June 27, 1996 **HSM-96001**

[HSM no assigned after original issuance of letter]

Mr. Greg Costa
Felix Costa & Sons
13160 N. West Lane
Lodi, California 95240

Dear Mr. Costa:

This letter is to relay to you the results of our monitoring at your worksite on May 30, 1996. This monitoring effort was planned to support a proposed three-hour aeration time for fumigated cherries at your facility. However, due to an unusual cherry season and other scheduling problems, the cherries processed on the day of this monitoring were aerated for five hours. The present permit conditions require a minimum of four hours.

To determine the magnitude of methyl bromide offgassing from the fumigated cherries, Harvard Fong and I conducted full-shift monitoring to determine the concentration of fumigant at five locations in the processing building. At each selected sampling location, air samples were obtained by drawing workplace air through charcoal sorbent tubes during the processing work shift. At the end of the work shift, the charcoal tube samples were collected, placed on ice and transported to the California Department of Food and Agriculture Laboratory for analysis. All samples were obtained as area samples and no personal samples were obtained. The samplers were placed in areas thought to be representative of the air to which workers were being exposed. The processing began about 07:00 and continued until just after 13:00, when all the cherries for that day had been processed. Our monitoring covered this same time. During this time, 72 bins of Bing and 305 boxes of Rainier variety cherries were processed. These cherries had been fumigated for two hours at a 3 lb/1000 ft^3 rate. These cherries had also been mechanically aerated for five hours prior to the start of processing.

Below I have tabulated the results of our monitoring by sampling location with the airborne concentration measured for each location during the monitoring period. Also listed is the calculated 24-hour time-weighted average (TWA) for each location to compare with the DPR target exposure control value of 210 ppb of methyl bromide, time-weight averaged over a 24-hour period (24-hour TWA).

Area Monitoring for Methyl Bromide - May 30, 1996
Processing Building - Costa and Sons

Location	Sampling Time (hours)	Concentration (ppb)	24-Hour TWA (ppb)
Dump Station	6.2	31	8
Hydrocooler	6.2	19	5
Boxing Line	6.2	12	3
Sorter Station	6.2	19	5
Weigh Station	6.2	35	9
Average	6.2	23	6

Compare the values in the far right column to the Department of Pesticide Regulation’s (DPR) target exposure value of 210 ppb. As you can see, all the measurements obtained on this day were far below the DPR value.

In addition to the area monitoring, you may recall we placed one box of cherries in a gas-proof bag at the start of processing. During the course of the processing, sequential air samples were obtained to determine the methyl bromide concentration in the bag over time. This was an attempt to quantify the amount of fumigant that may offgas from a known quantity of cherries over time. The results of this work are shown on the enclosed graph. This graph presents an estimate of the residue reportedly typical (Sell, *et al.*, 1987) for cherries fumigated for the same time and rate as the cherries at your facility. I have plotted the data we obtained in our bag experiment on the same scales (time and quantity). The bag data is consistent with the

values estimated from residue and dissipation data obtained from the reference source. Please notice the substantially greater estimated amount of offgassing characteristic of shorter aeration times. If the graph is accurate, each hour less of aeration almost doubles the amount of methyl bromide ultimately released by the fumigated cherries into the surrounding air.

General Conclusions and Recommendations:

Aeration of fumigated cherries for five hours prior to processing at your worksite appears to provide more than sufficient aeration time. With this aeration time, and the other physical conditions (mechanical and passive ventilation, etc.) present in the processing building at your worksite, subsequent offgassing from the cherries does not pose an exposure concern above the DPR target exposure value to the processing workers. Although these cherries had been aerated for five hours, considering the low work area levels we measured, I believe this testing supports your request for consideration of an aeration time shorter than the present four-hour minimum of the commodity permit conditions. However, the greater amount of offgassing associated with shorter aeration times indicates considerable care is needed to ensure adequate control is maintained over fugitive emissions from fumigated cherries.

Perhaps next year’s cherry season will be more typical and we might have an opportunity to work together again when a shortened aeration time is more critical to your operation.

Thank you and Mrs. Felix Costa, Michael Duey, Antonio, and the members of your processing crew for working with us. Thank you also for your personal interest in our work and in providing good workplace exposure controls. This monitoring work is very valuable to us in our efforts to better understand the physical and chemical aspects of all types of commodity fumigation processes. The aeration of fumigated commodities and potential for exposure to workers subsequently involved in handling fumigated commodity continues to be an area where we need additional information.

Please contact me at the number below if you have any questions about the results of this monitoring or if you want to discuss any other aspect of this issue.

Sincerely,

[original signed by Dennis Gibbons]

Dennis Gibbons, CIH
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Enclosure

cc: John Donahue
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