conducted inside of the confined space, a hot work permit is also required and must also be posted. For more information and requirements see the [Caltech Hot Work Permit Program](#).

### **CONCLUSION OF OPERATIONS/CANCELLATION OF PERMIT**

Upon conclusion of the entry operations, the authorized Entry Supervisor is responsible for terminating the entry and canceling the Permit ([See Duties and Workflow](#)).

The Entry Supervisor is also required to terminate entry and cancel the Permit when a condition exists that is not acceptable by the Permit.

Entry must not exceed the expiration date and time indicated on Entry Permits. Upon conclusion of entry operations, the Entry Supervisor shall cancel the Permit and keep the record on file for at least one year.

## **OUTSIDE CONTRACTORS**

Outside contractors must be informed of the fact that a space requires a permit, the hazards of the space, Caltech's experience with the space, and precautions and procedures that have been implemented for protecting employees in or around the space. If a Caltech employee works in or near the space, coordinated entry operations are necessary. Contractors entering permit-required spaces must have their own confined space program and must issue and post their own confined space permit for that space.

## **DUTIES AND WORKFLOW**

There are three (3) different active roles in the performance of Permitted Confined Space entry operations: Entrants, Attendants, and Entry Supervisors.

### **ENTRANTS**

Entrants are employees authorized to enter a permit space. Entrants shall:

- Read and fully understand the entry permit.
- Know the hazards that they may be faced during entry.
- Conduct entry in accordance with the entry permit.
- Alert the Attendant whenever the entrant recognizes any warning signs or symptoms of exposure to a dangerous situation, or when any prohibited condition is detected.
- Properly use equipment mentioned under the "Equipment" section and/or the entry permit.
- Communicate with the Attendant as necessary alerting them of hazards.
- Exit from permit space whenever there is an order to evacuate, a hazard is recognized, or an evacuation alarm is activated.

### **ATTENDANTS**

Attendants are employees stationed outside of a permit space to monitor Entrant activity and perform duties listed on the permit. Attendants are responsible to:

- Read and fully understand the Entry Permit.
- Know the hazards that they may be faced during entry.
- Know the behavioral effects of hazard exposure in Authorized Entrants.
- Keep an accurate count of the number of Entrants in the permit space.
- Remain outside the space during operations until relieved.
- Monitor the work area inside and outside the space for hazardous conditions.
- Summon rescue and emergency services.
- Communicate with Entrants to relay information and monitor the status of the Entrants.
- Order the evacuation of the Entrants from space if a hazardous condition is encountered.
- Keep unauthorized employees away from the space.
- Perform no duties that might interfere with the Attendant's primary duty to monitor and protect the Authorized Entrants.

- Perform non-entry rescues.

There must be at least one attendant present outside the space for the duration of the work being performed in Permit Required Confined Space. **Attendants must not monitor more than one confined space at any given time.**

## ENTRY SUPERVISORS

Entry Supervisors authorize and supervise entry operations. An Entry Supervisor that authorizes entry may delegate supervisory responsibilities during entry to another employee authorized as a Supervisor. Entry Supervisors are responsible to:

- Obtain a new Entry Permit, fill it appropriately, and keep it active in AiM.
- Ensure that the completed permit is read and understood by entrants and attendants
- Ensure that at least one on-site employee is trained in Cardio-Pulmonary Resuscitation (CPR)/First Aid, and readily available to facilitate the confined space entry operation, if needed.
- Recognize the potential hazards during entry, including signs and symptoms of exposure.
- Determine, before entry, that area conditions meet the requirements of the permit.
- Provide necessary equipment, hazardous material information, and assure rescue services are in place.
- Assure that Entrants and Attendants are trained prior to entry.
- Determine that entry operations and conditions remain consistent with the terms of the permit.
- Remove unauthorized individuals from the area during entry operations.
- Cancel the permit at the conclusion of entry or if other conditions warrant it, such as uncontrolled hazards.

## CONCLUDING OPERATIONS

When the scheduled work operations in a Permit Required Confined Space have concluded:

- Entrants will exit the space.
- The area will be closed off.
- The Permit will be cancelled.

## TRAINING

Employees working with Permit-Required Confined Spaces must receive training. Employees working as Attendants, Authorized Entrants, or Entry Supervisors receive Cal/OSHA compliant training for safe performance of assigned duties in confined space areas.

Contractors are expected to provide their employees with similar training that is compliant with Cal/OSHA requirements for entry of confined spaces. Caltech may request documentation of this training from its contractors.

