STATE OF CALIFORNIA
DEPARTMENT OF INDUSTRIAL RELATIONS
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD
2520 Venture Oaks Way, Suite 350
Sacramento, California 95833
(916) 274-5721

In the Matter of a Petition by:

Praveen Penmetsa & Jake Winters Monarch Tractor 203 Lawrence Drive, Suite A Livermore, CA 94568 Applicant.	))))))	**PETITION FILE NO. 596**

The Occupational Safety and Health Standards Board hereby adopts the attached PROPOSED DECISION.

OCCUPATIONAL SAFETY AND HEALTH
STANDARDS BOARD

DAVID THOMAS, Chairman

BARBARA BURGEL, Member

KATHLEEN CRAWFORD, Member

DAVE HARRISON, Member

NOLA KENNEDY, Member

CHRIS LASZCZ-DAVIS, Member

LAURA STOCK, Member

By: Christina Shupe, Executive Officer

DATE: June 16, 2022
Attachments

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PROPOSED PETITION DECISION OF THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD (PETITION FILE NO. 596)

INTRODUCTION

The Occupational Safety and Health Standards Board (Board) received a petition on December 15, 2021 from Praveen Penmesta, CEO of Monarch Tractor (Petitioner). The Petitioner requests the Board to amend title 8, section 3441, subdivision (b), "to allow for the use of driver optional tractors without a human operator stationed at the vehicular controls within a strict set of safety guidelines." (Petition, p. 1.)

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 and health standard received by the Board from a source other than the Division of Occupational Safety and Health (Cal/OSHA) must be referred to the Cal/OSHA for evaluation. Cal/OSHA has 60 days after the receipt to submit an evaluation regarding the proposal.

SUMMARY

The Petitioner requests the Board amend title 8, section 3441, subdivision (b), which regulates the operation of agricultural equipment. Specifically, Petitioner proposes the Board adopt an exception to section 3411, subdivision (b) to allow for operation of autonomous tractors. Petitioner proposes the following language:

> Notwithstanding section 3441(b), self-propelled equipment is not required to have an operator onboard the vehicle when the following conditions are met:
>
> - The manufacturer certifies that the technology has gone through appropriate safety protocols in the following: Product development; Monitoring and testing of the technology; and the technology meets the operational requirements of the three stages listed below:

  - Stage 1 -- zero to 500 hours or one year of operation of the tractor technology with an operator on the tractor at all times, allowing for advancement to Stage 2 only if there are no close calls, incidents, injuries, or accidents;
  - Stage 2 -- an additional 500 hours of operation of the tractor technology and operation during all four seasons (summer, fall, winter, spring) without an operator on the tractor so long as an onsite remote operator was alerted whenever the tractor detects an obstacle, allowing for advancement only if there are no close calls, incidents, injuries, or accidents.
- There are posted signs, visible from 50 feet during daytime or nighttime, at the entry and exit of every site where autonomous technologies are deployed, reading "Driver Optional Vehicle in Use";
- The driver-optional vehicle shall be provided with a perception system capable of detecting and locating persons or other obstacles relative to the machine;
- The driver-optional machinery shall be provided with a system capable of locating and positioning the driver-optional machinery as required for the operations involved while preventing unintended excursions beyond the boundary of the working area;
- Emergency stop buttons shall be affixed at the outermost perimeter on both sides and the rear of the tractor, depressing the emergency stop buttons shall immediately initiate braking to stop the tractor; and
- The tractors shall come to a full stop before any human encroaches a 7-foot radius from the tractor, and the 7-foot clearance applies regardless of the agricultural operation or the implements attached to the tractor.

(Petition, p. 6.)

