

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

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**FINAL STATEMENT OF REASONS**

CALIFORNIA CODE OF REGULATIONS

TITLE 8: Division 1, Chapter 4, Subchapter 4,
Article 4, Section 1533(a), (b), (c) and Article 6, Section 1541(g)(3) of the Construction Safety
Orders and Subchapter 20, Article 1, Section 8403(a)(4) of the Tunnel Safety Orders.

Ventilation Inside Shafts, Culverts and Pipelines**MODIFICATIONS AND RESPONSE TO COMMENTS RESULTING FROM
THE 45-DAY PUBLIC COMMENT PERIOD**

There are no modifications to the information contained in the Initial Statement of Reasons except for the following sufficiently-related modifications that are the result of public comments, written comments and/or Board staff evaluation.

Section 1533. Internal Combustion Engines.

A modification is proposed to specify in subsection (a) that, in addition to applying to internal combustion engine driven equipment operated by workers inside buildings and structures, Section 1533 also applies to such equipment operated in shafts, culverts, pipelines and excavations that are 20 feet or less in depth. Also, in response to a Federal OSHA concern, Section 5155 of the General Industry Safety Orders is specifically referred to. The proposed modifications are necessary to clarify to the employer that, consistent with Federal and Title 8 standards, the airborne concentrations specified in Section 5155 are also not to be exceeded.

As originally proposed, a new subsection (b) addresses shafts, culverts, pipelines or other excavations 20 feet in depth or less where internal combustion engine driven equipment is operated and requires either mechanical ventilation in the form of a blower system or exhaust ventilation to control excessive and harmful exposure to airborne contaminants according to specified ventilation flow-rates and require competent person inspection of the workspace to validate that the ventilation is safe and healthful. The wording has been revised for clarity.

A new subsection (c) is proposed to specify that the requirements of Title 8, confined space safety standards shall take precedence if they are more protective than the air quality/ventilation standards required by Section 1533(b). The inter-relationship of these standards is thereby clarified.

SUMMARY AND RESPONSE TO WRITTEN AND ORAL COMMENTS

I. Written Comments

Mr. Van Howell, Area Director, Region IX, OSHA, U.S. Department of Labor, by letter dated July 22, 2011.

Comment:

Mr. Howell commented that Federal OSHA has reviewed the proposal and found it to not be commensurate with federal standards, in that it is not sufficiently linked to Title 8, Section 5155 (the counterpart of federal construction standards) as to hazardous substance exposure limits.

Response:

The Board accepts Mr. Howell's comments to the extent that the proposal will be modified to reference Section 5155. That modification is found in Section 1533(a). In addition, the first sentence of Section 1533(a) had been modified to make it clear that work locations subject to subsection (b) are subject to subsection (a) as well.

II. Oral Comments

Oral comments received at the August 18, 2011, Public Hearing in Sacramento, California.

Mr. Hank McDermott, Board Member

Comment:

Mr. McDermott stated that the definition of ventilation was somewhat unclear because it requires a mechanical exhaust ventilation system but then it goes on to state that a forced air blower system may be used in conjunction with or in lieu of a mechanical exhaust system. He stated that it seems that the wording could be tightened a little bit to make it clearer.

Response:

The proposal provides the employer with the option of using either a mechanical exhaust (removes contaminated air) ventilation system or a forced air blower (introduces breathing air and dilutes contaminated air) or a combination of both. The manner in which the options are stated is clear and does not constitute a definition.

Mr. Bill Jackson, Board Member

Comment No 1:

Mr. Jackson questioned the necessity of the proposal. Mr. Jackson indicated that the confined space safety orders should provide adequate safety for poor air quality in shafts, pipelines,

culverts and excavations. The definition of a confined space should not be changed as a result of the proposal.

Response No 1:

The proposal is necessary because existing Construction Safety Order (CSO) requirements for internal combustion engines contained in Section 1533 only apply to work inside buildings or enclosed structures. Ventilation inside pipelines, shafts, excavations and culverts is not addressed by existing Section 1533 language since these are not buildings or structures. Secondly, the confined space safety orders only apply to what are by definition confined spaces, meaning they are defined by the concurrence of two conditions: limited egress and access and questionable air quality. Not all pipes, shafts, culverts and excavations meet these two conditions and therefore would not be addressed by the confined space safety orders. It is possible however, that portions of some shaft, pipeline, culvert and excavation jobsites may be subjected to Title 8 confined space standards leaving other portions subject to the proposal. This kind of overlap is not uncommon in Title 8 standards. For clarification, wording has been added to set forth the order of precedence. It is important, whether the space is a confined space or not, that adequate, healthful ventilation is provided to ensure employee safety. The definition “confined space” is therefore unaffected by the proposal.

