

Interpretation of Sample results taken downwind of Tagros Chemicals in SIPCOT Cuddalore

Date of Sampling: 9 August 2010

Time of Sampling: 9.20 pm

Location: Downwind of Tagros Chemicals on the SIPCOT service road near the new construction.

Wind direction: South East to North West

Description of sampling conditions and location: The sample was taken during a routine pollution patrol exercise of the SIPCOT Area Community Environmental Monitors in SIPCOT Cuddalore. According to their report, there was a strong rotten fruit and pesticides like odour noticed from the area which caused headache and throat irritation among the monitors.

Results:

- 15 chemicals were found – Dimethyl Sulphide, Propene, Acetonitrile, Isopropyl Alcohol, Ethyl Acetate, n-Hexane, Chloroform, 1-2 Dichloroethane, Carbon Tetrachloride, Cyclohexane, Toluene, 1-2 Dibromomethane, Tetrachloroethene, Chlorobenzene and Napthalene.
- 10 chemical were found to exceed United States Environmental Protection Agency's health based screening levels, or other relevant safety limits. These chemicals were Dimethyl Sulphide, n-Hexane, Chloroform, 1-2 Dichloroethane, Carbon Tetrachloride, Toluene, 1-2 Dibromomethane, Tetrachloroethene, Chlorobenzene and Napthalene.
- 5 out of 15 chemicals are known to cause cancer. These chemicals are – 1,2-Dichloroethane, 1,2-Dibromomethane, Carbon Tetrachloride, Chloroform and Tetrachloroethene.
 - a) 1,2-Dichloroethane was found 3243.2 times above safe levels prescribed by the United State Environment Protection Agency Region 6 (US EPA).
 - b) 1,2-Dibromomethane was found 1724.1 times above safe levels prescribed by the United State Environment Protection Agency Region 6 (US EPA).
 - c) Carbon Tetrachloride was found 1000 times above safe levels prescribed by the United State Environment Protection Agency Region 6 (US EPA).
 - d) Chloroform was found 102.3 times above safe levels prescribed by the United State Environment Protection Agency Region 6 (US EPA).
 - e) Tetrachloroethene was found 3 times above safe levels prescribed by the United State Environment Protection Agency Region 6 (US EPA).
- Out of the 15 chemicals found – 14 chemicals affect the eyes and skin; 11 chemicals affect the respiratory system; 10 chemicals affect the Central Nervous System and Liver; 8 chemicals affect the kidneys; 2 chemicals affect the heart and cardiovascular system and one chemical affects the lungs, reproductive system and Peripheral Nervous System.

S No.	Name of the Chemical	Odour	Levels detected (ug/m3)	Health based Screening levels (ug/m3)	Number of times exceed the screening levels (approx)	Symptoms	Target Organs	Carcinogen
1.	Dimethyl Sulphide	Cabbage like Odour	40	0.3 (Texas Long-Term Screening Levels)	133.3	Irritation of eyes, throat, suffocation	Eyes, Skin, Respiratory System, Central Nervous System, Blood, Liver	No
2.	Toluene	Sweet pungent benzene like odour	510	400 (EPA Region 6 Screening Level)	1.2	Irritation of eyes, nose, weakness and exhaustion, confusion, euphoria, dizziness, headache, dilated pupils and tears to eyes, anxiety, muscle fatigue, insomnia, dermatitis, liver injury, kidney damage	Eyes, skin, respiratory system, Central nervous system, liver and kidney	No
3.	Isopropyl Alcohol	Odour of rubbing alcohol	170	--	--	Irritation eyes, nose, throat; drowsiness, dizziness, headache; dry cracking skin	Eyes, skin, respiratory system	No
4.	Chlorobenzene	Almond like odour	49	46.0 (Texas Long-Term Screening Levels)	1.06	Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; in animals: liver, lung, kidney injury	Eyes, skin, respiratory system, central nervous system, liver	No
5.	Tetrachloroethene /Trichloroethene	A chloroform-like odor	9.9	3.3 (EPA Region 6 Screening Level)	3	Irritation of eyes and skin; headache, visual disturbances, weakness and	eyes, skin, respiratory system, heart, liver, kidneys	Yes potential occupational carcinogen

						exhaustion, dizziness, tremor, drowsiness, nausea, vomiting, dermatitis, liver injury		Cancer Site [in animals: liver & kidney cancer]
6.	Ethyl Acetate	A fruity like odour	19	--	--	Irritation eyes, skin, nose, throat; narcosis; dermatitis	Eyes, skin, respiratory system	No
7.	Propene	An unpleasant odour	7.4	--	--	Irritation eyes, skin	Eyes, Skin, respiratory system	No
8.	Acetonitrile	An aromatic odour	21	34 (Texas Long-Term Screening Levels)	--	Irritation nose, throat; nausea, vomiting; chest pain; weakness, exhaustion, convulsions; in animals: liver, kidney damage	Respiratory system, cardiovascular system, central nervous system, liver, kidneys	No
9.	n-Hexane	A gasoline-like odour	870	176 (Texas Long-Term Screening Levels)	4.94	Irritation eyes, nose; nausea, headache; peripheral neuropathy: numb extremities, muscle weakness; dermatitis; dizziness	Eyes, skin, respiratory system, central nervous system, peripheral nervous system	No
10.	Chloroform	Pleasant Odour	8.6	0.084 (EPA Region 6 Screening Level)	102.3	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, weakness, exhaustion; enlarged liver; [potential occupational carcinogen]	Liver, kidneys, heart, eyes, skin, central nervous system	Yes Cancer Site [in animals: liver & kidney cancer]
11.	1,2 – Dichloroethane	Pleasant, chloroform-like odour	240	0.084 (EPA Region 6 Screening	3243.2	Irritation eyes; Central Nervous System depression; nausea,	Eyes, skin, kidneys, liver, central	Yes Cancer Site

				Level)		vomiting; skin diseases; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	nervous system, cardiovascular system	[in animals: forestomach, mammary gland & circulatory system cancer]
12.	Carbon Tetrachloride	A characteristic ether-like odour	130	0.130 (USEPA Region 6 Screening Levels)	1000	Irritation eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, [potential occupational carcinogen]	central nervous system, eyes, lungs, liver, kidneys, skin	Yes Cancer Site [in animals: liver cancer]
13.	Cyclohexane	A sweet chloroform like odour	50	--	--	Irritation eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	No
14.	1,2 – Dibromoethane	A sweet odour	15	0.00870 (USEPA Region 6 Screening Levels)	1724.1	Irritation eyes, skin, respiratory system; dermatitis with vesiculation; liver, heart, spleen, kidney damage; reproductive effects; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, reproductive system	Yes Cancer Site [in animals: skin & lung tumors]
15.	Napthalene	Odour of moth ball	5.40	3.10 (USEPA Region 6 Screening Levels)	1.74	Irritation eyes; headache, confusion, excitement, nausea, vomiting, abdominal pain; blood in the urine, renal shutdown; dermatitis, optical neuritis, corneal damage	Eyes, skin, blood, liver, kidneys, central nervous system	No