



Technical Note

SKC 575-002 Passive Sampler Styrene Method Summary (50 ppm PEL) Validation to NIOSH Protocol*

PROCEDURE: Adsorption on the Passive Sampler Cat. No. 575-002 containing 500 mg Anasorb® 747, with desorption (in situ) with 2 ml carbon disulfide and analysis by gas chromatography with flame ionization detection. The 575-003 has the better recovery and is therefore more useful at low concentrations or for measuring STELs. The 575-003 should not be used to sample compounds with boiling points below that of styrene.

SAMPLING RATE: 13.7 ml/min tested for linearity over the range of 7.5 minutes to 12 hours.

BIAS AND PRECISION: The pooled % RSD** for all samplers was 4.9%. Since the uptake of the sampler has been calibrated against standard atmospheres, the method can be considered free from bias.

Meets NIOSH accuracy criteria of $\pm 25\%$

ANALYTICAL RECOVERY:	% Recovery	Validation Range	
	Variable ($> 75\%$ for 0.5 to 2 x PEL) (see research report for details)	(mg)	(ppm)
		0.68 to 3.3	25 for 8 hours 250 for 4 hours

STORAGE: Samples, which were collected for eight hours at the PEL at 80% RH (25 C), can be stored for 21 days at ambient (25 C) or refrigerator (3 C) temperatures with no loss in recovery.

HUMIDITY EFFECTS: High humidity conditions (80% RH at 25 C) did not affect the uptake rate or recovery.

REVERSE DIFFUSION: Not significant ($\leq 10\%$) when samplers were exposed to 200 ppm Styrene for four hours then four hours of clean air at 80% RH (25 C). Significant loss of capacity was not observed when sampler was exposed to 250 ppm Styrene at 40 C for four hours.

LIMIT OF DETECTION: Depending on the instrumentation, it is possible to determine at least 13 $\mu\text{g}/\text{sampler}$ with an RSD of $< 10\%$. This corresponds to an air concentration of 0.5 ppm (v/v) based on an eight-hour sample at the validated sampling rate of 13.7 ml/min.

FACTOR EFFECTS: A 16-run six-factor factorial test indicated no statistically significant effects of concentration, exposure time, relative humidity, face velocity, orientation, or the presence of 200 ppm toluene or any interactions of these factors at the 95% confidence level.

VALIDATION DATE: April 1995

* Sampler passed all criteria of Full Validation to NIOSH Protocol at PEL of 50 ppm.

** Relative Standard Deviation

For More Information Request Research Report Publication No. 1313

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