METHYL BROMIDE SCRUBBER SYSTEM FOR LARGE QUARANTINE & PRE-SHIPMENT FUMIGATIONS

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Presented is the design and experimental data for a two-stage sequential methyl bromide scrubber system for destruction of methyl bromide from very large fumigation vent streams. The system incorporates adsorption on carbon at low temperature for capture of the methyl bromide from fumigation vent streams for the first stage and then employs desorption with hot air into the chemical scrubber for instantaneous destruction of the methyl bromide for the second stage. The system allows for processing of methyl bromide vent streams from Q/PS fumigation volumes up to 7,000 cubic meters (250,000 ft^3) and up to 28,000 cubic meters for structures. The difference between the two applications arises from the much shorter aeration times needed for venting Q/PS fumigation structures.

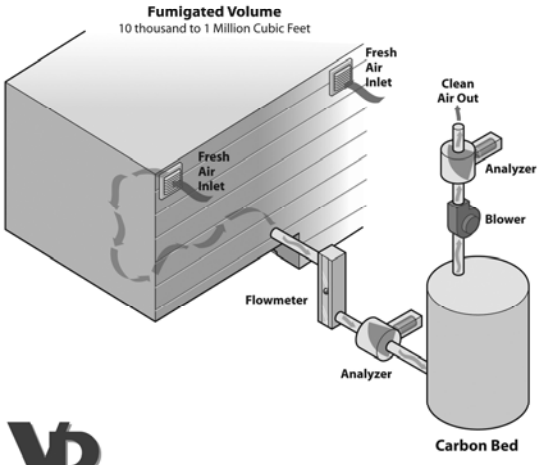
An earlier commercial demonstration has shown that over 90% of the methyl bromide can be chemically destroyed by breaking the fumigation vent gas stream up into fine bubbles and allowing the gas containing the methyl bromide to come in contact with an aqueous solution of thiosulfate. When sodium thiosulfate solution is used as the scrubbing liquid the reaction products are sodium bromide and methyl sodium thiosulfate producing a non-hazardous spent solution. The limitation to this direct scrubbing approach is the relatively small fumigation systems that can be accommodated.

The two-stage system uses carbon adsorption as a capacitor to capture methyl bromide from large design ventilation flows of 700 cubic meters per minute. The second stage desorption with hot air also serves the dual purpose of re-generating the carbon for the next cycle. Lab scrubber efficiencies of greater than 97% will be shown.

Value Recovery Methyl Bromide Scrubber System

Large Scale Destruction of Methyl Bromide for Q/PS and Structures

Step 1: Aeration with Carbon Adsorption



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Step 2: Desorption from Carbon into Scrubber