The Other Media

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To:

The District Collector
Cuddalore District
Cuddalore 607 001

The Member Secretary
Tamilnadu Pollution Control Board
Anna Salai, Chennai

The Chairman
Supreme Court Monitoring Committee on Hazardous Wastes
132 St Mary's Road, Alwarpet, Chennai 600 018

7 September, 2004

Sub: Submission at the Public Hearing for Evaluation of REIA report for Expansion and Diversification Project of M/S Tagros Chemicals

I request that the Public Hearing be nullified, that action be taken against Tagros Chemicals and the proposal for expansion of the facility be rejected on the following grounds:

1. The Public Hearing is being held post-facto after completion of construction and commencement of production

According to Table 2.0 of the REIA, the company plans to expand from its current capacity of 471 MT/year to 1359 MT/year of a variety of biocides. The expansion is said to include new products such as Hexaconazole, Tricyclazole, Propiconzole, Oxyclozanide and Metaphenoxy benzyl alcohol.

Reports from workers and residents of SIPCOT indicate that not only has Tagros completed construction for the expanded capacity, but it has commenced production, including of the new products mentioned above.

Indeed, Tagros' website (www.tagros.com) states that "A modern production unit is situated around 200 kms from Chennai (Madras) with a 1500 metric ton/annum capacity," while its stated "Existing Capacity" as per the REIA (page 5) is 471 MT/year. Tagros' parent group's website (www.jhavergroup.com/chem_tagros.htm) lists the products manufactured, including the formulations. (List enclosed).

The EIA Notification issued by the Ministry of Environment, Govt of India, clearly states that a public hearing is to be conducted **BEFORE** issuance of a "Consent to Establish." In a judgement dated 18 March 2004, in the matter of M.C. Mehta v. Union of India & Ors (Writ Petition (civil) 4677 of 1985, Justice Y.K.Sabharwal and H.K. Sema of the Hon'ble Supreme Court reiterate that "No construction work preliminary or otherwise, relating to the setting up of the project may be undertaken till the environmental and/or site clearance is obtained."

2. The REIA dated October 2002 is two years old.

3. The REIA report fails to assess the health impacts of emissions of highly toxic substances Tagros Chemicals uses to manufacture pesticides

Tagros Chemicals (India) Ltd is a facility that engages in the manufacture of chemical pesticides. As such, the facility uses extraordinary quantities of chemicals that cause cancer and other serious health effects, including neurological disease.

Chemicals Used (MT/day)	Quantity	Reported Loss to Environment**	Health Effects
Carbon Tetrachloride	4.2 MT/day + 2.5 MT/ton of propiconozole	126 kg/ton of propiconozole	Liver and kidney damage. Group B2 Probable Human Carcinogen
n-Hexane	9.8 MT/day	670 kg/day	Sensorimotor polyneuropathy in humans, with numbness in the extremities, muscular weakness, blurred vision, headache, and fatigue
Acetonitrile	280 kg/day		Cyanide poisoning from metabolic release of cyanide after absorption. The major effects consist of those on the central nervous system (CNS), such as headaches, numbness, and tremor
Ethylene Dichloride	1.1 MT/day	109 kg/day	Chronic inhalation produced liver and kidney effects in animals. Group B2 Probable Human Carcinogen
Toluene	1.1 MT/day	117 kg/ton of propiconozole	Irritation of the upper respiratory tract and eyes, sore throat, dizziness, headache, and difficulty with sleep

** Note: The reported values do not include fugitive emission losses from the venting of reactors and evaporation from storage containers and effluent treatment facilities

Tagros Chemicals uses more than 4.2 metric tons per day of **carbon tetrachloride**, including 2881.74 kg per day in the manufacture of deltamethrin (see Table 2.32 of the REIA report); 960 kg per day in the manufacture of cypermethrin/alphametrin (see Table 2.41); and 403.63 kg per day in the manufacture of D.V. acid chloride (see Table 2.8). In addition, Tagros Chemicals also uses more than 2.5 metric tons of carbon tetrachloride as a solvent for the manufacture of each metric ton of propiconozole (see Table 2.65).

