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Occupational Safety and Health Standards Board  
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**PROPOSED PETITION DECISION OF THE  
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD  
(PETITION FILE NO. 571)**

**INTRODUCTION**

The Occupational Safety and Health Standards Board (Board) received a petition on November 26, 2018, from Michael Pankonin on behalf of the Association of Equipment Manufacturers (Petitioner). The Petitioner requests that the Board amend Title 8, General Industry Safety Orders, Section 3441(b), Operation of Agricultural Equipment to allow the use of highly automated agricultural equipment and autonomous agricultural equipment.

Labor Code Section 142.2 permits interested persons to propose new or revised regulations 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. The Division has 60 days after receipt to submit an evaluation regarding the proposal.

**SUMMARY**

The Petitioner requests the Board amend Section 3441(b) by adding the following language: “Highly automated agricultural equipment and autonomous agricultural equipment may be operated by an operator not on the equipment provided that it is used in accordance with manufacturers’ instructions and guidance.”

The Petitioner states “there has been a lot of design effort directed toward developing highly automated agricultural equipment and autonomous agricultural equipment.” He further states that because of the many applications of the equipment, the equipment will need to operate in close proximity to humans. Petitioner asserts that Section 3441(b), “as currently published, will prohibit [the use of such equipment] as intended and severely limit its functionality.”

The Petitioner is concerned that Section 3441(b) will hinder the production and use of modern driverless technologies being developed for agricultural use.

**DIVISION EVALUATION**

In its report concerning the Petition, dated March 20, 2019, the Division reviewed the Petitioner’s proposed changes to Title 8, Section 3441(b). The review included information provided in the Petitioner’s application, applicable consensus standards and communications

with experts in the field of autonomous equipment. Field evaluations were also conducted at two different locations that employ technology relevant to the use of Highly Automated Agricultural Machines (HAAM).

Although great strides have been made in the development of HAAM, it is still an emerging technology. There is very little data available to establish a solid safety record for the operation of this equipment.

Based on the information gathered during the evaluation, the Division recommends the Occupational Safety and Health Standards Board deny this petition.

### **BOARD STAFF EVALUATION**

The Board staff evaluation dated April 4, 2019, states that one challenge faced by Highly Automated Agricultural Machines (HAAM) and their regulation under Cal/OSHA standards is that HAAM can come in almost limitless forms. Some HAAM is truly autonomous (e.g. a robotic milker on a dairy that a milk cow can access on demand<sup>1</sup>), while others have the option of being autonomous for some tasks and then remote controlled or manually operated for others (e.g. a grain cart that works autonomously to collect harvested grain from a working combine and then returns to a staging area for a worker to offload the grain for transport<sup>2,3</sup>).

The review included information provided in the Petitioner's application as well as:

#### **Federal Standards**

Federal agricultural regulations include general requirements for protecting employees from hazards created by moving machinery parts, as well as general equipment safety training requirements, but do not specifically address HAAM.

#### **California Standards**

Title 8, Section 3441(b) as described above along with other generic guarding and training standards exist, but none specifically address HAAM.

#### **Consensus Standards**

ISO 18497:2018 "Agricultural machinery and tractors—Safety of highly automated agricultural machines—Principles for design" is a recently published performance standard that lays out guidelines for the manufacture of HAAM and which could be applied to a wide variety of equipment. The standard does not provide prescriptive requirements or specific benchmarks, but instead provides general principles to address the potential hazards.

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<sup>1</sup> <https://www.nytimes.com/2014/04/23/nyregion/with-farm-robotics-the-cows-decide-when-its-milking-time.html>. Accessed 1/31/19.

<sup>2</sup> <https://www.seedotrun.com/faq.php>. Accessed 1/31/19.

<sup>3</sup> <https://www.youtube.com/watch?v=YFy6ZAJbeew&index=2&list=PL4A9EEE75D109BD18>. Accessed 1/31/19.

### **Other Standards, Guidelines, Codes**

Much of the current research into autonomous machines is being done in the field of transportation. Ontario, Canada, and other jurisdictions, for example, have guidelines for Automated Driving Systems, but do not include off road vehicles or agricultural equipment.

There are many safety features built into autonomous equipment, but accidents in the field of transportation indicate that further refinement of the technology is necessary<sup>4</sup>.

A discussion on the viability of autonomous machines in agriculture has merit and should occur to ensure that employee protections are in place before the inevitable expansion of the technology. Although the technology is in limited use in California today, an advisory committee discussion should include:

- 1) Definitions for highly automated and autonomous equipment.
- 2) Protections for employees working both directly with and in the vicinity of HAAM. The committee should consider including the most protective requirements for those workers who will work directly with the HAAM.
- 3) Where HAAM is used in isolation, prevention of unintentional employee exposure.
- 4) Any special training requirements for working around HAAM that are not included in existing regulations.
- 5) Suitability of ISO 18497:2018 as a consensus standard for designing HAAM that will operate near employees, and/or any other standards regarding employee protections that should be included in HAAM operating in California.
- 6) Means to ensure that HAAM safety features will function as intended in real-world conditions.
- 7) Means to prevent unauthorized use or hacking of HAAM.
- 8) The need for, or benefits of, special procedures or requirements for reporting employee injuries or illnesses resulting from exposure to HAAM.

### **CONCLUSION AND ORDER**

Having considered Petition 571 and evaluations of it by the Division and Board staff, the Board hereby GRANTS the Petitioner's request to the limited extent that Board staff shall convene an advisory committee of stakeholders, inclusive of the Petitioner, to discuss the issues identified by the petition and subsequent evaluations.

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<sup>4</sup> <https://www.digitaltrends.com/cool-tech/most-significant-self-driving-car-crashes/>. Access 2/4/2019.