



Department of Pesticide Regulation



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Director

MEMORANDUM

Edmund G. Brown Jr.
Governor

TO: Saturnino Yanga **HSM-12008**
Acting Environmental Program Manager I **(No. assigned after issuance of memo)**
Worker Health and Safety Branch

FROM: Harvard R. Fong, CIH *(original signed by H. Fong)*
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DATE: June 21, 2012

SUBJECT: RESULTS FROM CONSULTATION WITH SAN LUIS OBISPO CAC
CONCERNING RECENTLY CONSTRUCTED FUMIGATION CHAMBER

On June 13th, 2012, I traveled to San Luis Obispo (SLO) County to provide consultation for SLO County Agricultural Commission's (CAC) staff concerning the proposed operation of a newly constructed fumigation chamber in the county. Heidi Quiggle of the SLO CAC met me at the facility site located at Guadalupe Cooling Company, located north of the town of Guadalupe. Also present were staff from the United States Department of Agriculture (USDA) and a SLO County Safety Officer. The purpose of this visit was an on-site consultation with the CAC staff concerning safety issues with the fumigation facility.

The facility is less than 2 years old and had not yet been certified by USDA. The primary function of the three chambers will be to fumigate produce (at this time broccoli) for export. USDA staff was on-site to conduct retention testing of the chamber as part of the certification for export fumigation. From air samples taken by USDA, the chambers appear to have some leakage problems, possibly associated with the design of the doors. The doors are of the "double-leaf" variation (two door panels, hinged on opposite sides, which join together in the middle [Photo One]) and door sets are located on both ends of the chambers.



Photo One: Chamber Doors



In an attempt to improve the sealing characteristics of the doors, inflatable bladders are placed under the door threshold and small gel ice-packs are wedged into the corners (Photo Two). The efficacy of these methods is difficult to completely ascertain, since the present operational



Photo Two: Attempts at door sealing

protocol for the fumigation requires the vestibules (enclosed areas the chambers open into, one on each end of the chambers, essentially loading docks) to be evacuated except for personnel wearing self-contained breathing apparatus (SCBA). However, I was able to take two colorimetric tube samples at the entry door of the vestibule, with the detector tube inserted into the area. The two samples yielded results of 2 ppm and 3 ppm methyl bromide. Interior air sampling most likely would have had higher results. An air sample taken the day before, by the USDA staff, detected almost 11 ppm in the vestibule. No other area air samples were reported by USDA. Further improvement of the chamber sealing is strongly suggested, especially regarding the use of gel ice-packs as sealing devices. It is doubtful the manufacturer of the ice-pack intended this type of use. Re-engineering of the entire sealing system may be necessary.

One suggested interim solution, at least in regards to worker exposure, may be the use of general dilution ventilation to slightly pressure the vestibule during the fumigation. This may tend to keep fugitive emissions within the chamber. A second potential interim solution for worker exposure concerns would be to leave the vestibule entrances fully open, thus making the area not fully enclosed (Condition 4 in the Reference Manual: Methyl Bromide Commodity Fumigation [RefManMBr], 1994). This should reduce potential build-up of methyl bromide emissions within

the vestibule, though the minimum 10-foot buffer zone would still be applicable. Additionally, entrances from the vestibule to the general cold storage area would need to be kept closed during fumigation (though not during aeration). The use of SCBA to enter the vestibule (remaining outside the buffer zone) would be optional. Until certified by USDA for retention, the vestibule would also need to be tested for methyl bromide concentrations before worker reentry.

USDA has suggested modifying the chamber entrances by replacing the double-leaf doors with either guillotine or clam-shell type doors that are shorter than the ones currently in place. USDA also suggested, as a potential interim solution to the excessive leakage from the doors, the aggressive quasi-permanent sealing of the chamber doors at one end, effectively reducing potential emission by 50%.

Chamber issues aside, I noted a few other potential non-compliances with the RefManMBR:

1. The hallways that run parallel along the side of Chambers One and Three should be posted to indicate that entry is forbidden during the entire fumigation cycle (Condition 4: Common Wall).
2. The doors to the injector room, where the tanks are stored and where the injection of methyl bromide is controlled via the manual feeder valves, should be fitted with louvered vents. Even with the detector-controlled purge-ventilation system (reportedly designed to activate if 1 ppm or greater methyl bromide is detected), the addition of louvers brings the room into both active (ventilation system) and passive (louvers) compliance with Condition 10: Control Room Ventilation. I would also suggest that before worker entry, both doors be fully opened for 1 minute before worker entry and left open during the entire time a worker is present in the room. The use of SCBA would be optional.
3. The control room has a louvered door. It does not share a common wall with the fumigation chambers, but does share a common wall with the injector room. Once again I would suggest the door be opened fully 1 minute before worker entry.

Finally, because of Worker Health and Safety's experience with cold storage facilities storing fumigated fruit, I took a colorimetric tube air sample for methyl bromide by the broccoli that had been fumigated the day before. This sample, taken at 1030 hours, showed a value of 0.5 ppm in between the pallets of broccoli, approximately 20 hours post fumigation. Once the facility begins full fumigation operation, I suggest we take further air samples to characterize potential methyl bromide exposure and determine if air concentrations are within recognized limits.

cc: Heidi Quiggle, Agricultural Inspector/Biologist III, San Luis Obispo County Department of Agriculture
Pamela Wofford, Senior Environmental Scientist, Environmental Monitoring Branch