Tagros Chemicals uses more than 9.8 metric tons per day of **n-hexane**, including 1573.8 kg per day in the manufacture of deltamethrin (see Table 2.32); 7989.05 kg per day in the manufacture of cypermethrin/alphametrin (see Table 2.41); and 269.91 kg per day in the manufacture of D.V. acid chloride (see Table 2.8).

Tagros Chemicals uses nearly 0.3 metric tons per day of **acetonitrile**, including 132.69 kg per day in the manufacture of deltamethrin (see Table 2.32); 147.54 kg per day in the manufacture of cypermethrin/alphametrin (see Table 2.41); and 18.52 kg per day in the manufacture of D.V. acid chloride (see Table 2.8).

Tagros Chemicals uses nearly 1.1 metric tons per day of **ethylene dichloride** in the manufacture of deltamethrin (see Table 2.32).

Tagros Chemicals uses more than 1.1 metric tons of **toluene** as a solvent for the manufacture of each metric ton of propiconozole, of which 117 kg is lost in effluent (see Table 2.64).

Each of these chemicals is a potent human toxin. According to the U.S. EPA: "Chronic inhalation or oral exposure to **carbon tetrachloride** produces liver and kidney damage in humans and animals. ... EPA has classified carbon tetrachloride as a Group B2, probable human carcinogen."[1] According to the U.S. EPA: "Chronic inhalation exposure to **n-hexane** is associated with sensorimotor polyneuropathy in humans, with numbness in the extremities, muscular weakness, blurred vision, headache, and fatigue observed."[2] According to the U.S. EPA: "Chronic inhalation exposure of humans to **acetonitrile** results in cyanide poisoning from metabolic release of cyanide after absorption. The major effects consist of those on the

[1] http://www.epa.gov/ttn/atw/hlthef/carbonte.html
[2] http://www.epa.gov/ttn/atw/hlthef/hexane.html

central nervous system (CNS), such as headaches, numbness, and tremor."[3] According to the U.S. EPA: "Chronic (long-term) inhalation exposure to **ethylene dichloride** produced effects on the liver and kidneys in animals. ... EPA has classified ethylene dichloride as a Group B2, probable human carcinogen."[4] Finally, according to the U.S. EPA: "Chronic inhalation exposure of humans to **toluene** causes irritation of the upper respiratory tract and eyes, sore throat, dizziness, headache, and difficulty with sleep."[5]

Although some of the chemicals are consumed in reactions, substantial quantities are lost. Because each of these substances is highly volatile, most of these chemicals that are lost enter the air that people breathe. For example, Tagros Chemicals loses 126 kg of **carbon tetrachloride** and 117 kg of **toluene** during its manufacture of each metric ton of propiconozole (see Tables 2.64 and 2.65). Tagros chemicals loses 130 kg per day of **n-hexane** during its manufacture of D.V. acid chloride (see Table 2.7), at least 255 kg per day during its manufacture of deltametrhin (see Table 2.30), and at least 285.6 kg per day during its manufacture of cypermethrin/alphametrin (see Table 2.39). Tagros chemicals loses 109 kg per day of **ethylene dichloride** during its manufacture of deltamethrin (see Table 2.26). The REIA report fails to indicate how much of these substances are lost additionally from the venting of reactors and evaporation from storage containers and effluent treatment facilities.

4. Ambient air quality samples taken downwind of Tagros on 21 June 2004 by SIPCOT Area Community Environmental Monitors found extremely high levels of toxic gases, many of which are used as raw materials in Tagros.

It is a fact, not a hypothesis, that harmful levels of these five substances have entered the air people breathe in the vicinity of Tagros Chemicals. Ambient air quality monitoring was performed near Tagros Chemicals in June of 2004 by SIPCOT Area Community Environmental Monitors.[6]

Chemicals Found	Levels in mg/m3	Standards, guidelines, effective screening levels violated
Carbon tetrachloride	1.5	• 250 times more than WHO guidelines • 40 times more than California EPA chronic reference exposure level • 11,538 times more than US EPA Region 6 Screening Levels for lifetime exposure
n-Hexane	4.2	• 21 times above US EPA Reference Concentration (RfC)
Acetonitrile	0.55	• 9 times more than US EPA RfC
Ethylene dichloride	1.7	• 22,973 times above US EPA Region 6 Screening Levels for lifetime exposure • 4.3 times above California EPA chronic reference exposure level
Toluene	0.70	• 2.7 times above WHO guidelines • 1.8 times above RfC

