



Technical Note

SKC 575-001 Passive Sampler Methyl-tert-butyl-ether (MTBE) Validation Summary (40 ppm TLV*) Validation to NIOSH Protocol**

PROCEDURE: Adsorption on the 575-001 Passive Sampler containing Anasorb® (coconut charcoal), with desorption (in situ) with 2 ml carbon disulfide and analysis by gas chromatography with flame ionization detection.

SAMPLING RATE: 13.6 ml/min validated from one to eight hours.

ANALYTICAL RECOVERY:	% Recovery	% RSD***	Validation Range	
			(µg)	(8-hour TWA ppm)
	97.4	2.1	110 to 2200	5 to 100
	90.5	5.4	7	0.3

STORAGE: Samples, which were collected for eight hours at 40 ppm at 80% RH, can be stored for 14 days at ambient (25 C) or refrigerator (3 C) temperatures with no loss in recovery. Samples spiked with 15 µg showed no loss in recovery on storage for 14 days at ambient temperature.

HUMIDITY EFFECTS: No significant effects were seen in the eight-hour capacity, analytical recovery, or in storage experiments.

REVERSE DIFFUSION: Not significant ($\leq 10\%$) when samplers were exposed to 80 ppm MTBE for four hours then four hours of clean air at 80% RH (25 C). The experiment was repeated with a high concentration of a gasoline analogue (600 ppm iso-octane) for the full eight hours. Reverse diffusion was still less than 10%.

LIMIT OF DETECTION: The limit of detection was 7.0 micrograms (µg) per badge based on a desorption volume of 2 ml of carbon disulfide. This would correspond to 0.3 ppm (v/v) based on an eight-hour sample at the validated sampling rate of 13.6 ml/min, or a 10 ppm sample over 15 minutes.

VALIDATION DATE: July 1994

* 40 ppm TLV was proposed at a joint EPA/API Symposium on Oxygenated Fuel, Washington DC, August 1993

** Sampler passed all criteria of Full Validation to NIOSH Protocol at TLV of 40 ppm.

*** Relative Standard Deviation

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