Odor Threshold Concentration

Following are odour characteristics and odour thresholds for chemicals found in SIPCOT air in September 2004.

	Pungent, suffocating odor that is slightly fruity when diluted. Recognition in air= $2.1x10^{-1}$ ppm (chemically pure) Odor low: 0.0002 mg/cu m; Odor high: 4.14 mg/cu m
Acetaldehyde	A wide range of values has been reported: 0.0028 to 1000 ppm. An acceptable, critiqued value is 0.067 ppm (detection).(33) Another source reports the geometric value of all published values as 0.05 ppm.(9,34)
Methanol	ALCOHOLIC ODOR; PUNGENT ODOR WHEN CRUDE. Has a mild, characteristic alcohol odour, when pure. (1,31) Crude methanol may have a repulsive, pungent odour. METHYL ALCOHOL DOES NOT HAVE SUITABLE WARNING ODOR PROPERTIES EXCEPT @ HIGH CONCN. A LEVEL OF 2,000 PPM IS BARELY DETECTABLE BY ODOR. Low threshold= 13.1150 mg/cu m; High threshold= 26840 mg/cu m; Irritating conc.= 22875 mg/cu m.
Toluene	Reported values vary widely; 4.2-5960 ppm (geometric mean: 160 ppm) (detection); 53-8940 ppm (geometric mean: 690 ppm) (recognition) (33) SWEET, PUNGENT, BENZENE-LIKE ODOR 2.14 ppm (8 mg/cu m). Odor recognition level is reported as 1.03 to 140 ug/cu m. Odor in air= 1.30x10 11 mol/cu cm
1,1-Dichloroethane	There is a wide variation in values: 0.16 - 37 ppm (detection); 1.9 - 69 ppm (recognition).(18) CHLOROFORM-LIKE ODOR ; AROMATIC ETHEREAL ODOR Threshold conc.: 120 ppm (no specific isomer); 200 ppm (no specific isomer). 445.5 mg/cu m (odor low) 810 mg/cu m (odor high).
Nitrobenzene	ODOR OF VOLATILE OIL ALMOND; Nitrobenzene has a pungent, shoe-polish smell. Odour resembling that of bitter almonds or "shoe polish." Odor detection in air: $1.46x10^{-2}$ mg/l vapor/, purity not specified. Odor recognition in air: 4.70x10-3 ppm, chemically pure. Odor detection in air: 1.90 ppm, chemically pure. Nitrobenzene odor low, 0.0235 mg/cu m; odor high, 9.50 mg/cu m. Odour thresholds of 0.092 mg/m^3 (0.018 ppm) (Amoore & Hautala, 1983) and 0.03 mg/m^3 (0.005 ppm) (Manufacturing Chemists Association, 1968). The odour threshold in water has been reported as 0.11 mg/litre (Amoore & Hautala, 1983) and 0.03 mg/litre (US EPA, 1980).
Carbon Tetrachloride	SWEETISH, AROMATIC, MODERATELY STRONG ETHEREAL; SOMEWHAT RESEMBLING THAT OF CHLOROFORM Odor recognition in air: 2.14X10 ppm (chemically pure) In water: reduction of amenities: odor threshold 50 mg/l A wide range of values have been reported; 1.6 to 706 ppm. The range of acceptable values is 140 to 584 ppm. Geometric mean air odour threshold: 252 ppm (detection); 250 ppm (recognition).(49)
Carbon Disulphide	PUREST DISTILLATES HAVE SWEET, PLEASING, & ETHEREAL ODOR USUAL COMMERCIAL AND REAGENT GRADES ARE FOUL SMELLING ; When pure, carbon disulfide has sweetish aromatic odor similar to that of chloroform. 0.1 to 0.2 PPM Detection, odor, in air; purity not specified: 2.60x10-3 mg/l (gas).Recognition, odor, in air; purity not specified: 2.10x10-1 ppm. Odor Low: 0.0243 mg/m Odor High: 23.1 mg/m

	Reported values vary widely and are not reliable; 0.022 ppm (detection); 0.21 ppm (recognition); 0.016 to 0.42 ppm (methods not specified).(28)
Epichlorohydrin	ODOR IS GENERALLY PERCEIVED AS A SLIGHTLY IRRITATING CHLOROFORM-LIKE ODOR. ; Pungent, garlic; sweet; chloroform-like. SENSORY PERCEPTION STUDIES INDICATE THAT MEAN THRESHOLD FOR ODOR RECOGNITION IS APPROX 10 PPM @ 25 PPM IT IS RECOGNIZED BY MAJORITY OF PERSONS. Human Odor Perception: non perception 0.2 mg/cu m; perception 0.3 mg/cu m Threshold 38-95 mg/m^3 air
Benzene	AROMATIC ODOR BENZENE HAS DISTINCTIVE SRP: AROMATIC ODOR HOWEVER /WARNING PROPERTIES ARE INADEQUATE SINCE 100 PPM HAS IRRITATION RATING OF 0 & ODOR INTENSITY BETWEEN 1 & 2. 4.68 PPM In air: 4.9 mg/cu m (characteristic odor), in water: 2.0 mg/l. 61 ppm (detection); 97 ppm (recognition). Reported values range from 0.78-160 ppm.(31)
Methylene Chloride	Sweet, pleasant odor, like chloroform 205-307 ppm 2.14x10 2 ppm (odor recognition in air; chemically pure sample) Odor thresholds: low= 540 mg/cu m; high= 2160 mg/cu m. Odor index: 2100 @ 20 deg C A wide range of values are reported (1.2 to 440 ppm), but detection occurs around 150 ppm and recognition around 230 ppm.
Vinyl Acetate Monomer	SWEET SMELL IN SMALL QUANTITIES; PLEASANT FRUITY; CHARACTERISTIC ODOR 0.12 ppm 50% recognition threshold the conc. at which 50% of the odor panel defined the odor as being representative of the odorant being studied/: 0.40 ppm; 100% recognition threshold: 0.55 ppm.
Ammonia	Colourless gas with a sharp, penetrating, intensely irritating odour Reported values vary widely; 0.6 to 53 ppm; geometric mean: 17 ppm (detection) (27)
Formic Acid	Has an intense, pungent, penetrating odour. Reported values vary widely and are not reliable; 13-340 ppm (detection) (21); 11-13 ppm (recognition) (21); 20 ppm (100% recognition (22)
Hydrofluoric Acid	Pungent, irritating, penetrating odour 0.04 ppm (0.03 mg/m3) (minimum perceptible concentration); 0.04 to 0.14 ppm (0.03 to 011 mg/m3) (3,21)
Methyl Mercaptan	Rotten cabbage-1 ppb Odour threshold ca. 2 ppb.

Acetaldehyde has a pungent suffocating odor, but at dilute concentrations it has a fruity and pleasant odor. The odor threshold of acetaldehyde is 0.05 ppm (0.09 mg/m^3).