# TRIETHYLENETETRAMINE
## See ETHYLENEDEAMINE, Method 2540, for Procedure

$(NH_2CH_2CH_2NHCH_2)_2$ MW: 146.2 CAS: 112-24-3 RTECS: YE6650000

**METHOD: 2540, Issue 1** **EVALUATION: UNRATED** **Issue 1: 15 May 1989**
**Issue 2: 15 August 1994**

**OSHA :** no PEL
**NIOSH:** no REL
**ACGIH:** no TLV
(1 ppm = 5.98 mg/m$^3$)

**PROPERTIES:** liquid; d 0.98 g/mL @ 20 °C; BP 277.4 °C; VP unknown; flash point 118 °C

**SYNONYMS:** triethylenetetramine: TETA; trientine; N,N-bis(2-aminoethyl)-1,2-diaminoethane; 3,6-diazaoctane-1,8-diamine

### SAMPLING

**SAMPLER:** SOLID SORBENT TUBE (1-naphthylisothiocyanate- coated XAD-2, 80 mg/40 mg)

**FLOW RATE:** 0.01 to 0.1 L/min [1]

**VOL-MIN:** 1 L @ 10 ppm
**-MAX:** 20 L

**SHIPMENT:** routine

**SAMPLE STABILITY:** > 30 days @ 20 °C [2]

**BLANKS:** 2 to 10 field blanks per set

### ACCURACY

**RANGE STUDIED:** 0.016 to 8 mg/m$^3$; (10-L samples)

**OVERALL PRECISION ($\hat{S}_{rT}$):** 0.06 [1]

**BIAS:** - 1.9%

**ACCURACY:** ± 13.7%

### MEASUREMENT

**TECHNIQUE:** HPLC, UV DETECTION

**ANALYTE:** naphthylisothiourea derivative of analytes

**DESORPTION:** 2 mL dimethylformamide (DMF), ultrasonic 30 min

**INJECTION VOLUME:** 10 µL

**COLUMN:** 10-µm radial cyano, 10 cm x 8-mm ID in Waters RCM-100 radial compression mode

**MOBILE PHASE:** 50/50 isooctane/isopropanol at 3 mL/min

**CALIBRATION:** standard solutions of derivatives in DMF

**RANGE:** 1 to 119 µg per sample

**ESTIMATED LOD:** 0.3 µg per sample

**PRECISION ($\bar{S}_r$):** 0.018

**APPLICABILITY:** The working range for TETA is 0.08 to 160 mg/m$^3$ for a 10-L air sample. This method is the result of evaluation [2] of OSHA Method #60 for DETA, EDE, TETA [1]. The theoretical capacity of each front section is 1.6 mg of TETA.

**INTERFERENCES:** Other primary of secondary amines may react with the sampler coating reagent, and thereby reduce the sampler capacity.

**OTHER METHODS:** This replaces NIOSH Method P&CAM 276 [3]. The method of Anderson, et al., for EDA [4] is and alternate method using thiourea derivation and HPLC analysis.