Technical Data Bulletin

#119, September, 1996 — Toluene

Issue Date 06/01/00

3M Organic Vapor Monitors 3500/3510/ 3520/3530

Background:
This report contains supplemental information for sampling Toluene using 3M organic vapor monitors. Please see Tech Data Bulletin #124 for more information on the test protocol used to generate this report.

Sampling Rate:
The published sampling rate for Toluene is 31.4 ± 0.6 cc/min.

Analytical Recovery:
Recovery over a range of 0.43 to 5.64 mg using carbon disulfide was 100% with a coefficient of variation of 3.5%.

Accuracy:
The accuracy is within ±25% as determined from a series of concentration and time experiments (see Table 1).

Humidity:
Not significant (uptake rate was linear) when monitors exposed to 100 ppm Toluene for 2, 4, 6 and 8 hour periods at 50% and 80% RH.

Detection Limit:
Assuming an analytical detection limit of 2 µg per monitor, the minimum detectable concentration is 1 ppm with a 15 minute sample, and 0.04 ppm with an 8 hour sample.

Reverse Diffusion:
Not significant (<10%) when exposed to 200 ppm Toluene for 30 minutes, and then 450 minutes clean air at 80% RH, 23˚C.

Storage:
Samples may be stored at room temperature (23˚C) or refrigerated (4˚C) for 21 days without significant change from initial recovery.

Temperature:
Not significant (<10%) in the range of 10-40˚C (50-104˚F).

Interferences:
The sampling rate is not affected by the presence of other solvents provided that the monitor is not overloaded.

Orientation/Air Velocity:
To accurately sample at any orientation, there must be a minimum air velocity of 25 ft/min.

Table 1

% Accuracies by concentration and sampling time		
	15 min.	**8 hrs.**
10 ppm	23.8%	12.1%
200 ppm	11.3%	6.8%

Table 1 indicates the sampler accuracy for Toluene over a range of concentrations and times at 50% RH. For our protocol, accuracy must be within ±25%. Concentrations were chosen to bracket certain published exposure limits for Toluene at the time that this work was done.

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