The carbon tetrachloride level in an air sample taken on 21 June 2004 was 1.5 milligrams per cubic meter (mg/m3). The WHO guideline value for carbon tetrachloride is 0.0061 mg/m3 (one year averaging time).[7] The California Environmental Protection Agency (CalEPA) has established a chronic reference exposure level of 0.04 milligrams per cubic meter (mg/m3) for carbon tetrachloride based on liver effects in guinea pigs.[8] Therefore, carbon tetrachloride levels taken downwind of TAGROS Chemicals were roughly **250**

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[3] http://www.epa.gov/ttn/atw/hlthef/acetonit.html
[4] http://www.epa.gov/ttn/atw/hlthef/di-ethan.html
[5] http://www.epa.gov/ttn/atw/hlthef/toluene.html
[6] Results of Ambient Air Quality Monitoring Downwind of Tagros Chemicals. SIPCOT Area Community Environmental Monitors. Unpublished as of September 7, 2004. For more information, contact: narayanshweta@vsnl.net
[7] http://star.eea.eu.int/showResult.asp?selection=5481&themeID=11&class=inst&instr=Guidelines
[8] http://www.epa.gov/ttn/atw/hlthef/carbonte.html

times the WHO guideline value for carbon tetrachloride and **40 times** the CalEPA chronic reference exposure level for carbon tetrachloride.

The n-hexane level in an air sample taken on 21 June 2004 was 4.2 mg/m3. The U.S. EPA reference concentration (RfC) for n-hexane is 0.2 milligrams per cubic meter (mg/m3) based on neurotoxicity in humans and epithelial lesions in the nasal cavity in mice.[9] Therefore, hexane levels near TAGROS Chemicals were **21 times** above the U.S. EPA RfC for hexane.

The acetonitrile level in the air sample taken on 21 June 2004 was 0.55 mg/m3. The U.S. EPA reference concentration (RfC) for acetonitrile is 0.06 milligrams per cubic meter (mg/m3) based on mortality in mice.[10] Therefore, acetonitrile levels near TAGROS Chemicals were more than **9 times** above the U.S. EPA RfC for acetonitrile.

The ethylene dichloride level in the air sample taken on 21 June 2004 was 1.7 mg/m3. The California Environmental Protection Agency (CalEPA) has calculated a chronic inhalation reference exposure level for ethylene dichloride of 0.4 mg/m3 based on hepatotoxicity and elevated liver enzyme levels in serum of rats.[11] Therefore, the ethylene dichloride levels near TAGROS Chemicals were roughly **4.3 times** the CalEPA inhalation reference exposure level for ethylene dichloride.

The toluene level in an air sample taken on 21 June 2004 was 0.70 mg/m3. The WHO guideline value for toluene is 0.26 mg/m^3 (one week averaging time).[12] The U.S. EPA RfC for toluene is 0.4 mg/m^3.[13] Therefore, toluene levels near TAGROS Chemicals were roughly **2.7 times** the WHO guideline value for toluene, and roughly **1.8 times** the U.S. EPA RfC for toluene.

It is wholly unreasonable for the REIA report to have entirely excluded from its ambit a close examination of how these toxic chemicals are impacting the environment and human health.

2. The REIA report fails to assess the health impacts of emissions of dioxins and other highly toxic substances that result from solid waste incineration

Tagros Chemicals generates large quantities of toxic solid wastes. For example, Tagros Chemicals claims to generate 200 kg per day of waste from the distillation of pesticide chemicals and their intermediates and 25 kg per day of waste from the cleaning of empty containers of raw materials (See Table 7.7). These wastes are classified as hazardous waste by numerous jurisdictions, including the European Union[14] and under the Hazardous Wastes (Management and Handling) Amendment Rules of the Government of India.[15]

The REIA report indicates that Tagros Chemicals incinerates these wastes. According to Section 5.7 on page 147 of the REIA Report: “The high caloric wastes from distillation column and residue from cleaning of empty raw material containers are incinerated in solid waste incinerator.”