Comment No 2:

Mr. Jackson questioned the procedure by which this proposal was developed, noting that it was put forward by the Division of Occupational Safety and Health (Division) and that Division-originated proposals do not have the initial scrutiny given to petitions.

Response No 2:

This proposal was developed in accordance with the laws and procedures that govern Board rule-making. In addition, the comment concerns procedural matters that do not touch on the substance of the proposal.

Mr. Guy Prescott, Board Member

Comment:

Mr. Prescott stated that if the confined space standard does not apply in the instant case, that standard is much more stringent than the proposal, and that we need to ensure that we are not putting a less stringent standard into effect regarding these conditions. He also echoed Mr. Jackson’s concerns about why staff handles Division Form 9 requests differently than petitions.

Response:

See the responses to Mr. Jackson’s comments. The Board notes the proposal enhances safety by instituting ventilation requirements for worksites not covered by the confined space regulations.

MODIFICATIONS AND RESPONSES TO COMMENTS RESULTING FROM
THE FIRST 15-DAY NOTICE OF PROPOSED MODIFICATIONS

As a result of written comments to the proposed modifications contained in the first 15-Day Notice of Proposed Modifications mailed on September 16, 2011, the following sufficiently related modifications have been made to the Initial Statement of Reasons published in the California Regulatory Notice Register dated July 1, 2011.

Section 1533. Internal Combustion Engines.

A modification is proposed in response to the written comment directed to the new subsection (b). As originally proposed, subsection (b) required a mechanical exhaust ventilation system be provided to prevent exposure to the internal combustion engine's emissions. The intent is to provide a mechanical ventilation system through a forced air ventilation system, a mechanical exhaust system or a combination of the two. As written, the proposal arguably is worded in a somewhat confusing fashion. Thus, for clarity, the word "exhaust" has been deleted from the introductory sentence, and the second sentence of subsection (b) is modified to improve the readability and clarity of the sentence by eliminating repetitive language.

SUMMARY AND RESPONSE TO WRITTEN COMMENTS

I. Written Comments

Mr. Hank McDermott, Board Member by e-mail transmission dated September 28, 2011.

Comment:

Mr. McDermott indicated that for clarity, the word "exhaust" should be deleted from the first sentence of Section 1533(b) and that the latter portion of the prefatory part of Section 1533(b) should be stated in a simpler, less confusing fashion. The intent of the rule is to require a ventilation system that may be either an exhaust or forced air system, and the present wording confuses this point.

Response:

The Board concurs with Mr. McDermott's comment and has made the changes he suggested.

Mr. Van Howell, Area Director, Region IX, OSHA, U.S. Department of Labor, by letter dated September 28, 2011.

Comment:

Mr. Howell commented that Federal OSHA has reviewed the modified proposal and found it to be commensurate with federal standards.

Response:

The Board acknowledges Federal OSHA's opinion regarding the proposal.

Mr. Michael Landy, Senior Safety Specialist, Department of Water Resources, by e-mail transmission dated October 4, 2011.

Comment:

Mr. Landy discussed maintenance activities on box culverts (natural drainage channels) using powered shovels. The buildup of fumes in the culverts is a concern as employees are continuously transiting the structures. Large fans are utilized to blow the fumes out of the work area, and gas detectors are provided to employees to warn of fume accumulation. Some build-up of fumes will happen at times, and build-ups are effected by such conditions as breezy days. Mr. Landy is concerned that the proposed language regarding air flow is difficult to quantify in user-friendly terms. Mr. Landy asks the following questions: "What does '100 cubic feet of fresh air per minute per engine brake horsepower' look like? Would a typical 3 foot diameter industrial fan move that much air?"

Response:

Mr. Landy's comments are outside the scope of this 15 day modification. The Board notes the proposal enhances safety by instituting ventilation requirements for worksites not covered by the tunnel safety orders or confined space regulations. The Board believes that the proposal's requirements are clear and are stated in terms that employers can understand and work with. The proposal requires that the ventilation system must be able to supply at least 100 cubic feet per minute (CFM) of fresh air per engine brake horsepower of the internal combustion engine being used. In response to Mr. Landy's questions, a 4½ foot square box holds by volume nearly 100 cubic feet of air for each brake horsepower (745.7 watts=1 horsepower measured at the crankshaft) of the internal combustion engine operated within the enclosure. An industrial fan 3 feet in diameter moves between 9,000 and 11,000 CFM and is more than adequate to displace 100 CFM of air.