## FREQUENCY

Affected employees must receive training before their first assignment of work in confined spaces. Employees receive additional training when there is a change in assignment, operation, or procedure(s).

# REVIEWS

## POST-ENTRY REVIEW

The Environmental Health and Safety Office will immediately review specific entry operations under the following circumstances, when reported:

- Unauthorized entry.
- Detection of hazards not addressed on a permit.
- Complaints of the effectiveness of entry procedures.
- Entries resulting in emergency exit or rescue.

Investigation of these circumstances will be documented and corrective actions, if any, will be communicated to stakeholders. Subsequent entries will not be authorized until the review is completed with all necessary revisions made.

## YEARLY REVIEW AND PROGRAM OVERSIGHT

The Environmental Health and Safety Office will review and evaluate:

- All documentation (Canceled permits, reclassification procedures, Security activation log, etc.) related to this program on a yearly basis.
- Request that each shop/unit complete a yearly assessment of their confined spaces and associated procedures – see [Appendix C](#).
- Issue a program oversight report and share with stakeholders for ongoing program management and improvement

## APPENDICES

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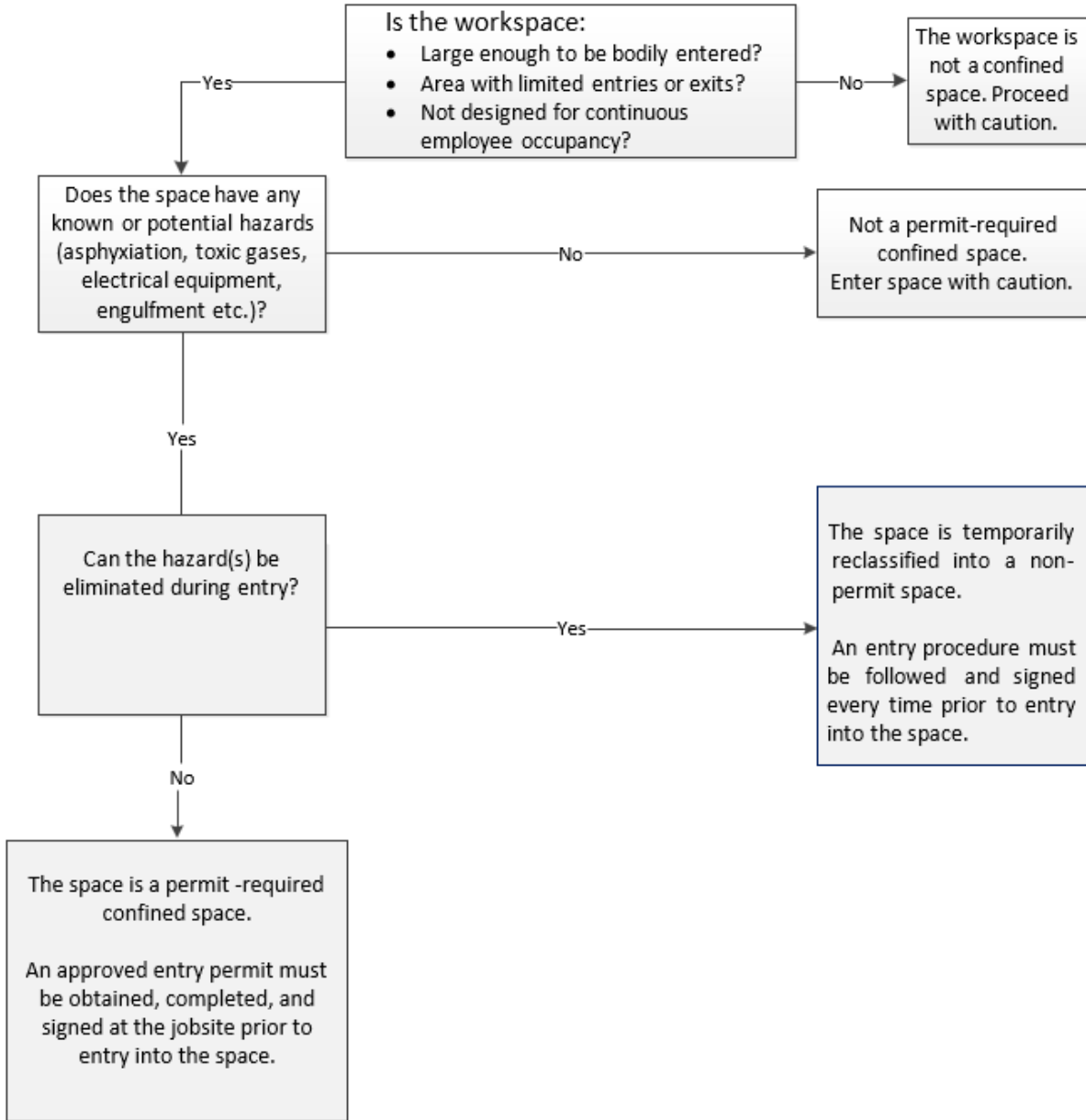
[APPENDIX A](#): CALTECH CONFINED SPACE ENTRY PROGRAM DECISION CHART

