

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

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**PROPOSED PETITION DECISION OF THE
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD
(PETITION FILE NO. 500)****INTRODUCTION**

The Occupational Safety and Health Standards Board (Board) received a petition on January 14, 2008, from Henry Morgan, Director and General Manager, (Petitioner) representing Brigade Electronics. The Petitioner requests the Board to amend Title 8, California Code of Regulations, Section 1592 of the Construction Safety Orders, Sections 3706 and 3801 of the General Industry Safety Orders, Sections 7016 and 7024 of the Mine Safety Orders, and Section 8483 of the Tunnel Safety Orders, concerning the requirement that automatic backup alarms on vehicles normally be audible at 200 feet.

Labor Code Section 142.2 permits interested persons to propose new or revised standards concerning occupational safety and health, and requires the Board to consider such proposals, and render a decision no later than six months following receipt. Further, as required by Labor Code Section 147, any proposed occupational safety or health standard received by the Board from a source other than the Division of Occupational Safety and Health (Division) must be referred to the Division for evaluation, and the Division has 60 days after receipt to submit a report on the proposal.

SUMMARY

The Petitioner states that the CalOSHA requirement that backup alarms shall be audible at a distance of 200 feet works directly against safety by generating four specific problems: false alarms, increasing site noise, exclusion of new technology, and prevention of universal adoption of best practices by national and international companies. The Petitioner states that only tonal backup alarms which generate a sound composed of one or two frequencies can comply with the 200-foot requirement. The Petitioner asserts that broadband backup alarms which generate sound with a broad frequency spectrum are more effective than tonal alarms at alerting employees in the hazard zone and they also expose persons outside of the hazard zone to less noise. An example of broadband or "white" noise can be heard on Petitioner's company website at <http://www.reverseinsafety.co.uk/> by clicking on "products" and "broadband sound alarms." The Petitioner is requesting that the applicable sections be amended to remove the requirement that backup alarms be audible at 200 feet and replace it with the following: *"A truck automatic backup warning sound shall be clearly alerting in all parts of and close to the hazard area. If possible the sound should be locatable and contained close to the hazard area."*

DIVISION'S EVALUATION

The Division's report recommends granting the petition to the extent that an advisory committee should be convened. The report states that there are a variety of alarm and sensing devices that should be considered in revision to the standard. Radar, strobe light, video camera, ambient noise leveling and motion sensor devices are available and should also be considered as part of the evaluation. The Division believes that the interests of the regulated public would be best served through the formation of an advisory committee composed of stakeholders such as contractors, unions, manufacturers, experts in acoustic technology and other interested parties to determine whether or not the 200 foot requirement impacts the introduction of technology which is just as safe and effective as tonal alarm systems.

STAFF'S EVALUATION

The Petitioner identifies six safety orders which he asserts have similar language requiring that backup alarms normally be audible at 200 feet. He is requesting that this prescriptive standard be replaced with a performance standard that requires backup alarms be alerting in the hazard zone. Of the six safety orders the Petitioner is requesting to amend; only Section 1592(a) requires, as the sole means of compliance, that vehicles shall be equipped with an automatic backup alarm that is normally audible at 200 feet. The other safety orders allow the employer to use alternative safety measures in lieu of backup alarms that are normally audible at 200 feet; or the provisions, which specify that vehicle warning devices be audible at 200 feet, apply only to audible warning devices (e.g., vehicle horns) and not to backup alarms.

Section 1592(a) applies to vehicles with a haulage capacity of 2½ cubic yards or more used to haul dirt, rock, concrete, or other construction material. The record shows that the provision, which specifies backup alarms shall normally be audible at 200 feet, dates back at least to 1957; however prior to 1965 the use of a signalman or a manual warning device was an acceptable substitute for a backup alarm. Nothing could be found in the rulemaking record to identify the source for specifying 200 feet as the minimum distance at which backup alarms must normally be audible.

