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Permit-Required Confined Spaces: What Cal/OSHA Section 5157 Requires

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Confined space fatalities in California tend to come in pairs: one worker goes down in a tank, vault, pit, or silo, and a coworker goes in after him without testing the air. The employers I see cited afterward are rarely the ones who ignored the hazard. They knew they had confined spaces, had a permit form in a binder, and never built the program around it. Title 8, Section 5157 is the permit-required confined space standard for general industry, and it is one of the most detailed and most enforced standards in the book.

Which Standard Applies: 5157 or 5158

Title 8, Section 5156 sets the scope for the confined space article. Section 5157 applies to all operations and industries except those specifically assigned to Section 5158. Section 5158, the older “other confined space operations” standard, covers construction operations regulated by Section 1502, agricultural operations (including cotton gins), marine terminal operations, telecommunication manholes and unvented vaults, grain handling facilities, and natural gas utility operation within distribution and transmission facility vaults. Shipyard work and electric utility underground vaults are handled under their own articles.

If you run a warehouse, a food plant, a wastewater facility, a brewery, a hospital, or a property with utility vaults and sumps, you are under Section 5157. If you are a construction contractor entering a manhole or tank on a jobsite, you are under Section 5158, which is shorter but still requires written operating and rescue procedures, pre-entry air testing, a standby person, and training. In my experience, contractors who adopt the Section 5157 permit system voluntarily have an easier time on multi-employer sites.

What Makes a Space a Permit Space

Section 5157 defines a confined space as one that meets all three of these tests: it is large enough and so configured that an employee can bodily enter and perform assigned work; it has limited or restricted means for entry or exit; and it is not designed for continuous employee occupancy. It becomes a permit-required confined space if it has any one of four characteristics:

- It contains or has the potential to contain a hazardous atmosphere.
- It contains a material that has the potential for engulfing an entrant.
- It has an internal configuration that could trap or asphyxiate an entrant, such as inwardly converging walls or a floor that slopes down to a smaller cross-section.
- It contains any other recognized serious safety or health hazard.



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The atmospheric thresholds are specific. Under Section 5157, a hazardous atmosphere includes oxygen below 19.5 percent or above 23.5 percent, a flammable gas or vapor above 10 percent of its lower flammable limit, and an airborne combustible dust at or above its lower flammable limit. Section 5158 uses 20 percent of the lower explosive limit for flammables and the same oxygen range, one reason the two standards should not be mixed casually.

The Evaluation, the Program, and the Permit

Before anything else, Section 5157 requires the employer to evaluate the workplace to determine whether any spaces are permit-required confined spaces. I recommend putting that evaluation in writing, because it is the first thing an inspector asks for. If permit spaces exist, you must inform exposed employees by posting danger signs or by another equally effective means. The standard gives the example wording “DANGER — PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER.”

You then have a choice. If employees will not enter permit spaces, you must take effective measures to prevent entry, and the program requirements do not apply. If employees will enter, you need a written permit space program. Two shortcuts in the standard get misused. Subsection (c)(5) allows alternate entry procedures without a full permit when the only hazard is atmospheric and continuous forced-air ventilation alone keeps the space safe, supported by documented monitoring data. Subsection (c)(7) allows a permit space to be reclassified as non-permit when all hazards have been eliminated without entry, and that too must be documented. Ventilating a space controls an atmospheric hazard; it does not eliminate it for purposes of reclassification.

The permit space program under subsection (d) has to cover how you prevent unauthorized entry, identify and evaluate the hazards of each space, and specify acceptable entry conditions; how you isolate, purge, ventilate, and test the space; what equipment you provide, including testing, ventilation, communication, PPE, lighting, barriers, and retrieval gear; how you test the atmosphere before and during entry, testing first for oxygen, then combustible gases and vapors, then toxic gases and vapors; how at least one attendant is stationed outside for every entry; how you coordinate with other employers entering the same space; how rescue will be summoned; the permit system itself; and how the program is reviewed. Cancelled permits must be retained for at least one year and reviewed at least annually.

The permit under subsection (f) must identify the space, the purpose, the date and authorized duration, the entrants, attendants, and entry supervisor, the hazards, the isolation and control measures, the acceptable entry conditions, the atmospheric test results with the tester’s initials and the time, the rescue service and how to summon it, communication procedures, required equipment, and any other permits such as hot work, and it must be signed by the entry supervisor. A permit missing the test results or the rescue service is the most common paperwork citation I see.



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Entrants, Attendants, and Entry Supervisors

Section 5157 assigns duties to three roles. Training under subsection (g) is required before an employee is first assigned any of them, before a change in duties, and whenever the hazards or procedures change, and it must be certified in writing with the employee's name, the trainer's signature or initials, and the date.

- **Authorized entrants** must know the hazards and their symptoms, use the equipment properly, stay in communication with the attendant, and exit immediately when ordered, when they notice a warning sign, or when an alarm sounds.
- **Attendants** must know the hazards, keep an accurate count of entrants, remain outside until relieved, monitor conditions, order evacuation when a prohibited condition develops, summon rescue, and keep unauthorized persons out. An attendant who enters the space to help is no longer an attendant, and that is how the second fatality happens.
- **Entry supervisors** must verify the permit is complete and the tests are done, confirm rescue services are available and can be summoned, authorize entry, and terminate entry and cancel the permit when work is done or a prohibited condition arises.

Rescue: The Part Most Programs Get Wrong

Subsection (k) is where I spend the most time with clients. If you rely on an outside rescue service, you must inform them of the hazards they may confront and give them access to your permit spaces so they can develop rescue plans and practice. Writing "call 911" on the permit is not an arrangement. Many fire departments will tell you directly that they do not perform technical confined space rescue, or cannot arrive fast enough for an atmospheric hazard.

If you use your own employees as a rescue team, they must be equipped and trained on the PPE and rescue equipment, trained as authorized entrants, trained in basic first aid and CPR, and they must practice permit space rescues at least once every 12 months. Retrieval systems are required whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue. That means a chest or full body harness with a retrieval line attached, and a mechanical device available to retrieve personnel from vertical-type spaces more than 5 feet deep.

What Inspectors Look For

A compliance officer will ask for the space evaluation, the written program, the signs, completed permits, the annual review, training certifications for each role, gas meter calibration and bump-test records, and the rescue arrangement with evidence it was practiced. Then they ask the attendant what they would do if the entrant stopped responding. The gap between the binder and that answer is where citations come from.



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What to Do This Week

- Inventory every tank, vault, pit, sump, silo, boiler, duct, and crawl space on the property and document which are confined spaces and which are permit-required.
- Post danger signs on permit spaces or document the equally effective means you use instead.
- Decide, in writing, whether your employees will enter or whether entry will be prevented and left to contractors.
- Pull the last year of permits and check each for test results, times, rescue service, and the supervisor's signature.
- Bump-test your gas meter today and confirm calibration is current.
- Call your rescue service and get a written answer on response time and capability, or schedule the annual practice rescue for your in-house team.
- Confirm every entrant, attendant, and supervisor has a dated, signed training certification.

If your confined space program is a permit form without the evaluation, program, and rescue plan behind it, McNeil Safety Consulting can build one around the spaces you actually have. Learn more about our [safety plan writing services](#) or call **(626) 546-9384**.

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