

Industrial Hygiene Report

Control of Organic Solvent Vapors:

Acetone

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OBJECTIVE:

The objective of this test was to determine the efficiency of a carbon filter with Acetone. An environment was created that exceeded the NIOSH threshold limit value. This test was conducted with air sampling pumps and sorbent tubes that absorbed the fumes, taking measurements at 4 different points: concentration inside the hood before filtration, concentration after filtration by the outlet of the hood, ambient air, and the operator's breathing zone.

PROTOCOL:

- 1) Sentry Air Systems Model SS-340-DCH was set up with a 10 lb Carbon filter. The 300 series unit with carbon filter generates sufficient air volume to keep the air velocity at the hood inlet greater than 100 FPM.
- 2) 100 ml of Acetone was measured into a metal pan and placed under the hood and the Acetone evaporated for 1 minute before the sampling pumps were turned on. Then, the pumps ran for an additional 15 minutes while evaporation was taking place.
- 3) After the 15 minute time period, the room was aired out completely before starting the next part of the experiment because this would have had an affect on the concentration for the next test.
- 4) Next, in a metal pan, 100 ml of Acetone was measured and placed in the room without the use of filtering with the Ductless Containment Hood. After pouring the Acetone into the pan, evaporation took place for 1 minute before turning on the sampling pumps. Then, the pumps continued to run for an additional 15 minutes. Two measurements were taken: one at the breathing zone of the operator and the ambient air.
- 5) Once testing was completed, samples were labeled and sent to a laboratory for results.

RESULTS:

The results indicated the carbon filter was 99.94% efficient in filtering the Acetone fumes in this test. Therefore, for the conditions present on that day, the Sentry hood was capable of creating a NIOSH compliant working environment for the operator.

Experiment with the use of the Sentry Hood:

Sample Description	Sampling Time	Concentration (mg)	Concentration (ppm)
Inside the hood	15 min	1.3	730
The outlet of the hood	15 min	<0.003	<0.5
Operator's Breathing Zone	15 min	0.086	12
Ambient air in the room	15 min	0.094	13

Experiment without using the Sentry Hood:

Sample Description	Sampling Time	Concentration (mg)	Concentration (ppm)
Operator's Breathing Zone	15 min	1.2	170
Ambient air of the room	15 min	0.74	100

For additional information, please contact Sentry Air Systems, Inc.



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