



Technical Note

SKC 575-003 Passive Sampler Styrene Method Summary (50 ppm PEL) Validation to NIOSH Protocol*

PROCEDURE: Adsorption on the Passive Sampler Cat. No. 575-003 containing 300 mg Anasorb® 727, with desorption (in situ) with 2 ml carbon disulfide and analysis by gas chromatography with flame ionization detection.

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 4.3%. Since the uptake of the sampler has been calibrated against standard atmospheres, the method can be considered free from bias.

% Recovery	Validation Range	
	(mg)	(ppm)
100	0.13 to 3.3	5 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 13 μg /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: May 1995

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

** Relative Standard Deviation

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