[APPENDIX B](#): CONFINED SPACE ENTRY PERMIT COMPLETION PROCEDURE

[APPENDIX C](#): ANNUAL SHOP/UNIT QUESTIONNAIRE



# APPENDIX A: CALTECH CONFINED SPACE ENTRY PROGRAM DECISION CHART



# APPENDIX B: CONFINED SPACE ENTRY PERMIT COMPLETION PROCEDURE

Entry is allowed to trained and authorized individuals only after the permit is issued.

PROCESS:

- NON-FACILITIES PERSONNEL:
  1. Contact the EH&S Office by emailing [safety@caltech.edu](mailto:safety@caltech.edu) or calling 626-395-6727 (x 6727) and a subject matter expert will assist you.
- FACILITIES PERSONNEL:
  1. Call the Facilities Service Center
  2. Request that the Confined Spaces Entry Permit form be uploaded into your Work Order (provide AIM Work Order number)
  3. Complete all portions of the Permit before indicating Work Complete (see sample AIM Confined Space Entry Permit line items below).

AiM
☰
Inspection Type

Action	<b>CONFINED SPACE</b>
<a href="#">Email</a>	CONFINED SPACE ENTRY PERMIT
View	

Line Items			
Line	Description	Question Type	Active
1	Is a confined space entry permit needed for this phase of work?	Validated List	Yes
2	This permit is only valid for one 8-hour work shift (unless approved otherwise by the Caltech EHS Office). A new permit must be issued at the beginning of each shift or when conditions change. A new permit must be issued for each individual space.	Text Entry	Yes
3	This permit must be complete and readily available upon request before entry. If more than 2 entrant or 2 attendants are needed, please add the names to line 39 of this inspection and verify all questions have been answered and reviewed	Text Entry	Yes
4	Authorized entrant name.	Text Entry	Yes
5	Is entrant current with all training related to this permit? Harness, A-Frame, Confined space?	Validated List	Yes
6	Has entrant read and understand the Caltech Confined Space Program?	Validated List	Yes
7	Second authorized entrant name.	Text Entry	Yes
8	Is second entrant current with all training related to this permit? Harness, A-Frame, Confined space?	Validated List	Yes
9	Has second entrant read and understand the Caltech Confined Space Program?	Validated List	Yes
10	Attendant's name.	Text Entry	Yes
11	Has attendant read and understand the Caltech Confined Space Program?	Validated List	Yes
12	Second attendant's name.	Text Entry	Yes
13	Has second attendant read and understand the Caltech Confined Space Program?	Validated List	Yes
14	Location if this is a system asset	Text Entry	Yes
15	Date and time permit is authorized. Use 24 hour clock	Text Entry	Yes
16	Entry permit duration in hours.	Text Entry	Yes
17	Entry supervisor.	Text Entry	Yes
18	Anticipated hazards	Text Entry	Yes

# APPENDIX C: ANNUAL SHOP/UNIT QUESTIONNAIRE

## Caltech Confined Space Entry Program SHOP/UNIT ANNUAL REVIEW QUESTIONNAIRE

**Shop/Unit:** \_\_\_\_\_ **Supervisor:** \_\_\_\_\_

During the twelve-month period from \_\_\_\_\_ to \_\_\_\_\_, were there any entries into permit-required confined spaces (including permitted entries, and reclassified / alternate entry procedures)?