The Petitioner asserts that broadband backup alarms are more effective and less annoying than tonal alarms for several reasons. His assertion is based on the physical properties of sound transmission, reflection, and absorption at different frequencies; and the perception of sound loudness or annoyance at different frequencies. The Petitioner states that a tonal alarm is largely omni-directional, while broadband is focused into the hazard area. He states that when a broadband alarm is mounted on the back of a vehicle the sound pressure levels behind the vehicle typically show a reduction of approximately 10 decibels when moving from a location that is directly to the rear of the vehicle to a location that is directly 90 degrees to the side of the vehicle. He asserts that the sound level in the hazard zone is not significantly reduced, and because the sound is confined to the hazard zone, it results in fewer community noise complaints and false alarms that lead to employee complacency.

The Petitioner states that employers in California are hesitant to use broadband alarms because Section 1592(a) is ambiguous in that it does not clearly state whether the backup alarm is required to be audible 200 feet in all directions, 200 feet in any direction, or 200 feet to the rear of the vehicle. The Petitioner asserts that broadband alarms are normally audible at a distance of 200 feet directly behind the vehicle; however they are not normally audible 200 feet to the side or front of the vehicle. The Petitioner proposes to replace the existing provision, which requires backup alarms to normally be audible at 200 feet, with the following: *“A truck automatic backup warning sound shall be clearly alerting in all parts of and close to the hazard area. If possible the sound should be locatable and contained close to the hazard area.”* Board staff considers the proposed language is vague since “hazard area,” “alerting,” “locatable” and “contained close to the hazard zone” are not defined.

On March 10, 2008, the Petitioner met with staff from the Board and the Division and demonstrated a broadband alarm that was placed on the rear bumper of a pickup truck in a relatively quiet office parking lot. This particular alarm had a maximum sound level of 97 decibels and automatically adjusted its volume to be 10 decibels above the background noise level. The alarm was clearly audible approximately 100 feet behind the vehicle but was barely audible just in front of the vehicle. The demonstration indicated that a broadband backup alarm that is normally audible 200 feet directly to the rear of a vehicle is not likely to be audible 200 feet directly to the side of the vehicle. The Petitioner stated that broadband backup alarms have been used for several years in Europe and the United States in a variety of applications, and he expressed an interest in the Board’s variance process.

A proposal to allow the use of broadband backup alarms as an alternative to backup alarms that are audible at 200 feet has merit. There are other devices that employ new technologies which may also be effective alternatives, such as alarms that automatically adjust their volume to compensate for ambient noise levels, and discriminating alarm systems which only alarm when a sensor detects an object in the hazard zone. The United States Mine Safety and Health Administration allows the use of discriminating alarms, the Society of Automotive Engineers has adopted standards for evaluating their performance, and The National Institute of Occupational Safety and Health has conducted studies to evaluate their performance.

Board staff recommends that the Petitioner’s request be granted to the extent that an advisory committee be convened to consider the Petitioner’s proposed language, innovative backup warning devices, and whether the current standard, which requires backup alarms to normally be audible at 200 feet, is effective, consistent with other applicable standards, and provides a reasonable balance between employee safety and public noise concerns. If appropriate, the advisory committee should assist with the development of proposed amendments to Section 1592 and other applicable standards. The Petitioner should be invited to participate in the advisory committee process.

CONCLUSION AND ORDER

The Occupational Safety and Health Standards Board has considered the petition of Henry Morgan, Director and General Manager, (Petitioner) representing Brigade Electronics, to make recommended changes to Section 1592 of the Construction Safety Orders, Sections 3706 and 3801 of the General Industry Safety Orders, Sections 7016 and 7024 of the Mine Safety Orders, and Section 8483 of the Tunnel Safety Orders, concerning the requirement that automatic backup alarms on vehicles normally be audible at 200 feet. The Board has also considered the recommendations of the Division and Board staff. For reasons stated in the preceding discussion, the Petition is hereby granted to the extent that a representative advisory committee be convened by Board staff to consider whether Section 1592(a) and other applicable sections should be amended to allow the use of broadband back up alarms and other warning devices that are not normally audible at 200 feet.