The Board thanks Mr. Landy for his comments and participation in the Board's rulemaking process.

MODIFICATIONS AND RESPONSE TO COMMENTS RESULTING FROM
THE SECOND 15-DAY NOTICE OF PROPOSED MODIFICATIONS

No further modifications to the information contained in the Initial Statement of Reasons are proposed as a result of the second 15-Day Notice of Proposed Modifications mailed on October 27, 2011.

MODIFICATIONS AND RESPONSE TO COMMENTS RESULTING FROM
THE DECEMBER 15, 2011, BUSINESS MEETING

No further modifications to the information contained in the Initial Statement of Reasons are proposed as a result of the Standards Board's Business Meeting on December 15, 2011.

SUMMARY AND RESPONSE TO ORAL COMMENTS

Mr. Bill Jackson, Board Member

Mr. Jackson questioned the necessity of the proposal and the prescriptive ventilation flow rates which appeared to have come from the Tunnel Safety Orders. Mr. Jackson stated that he understands there may be a safety issue that requires addressing; but it does not appear to justify additional regulatory language. Mr. Jackson stated that he is not aware of any accidents that would substantiate the need for the proposal.

Mr. Guy Prescott, Board Member

Mr. Prescott stated that he concurred with Mr. Jackson and indicated concern that stakeholders from the construction industry were not involved in the development of the proposal.

Response:

Internal combustion engine driven equipment can generate up to 13 different airborne contaminants such as (but not limited to) carbon monoxide, hydrocarbons, oxides of nitrogen, particulates, benzene and various oxides of sulphur. Operated in enclosed spaces or below ground, it is probable that the contaminants will build up rapidly to a point where there will be worker exposure.

This issue exists in buildings and enclosed structures and has been regulated for years by Section 1533(a). The Tunnel Safety Orders (TSO) also addresses this issue in Section 8437 for shafts more than 20 feet in depth and excavations unrelated to the TSO. However, given the scope of the TSO, this issue is not addressed for construction shafts 20 or less feet in depth, culverts, pipelines or excavations unrelated to the TSO. Federal OSHA standards make no distinction between tunnel related work or the construction industry when it comes to the need for fresh air for workers below ground. Federal OSHA requires fresh air to be supplied to *all* underground work areas in sufficient quantities to prevent the buildup of air contaminants to unhealthy levels. The Federal Standard in 29 CFR 1926.800 (k) specifies ventilation flow rates consistent with the proposal and the TSO. The proposal is arguably necessary for California to be at least as effective as Federal OSHA for this issue; the proposal is needed to address shafts 20 feet or less in depth, culverts, pipelines and excavations not related to the TSO.

Staff has also investigated existing Title 8 General and Construction Industry Standards that may be germane to this issue (e.g., CSO 1541, GISO 5158, 5155(e), 5141, and 5144). These standards are either intended to address different issues such as build up of flammable gas, apply only to a limited number of workplaces, require employer action after an exposure has occurred,

are too generic, or simply do not apply to all the locations addressed in the proposal as is the case with confined space standards (not all workplaces addressed in the proposal are confined spaces). The proposal does not conflict with or duplicate existing workplace air quality standards.

Finally, it should be emphasized that during deliberations by the Division's Tunnel Safety Orders advisory committee, representatives from above and below ground construction industries suggested that language similar to the proposal be placed in the CSO. Discussions with construction industry stakeholders took place during its development prior to the noticing of the proposal for Public Hearing.

The proposal did not generate written public comments during the 45 Day Notice period. There were no oral stakeholder comments at the August 18, 2011, Public Hearing, however various Board members made comments and Board staff has provided responses.

Recent discussions by Board staff with construction industry stakeholders following the December 15, 2011, Business Meeting including AGC California, The Construction Employer's Association and the Engineering and Utility Contractors Association indicate there are no objections or concerns regarding the proposal. Consequently, the Board staff believes the proposal is necessary.

ADDITIONAL DOCUMENTS RELIED UPON

None.

ADDITIONAL DOCUMENTS INCORPORATED BY REFERENCE

None.

DETERMINATION OF MANDATE

These regulations do not impose a mandate on local agencies or school districts as indicated in the Initial Statement of Reasons.

ALTERNATIVES CONSIDERED

The Board invited interested persons to present statements or arguments with respect to alternatives to the proposed regulation. No alternative considered by the Board would be more effective in carrying out the purpose for which the action is proposed or would be as effective as and less burdensome to affected private persons than the adopted action.