**Yes – Please answer the remaining questions on this form.**

**No – Stop here. The remaining questions on this form are not applicable and do not need to be completed.**

Confined Space Entry Procedures <i>(Explain "NO" answers in comments, bottom of page 2.)</i>	Yes / No / N/A	Comment #
1. Were procedures followed per the Shop's/Unit's Confined Space Entry Plan?		
2. Did the Confined Space Supervisor evaluate and assess potential hazards in the confined space prior to entry?		
3. Were all entered confined spaces listed in the Shop's/Unit's confined space inventory? (if not, add the new space to the comments section – page 2)		
4. Were LOTO procedures in place for confined space entries (when applicable)?		
5. Were Hot Work procedures in place for welding in confined spaces (when applicable)?		
6. Were contractors vetted by EH&S to work in permit required spaces?		
7. Were contractors informed of the fact that a space requires a permit, the hazards of the space, Caltech's experience with the space, and precautions and procedures that have been implemented for protecting employees in or around the space (when applicable)?		
8. Were unauthorized entries into confined spaces prevented? (e.g., barricades, guarded rails, etc.) (when applicable)		
9. Was Campus Security notified of the location of the planned permit required confined space entry prior to entry and at the end of the work?		
10. Was required equipment available and used for confined space entry? (e.g., gas meter, tripod/harness, ventilation equipment, etc.)		
Confined Space Entry Permits <i>(Explain "NO" answers in comments, bottom of page 2.)</i>	Yes / No / N/A	Comment #
1. Was any permit required confined spaces reclassified for entry? If any problems with reclassification, comment on page 2.		
2. Was any permit required confined spaces entered using alternate/ reclassified procedures? If any problems with alternate procedures, comment on page 2.		
3. Were atmospheric monitoring results on the permits [i.e., oxygen (O <sub>2</sub> ), lower explosion limit (LEL), Carbon Monoxide (CO), Hydrogen Sulfide (H <sub>2</sub> S), and Temperature] (if applicable)?		
4. Was the type of work performed correctly written on the permits?		
5. Did a condition occur that was prohibited by the permit? (If yes, comment on page 2)		
6. Were there any injuries or near misses that occurred during entry? (If yes, comment on page 2)		
7. Were safety equipment and PPE correctly identified on the permits?		
8. Was the duration of each permit correctly identified?		
9. Were all entrants, attendants and entry supervisors identified on the permits?		
10. Were appropriate approvals and signatures documented on the permits?		

**Caltech Confined Space Entry Program**  
**SHOP/UNIT ANNUAL REVIEW QUESTIONNAIRE**

<b>Atmospheric Monitoring</b> <i>(Explain "NO" answers in comment section below)</i>	<b>Yes / No / N/A</b>	<b>Comment #</b>
1. Were portable gas meters available and in good working order?		
2. Were the gas meters functionally (bump) tested before each use?		
3. Were calibrations for gas meters up to date? What is the calibration date(s)? List in the comments section.		
4. Was testing conducted initially, without ventilation, in areas where entrants will be working?		
5. Was periodic or continuous atmospheric monitoring documented?		
<b>Tools, PPE and Working Materials</b> <i>(Explain "NO" answers in comment section below)</i>	<b>Yes / No / N/A</b>	<b>Comment #</b>
1. Were appropriate tools for the described work used (e.g., low voltage, non-sparking, etc.)?		
2. Was GFCI protection provided for all portable electric tools?		
3. Was ventilation equipment capable of providing adequate fresh air? (when applicable)		
4. Was PPE available and used when necessary?		
5. Was a PPE assessment conducted for routine confined space entries?		
6. Was/were tripod(s) and safety harness(es) in good working order?		
7. Were entry ladders inspected and in good working order?		
8. Was there any equipment or means of communication available to accommodate two-way communication? Like what? List in the comments section.		
<b>Training</b> <i>(Explain "NO" answers in comment section below)</i>	<b>Yes / No / N/A</b>	<b>Comment #</b>
1. Are all personnel involved in confined space entry trained?		
2. Are entrants trained in the use of required PPE?		
3. Are entrants and attendants trained on monitoring equipment?		
4. Are entrants and attendants trained on non-entry rescue equipment?		
5. Are entrants and attendants trained on assessing hazards?		
6. Are Confined Space Entry Supervisors trained on assessing hazards and making determinations about safe entry requirements?		

Comments and corrective actions must be listed below. Serious deficiencies must be corrected before subsequent confined space entries are authorized.

*Attach additional pages for comments if needed.*

1.
2.
3.
4.
5.
6.

I hereby certify that an annual review was conducted of the Confined Space Entry Program by the person responsible for the Program at the \_\_\_\_\_ Shop/Unit on this date,