CAL/OSHA'S EVALUATION

The Cal/OSHA evaluation report, dated April 7, 2022, notes that the technology utilized by Petitioner is still very new, and although the technology has the potential to increase worker safety in the agricultural sector, further study and review of this technology is needed. (Cal/OSHA, p. 6.) While some study has been done in this emerging industry, the current dataset is too small to allow for Cal/OSHA to conclude that safety provided by an autonomous tractor is equivalent to safety provided by a human operator. More information, including information gleaned from the Petitioner's recently-granted temporary experimental variance, is necessary for determining if an amendment to the regulation is needed. Such data and information will help inform that rulemaking process, should it occur.

Moreover, according to Cal/OSHA's evaluation, Petitioner's assertion that section 3441, subdivision (b) as currently worded is ambiguous is incorrect, and that the current regulatory language does cover autonomous equipment. Cal/OSHA states,

> Section 3441(b) is clear in its requirements to have an operator stationed at the controls of agricultural equipment. Although the language of section 3441 does not specifically address modern self-driving tractors, this does not limit the applicability of the regulation to this type of equipment.
>
> (Cal/OSHA, p. 7.)

Cal/OSHA recommends the Petition be DENIED.

BOARD STAFF EVALUATION

The Board staff's evaluation, dated April 29, 2022, finds that federal regulations do not specifically address autonomous or driver optional equipment. In California, Department of Motor Vehicle regulations govern the use of autonomous vehicles on public roads, but are not applicable to agricultural equipment being used on private land.

Board staff points out that consensus standards do exist for what are known as highly automated agricultural machines (HAAM). The International Organization for Standardization (ISO), a worldwide federation of national standards bodies, has codified ISO 18497:2018 Agricultural machinery and tractors—Safety of highly automated agricultural machines—Principles for design, a performance standard with guidelines for manufacture of HAAM. While the standard does not provide prescriptive requirements or specific benchmarks, it does provide definitions, general principles, and requirements to address the potential hazards of HAAM.

The Board staff evaluation shares the Petitioner's concern that autonomous agricultural equipment may not have been contemplated at the time section 3441, subdivision (b) was promulgated, and that the section may benefit from further refinement, in order to better spell out application to new technology, such as Petitioner's autonomous tractors. Board staff recommends that an advisory committee be convened to discuss the following topics:

1. Means for alerting employees and others about the presence of the autonomous agricultural equipment in operation
2. Means for stopping the operation of the equipment in an emergency, including requirements for the redundancy of such systems
3. Benchmark requirements for detecting objects and employees in the path of travel

4. Requirements for the start and restart of machines in autonomous operation
5. Requirements for testing and maintenance of the sensors and alarms used to protect employees
6. Means to ensure the autonomous vehicle does not leave the desired work area or field
7. Requirements for operation and supervision of the equipment
8. Precautions necessary to prevent unauthorized interference or use of the equipment

(Board Staff, p. 8.)

Board staff recommend the Petition be GRANTED to the extent that an advisory committee be convened.

DISCUSSION

In May 2019, the Board considered Petition 571, which also proposed amendment of section 3441, subdivision (b), in order to allow for more widespread use of autonomous equipment. At that time, Cal/OSHA found that there was a dearth of empirical study on the safety of such equipment. While two years have passed, the relative lack of data still remains a concern of Cal/OSHA. The Board shares that concern.

After two years of planning and discussion, Cal/OSHA has recently granted a temporary experimental variance to Petitioner. The temporary experimental variance process may help to close some of that knowledge gap, but until it is complete, the Board is in agreement with Cal/OSHA that beginning rulemaking at this juncture would be premature. The Board also finds that while the language of the safety regulation may not specifically discuss modern autonomous equipment, it is not ambiguous as currently written.

Subsequent to the completion of the Cal/OSHA temporary experimental variance process and the data gathering currently underway, the Board anticipates being able to establish whether the proposed technologies require new regulations be added to title 8, or modification of current standards.

CONCLUSION AND ORDER

Having considered Petition 596, and evaluations of it by Cal/OSHA and Board staff, the Board hereby DENIES the Petition. The Board does, however, direct its staff to monitor the status of Petitioner's temporary experimental variance and request periodic updates from Cal/OSHA on its progression and their conclusions.