Methyl Bromide Recapture System- Operation and Performance

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Decreasing the amount of Ozone Depleting Substances that are released to the environment is of critical concern to national and international regulators, environmental groups and local citizens. Methyl bromide is still widely used for export and import commodities, and fumigators are looking for efficient ways to reduce emissions.

TIGG Corporation, in cooperation with Chemtura Corporation and GFK Consulting, has engineered and manufactured an answer to this problem- the Methyl Bromide Recapture System. The system utilizes activated carbon as a medium to clean the air and separate trace elements from air prior to release back into the environment.

The Methyl Bromide Recapture System limits the maximum concentration of methyl bromide emitted in to the atmosphere to 500 ppm, and reduces emissions during fumigation by up to 97%. In a typical installation the system captures approximately 80% of the applied methyl bromide.

How the Methyl Bromide Recapture System works:

1- A 40 ft container with 40,000 lbs of commodity is in place and covered with a tarp. This creates 5000 cubic feet of space to be fumigated.
2- 20 lbs of methyl bromide is applied as fumigant at a concentration of 4 lb/1000 cubic ft.
3- After fumigation, aeration begins and air is ventilated through the Methyl Bromide Recapture System instead of directly into the atmosphere. The air passes through an activated carbon filled adsorber until the methyl bromide concentration of the covered space reaches 500 ppm.
4- When the methyl bromide concentration reaches 500 ppm the ventilation air is redirected around the adsorber and released into the atmosphere.
5- Aeration is terminated when the methyl bromide concentration reaches 5 ppm and the chamber can be accessed.
6- After the carbon canisters are exhausted the spent carbon can be recycled through thermal reactivation.

Methyl Bromide Mass Balance:

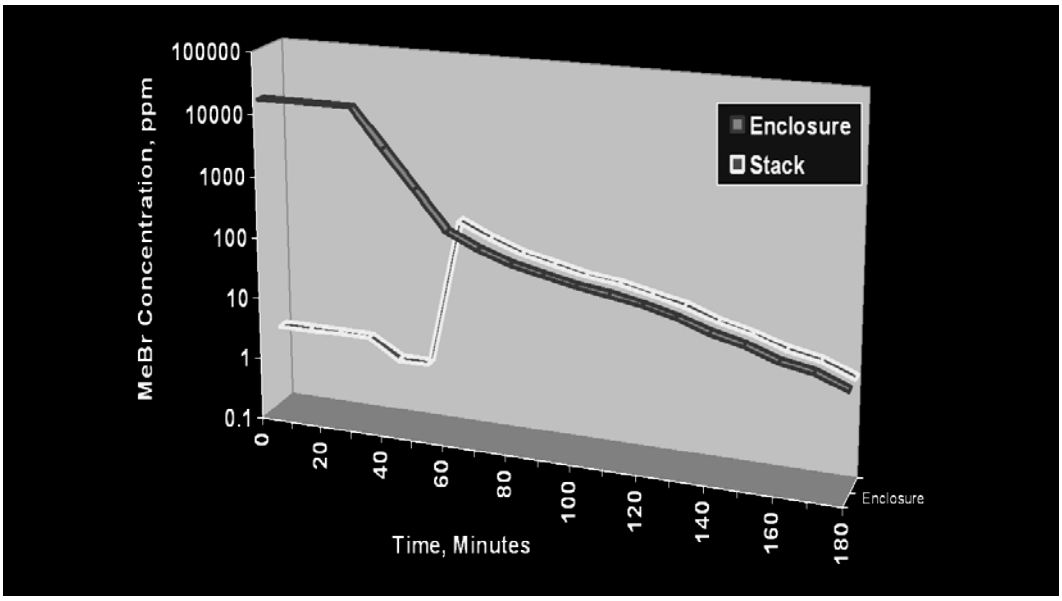
- 20 lbs of methyl bromide were applied for fumigation.
- During fumigation an estimated 1 lb of methyl bromide escaped

through the tarp and an estimated .4 lbs were absorbed onto the commodity and packaging.
- During aeration 15.4 lbs of methyl bromide were adsorbed onto the activated carbon and 4.2 lbs were released into the atmosphere.
- This is an estimated 79% reduction in applied methyl bromide emitted.

Results:

- Without recapture an estimated 19.6 of the 20 lbs of applied methyl bromide would have been emitted into the atmosphere.
- With the Methyl Bromide Recapture System only an estimated 4.2 lbs of applied methyl bromide were released into the atmosphere.
- The maximum concentration of methyl bromide emitted into the atmosphere through recapture was reduced from 16,000 ppm to 500 ppm.
- This is an estimated 97% reduction in methyl bromide emitted.

TIGG Corporation's main goal in developing the Methyl Bromide Recapture System was to create a system that is safe, easy to operate, and is consistent with USDA treatment schedules. These goals were met and the technology was proven in laboratory and pilot scale demonstrations before the first commercial unit was installed.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