



Department of Pesticide Regulation



Edmund G. Brown Jr.
Governor

MEMORANDUM

TO: George Farnsworth
Environmental Program Manager
Worker Health and Safety Branch

HSM-11007

FROM: Harvard R. Fong, CIH *(original signed by H. Fong)*
Senior Industrial Hygienist
916-445-4211

DATE: September 30, 2011

SUBJECT: ON-SITE REVIEW OF AN ENGINEERING CONTROL IN A FUMIGATION FACILITY DESIGNED TO REDUCE BUFFER ZONE

On September 13, 2011, I visited the Three Rivers Trucking facility in Long Beach. Previous inspections by the Los Angeles County Agricultural Commissioner's (LACAC) office indicated that the buffer zone extending along the back (west) wall unacceptably extended into an adjoining lot where a portable office building was located (Photo One).

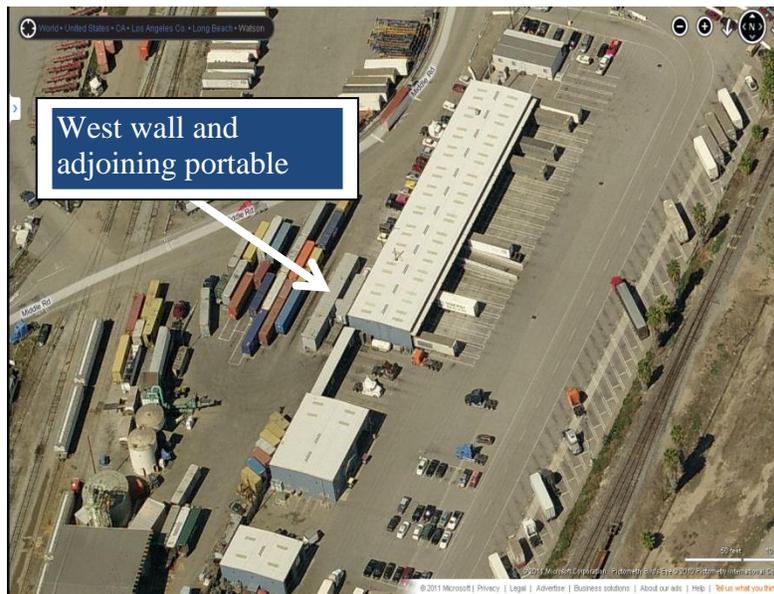


Photo One: Facility Overview

Because of the proximity of the portable structure (within 2 meters), Three Rivers had their fumigation permit rescinded by the LACAC. The facility operator asked what steps could be taken to remediate the situation. At that time, I suggested an engineering control in the form of a secondary containment wall with pressurized air between the outer and inner walls. This concept, termed an “air wall”, would effectively remove the west wall from buffer zone considerations.



George Farnsworth
September 30, 2011
Page 2

Three Rivers retained the services of Elliott Thermodynamics (ET), an environmental and energy conservation engineering firm. After consulting with the Worker Health and Safety Branch and the Environmental Monitoring Branch, ET began design and construction of an appropriate structure to fulfill Department requirements. ET built an internal secondary wall (Photo Two) that was pressurized by a blower (Photo Three) pulling fresh air into the void between the inner and outer walls. Excess pressure can be bled off via a flow-adjustable (via butterfly valve) exhaust stack (Photo Four).



Photo Two: View of internal secondary wall



Photo Three: Blower air intake



Photo Four: Exhaust stack and butterfly valve

A small amount of air must always be released to prevent over-pressurization and excess backpressure on the blower. By adjusting the fan speed and the amount of bleed air released, the facility operators can maintain adequate air pressure in the void regardless of temperature or barometric variability. Internal pressure in the air wall void is measured by a Dwyer[®] Magnehelic gauge. The pressure differential is to be maintained at a nominal 0.035 inches water gauge. This is 5 times the 0.007 inches water gauge value recommended by the United States Environmental Protection Agency for Permanent Total Enclosures (a capture device designed to collect and vent pollutants to an abatement device, e.g. incinerator). Between the pressurization inhibiting infiltration of fumigant, and the constant replenishment of void air with fresh air, with concomitant exhausting (through a standard height stack) of any fumigant that may get into the void, the chance of fumigant emitting from the exterior wall is infinitesimal.

The air wall is to be activated during fumigation and aeration operations within the structure. Proposed fumigations will be “stack” fumigations, also referred to as pile fumigation. Product will be brought into the building, covered with a tarpaulin and have methyl bromide introduced via fumigation lines under the tarpaulin. To aerate the product, flexible ducting connected to an aeration fan will be used to remove any remaining fumigant under the tarpaulin. The location of the air wall intake (low to the ground, west wall) will eliminate possible re-entrainment of exhausted aeration gas into the air wall.

I have reviewed the engineered exposure control system and it is compliant with recommendations made to mitigate potential buffer zone issues with the west wall of this particular structure. I would recommend that the buffer zone from this wall be set to zero feet; all other commodity fumigation permit requirements (as outlined in the 1994 “Methyl Bromide Commodity Fumigation Reference Manual”) continue to apply.