The incineration of hazardous wastes, especially chlorinated organic wastes, results in copious emissions of dioxins and other highly toxic substances. According to the United Nations Environmental Programme, incineration of hazardous waste has the potential to release 35,000 micrograms of dioxin per metric ton of waste for systems using low technology combustion,[16] one of the highest rates of dioxin emissions for any kind of combustion source.

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[9] http://www.epa.gov/ttn/atw/hlthef/hexane.html
[10] http://www.epa.gov/ttn/atw/hlthef/acetonit.html
[11] http://www.oehha.ca.gov/air/chronic_rels/pdf/107062.pdf
[12] http://star.eea.eu.int/showResult.asp?selection=5496&themeID=11&class=inst&instr=Guidelines
[13] http://www.epa.gov/ttn/atw/hlthef/toluene.html
[14] http://europa.eu.int/eur-lex/en/consleg/pdf/2000/en_2000D0532_do_001.pdf
[15] http://envfor.nic.in/legis/hsm/hsm1.html See Schedule 1, Waste Category No. 15.
[16] http://www.chem.unep.ch/pops/pdf/toolkit/toolkit.pdf

It is wholly unreasonable for the REIA report to have entirely excluded from its ambit a close examination of how emissions of dioxins and other highly toxic chemicals from the incineration of 225 kg per day of hazardous, chlorinated organic wastes are impacting the environment and human health.

3. The REIA report describes measures for disposing of solid wastes that are inappropriate and pose substantial risk of environmental contamination

3.1. Permanent storage of distillation column waste is inappropriate and inconsistent with numerous statements elsewhere in the REIA report suggesting this waste is incinerated

In apparent contradiction with other statements in the REIA Report that "high caloric wastes from distillation column and residue from cleaning of empty raw material containers are incinerated in solid waste incinerator," Table 7.7 of the REIA Report states that these waste are stored in leak proof containers. The REIA Report provides no other details about the storage of these wastes, such as the nature of the 'leak proof' containers, and the characteristics of the facility in which these containers are stored.

The long-term storage of hazardous waste in containers, especially liquid organic wastes, is highly inappropriate because of the tendency of containers to corrode and release their contents. The Hazardous Waste Rules prohibit the storage of hazardous wastes onsite for longer than a period of 90 days.

If Tagros Chemicals were storing these hazardous wastes on-site rather than incinerating them, Tagros Chemicals would be a 'facility' for the 'storage' of 'hazardous waste' and, thus, be compelled to submit an Environmental Impact Assessment of its hazardous waste storage facility per Rule 8 of the Hazardous Wastes (Management and Handling) Amendment Rules, 2003.[17]

3.2. Use as manure of sludge from the anaerobic treatment plant is inappropriate – this waste would be contaminated with high levels of toxic substances

The REIA Report states that 60 kg per day of sludge from the anaerobic treatment plant of Tagros Chemicals is being used as manure. See Table 7.7. The Report also baselessly places Effluent Treatment Plant sludge in the category of "Non Hazardous Waste."

This is an inappropriate practice that will lead to widespread environmental contamination. Sludge from the effluent treatment plants of pesticide manufacturing facilities is classified as hazardous waste by numerous jurisdictions, including the European Union[18] and under the Hazardous Wastes (Management and Handling) Amendment Rules of the Government of India.[19] Sludge from the effluent treatment plants of pesticide manufacturing facilities, especially those engaged in the manufacture of chlorinated organic pesticides, contain unacceptable levels of persistent organic pollutants. If such sludge were sold as manure, then significant quantities of persistent organic pollutants would be introduced into the environment and food supply.

3.3. Sale to vendors of empty containers of raw materials is inappropriate – these containers are contaminated with high levels of toxic substances

The REIA Report states that each day a score of LDPE bags and 100 kg drums previously containing raw materials are sold to vendors. This is an inappropriate practice that will lead to widespread environmental contamination and, possibly, loss of life from episodes of acute poisoning.

Sincerely,

Nityanand Jayaraman
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[17] http://envfor.nic.in/legis/hsm/so593e.htm
[18] http://europa.eu.int/eur-lex/en/consleg/pdf/2000/en_2000D0532_do_001.pdf
[19] http://envfor.nic.in/legis/hsm/hsm1.html See Schedule 1, Waste Category No. 15.