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Press Release

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PSS Finds Carcinogens In Ambient Air

Yet no ambient air quality standards for dangerous toxins in India

Chasing Investment: A Fool's Game?

Gujarat, along with the rest of the nation, has taken to blindly chasing investment without regard for its source or the consequence. The state, in its ongoing effort to "keep up" with other nations in the twenty-first century, has pedaled off our precious common resources to hazardous chemical industries – the same industries that are being phased out of the West. Our resources and our people are left vulnerable to selective interests and the whim of private industry. In the name of "development," all else is discounted – including public health, the environment, and employment of the common, local people. Industry treats people as if they were inanimate raw materials.

Sleeping Government; Suffering People

The voluntary organisation Paryavaran Suraksha Samiti (PSS) stands for balanced resource use and sustainable development. We experiment with alternatives and work at organizing the people to face issues confronting them. As part of our continuous effort to address environmental destruction, we have done various scientific tests on water sources and solid wastes. In the absence of proactive action on the part of MoEF, CPCB, and GPCB to assess the status of ambient air quality, it falls upon voluntary groups to prod and pressurize the State bodies to act.

A car or train trip through Vapi, Ankleshwar, Nandesari, or Vatwa Industrial Estates is a veritable journey to the stench capitals of India. Industrial workers are taught to simply accept it and are often made insensitive to it. Farmers are told that the air pollution – which is so bad that it can be *smelt, felt, and seen* – has nothing to do with crop failure. And the Government denies air pollution as a cause for concern, despite the fact that 40,000 urban dwellers die each year because of it.

But the Government and its machinery are woefully lacking competence and will to deal with the gravity of the situation. The Pollution Control Boards (PCBs) monitor *only* Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x), and Suspended Particulate Matter (SPM) – these three parameters are totally insufficient to investigate the reality of the air pollution situation in the nation. The PCBs only haphazardly monitor the emissions at the industry stacks; there is no system or infrastructure set up to monitor these parameters around industrial estates themselves. The Parliament and the Assembly is presented only the sparse PCB figures; these bare parameters are insufficient for the legislature to make informed decisions. As a result, *neither the Government nor the public has a systematic record of the general ambient air pollution caused by industry.*

Air Sampling

This June, PSS decided to put the GPCB air quality claim to the test. Is the air that we breathe around industrial estates absolutely harmless?

PSS, in collaboration with Farmers Action Group, sampled air along the "infamous" Effluent Channel Project, the Ankleshwar GIDC, and the Vadodara Petrochemical Complex (see attached map for exact locations), as part of a collaborative effort with the International Bucket Brigade. The Bucket Brigade uses a special non-reactive tedlar plastic bag and a pump to collect ambient air. This device is internationally recognized and approved by the US Environmental Protection Agency (see attached picture). Since no laboratory in India was willing to take on such rigorous testing, we were forced to send the air samples to Columbia Analytical Services, Inc, in the USA for testing. These samples are representative of typical emissions from these industrial estates and effluents because we intentionally chose a time when the odor was at an average level. The samples were taken on June 1 and 2, 2005; the results would be more shocking had they been taken in the winter.

Results

Our fears stood confirmed when the laboratory returned reports of alarming cocktails of cancerous and dangerous toxins contaminating the air at the Vadodara and Ankleshwar Industrial Estates. By far, Ankleshwar wins for being the most hazardous industrial estate to the public. The list of chemicals found amongst the three samples is disturbing: Carbon Disulphide; Acetonitrile; Isopropyl Alcohol; Acrylonitrile; Methyl Ethyl Ketone (2- Butanone); 1,2 Dichloroethane; Toluene; Acetone; Chloroform; Methylene Chloride; Benzene; Ethanol; Hydrogen Sulphide; Methyl Mercaptan; Dimethyl Disulphide; n-Hexane; Carbon Tetrachloride; Trichloroethene; Toluene; Ethyl Benzene; m, p- Xylenes. The air sample collected from Ankleshwar revealed the presence of four cancerous chemicals much higher than international standards. A sample collected at the Vadodara Petrochemical complex had two cancerous chemicals that exceeded the same standards, while the sample collected along the Effluent Channel Project¹ at Ekalbara contained three cancerous chemicals. Cancer is not the only concern, however. These chemicals effect reproductive systems, the central nervous system, the kidneys and the liver, among other things. Since these are not chemicals naturally in the air at these levels, their mere presence bids warning of the severity of pollution. See the tables on pages 5 and 6 for details of the chemicals found and their effects.

What Next?

No standards for ambient air pollution exist in India. This means that the government allows industry to release these poisons without offering the public any protection or recourse.

The deplorable environmental status of Industrial Estates across the country is well known. We must then ask ourselves why air pollution is grossly neglected by the state regulatory authorities. Though the Central Pollution Control Board has announced a plan to measure benzene and selected heavy metals², implementing this change will take an indefinite amount of time and this is not an exhaustive list of dangerous toxins. Most importantly, the time already lost can not be regained. The actions of the MoEF, CPCB, and GPCB to date lead us to three conclusions:

¹ Ironically, a year before the present air samples were taken, PSS and FAG had taken samples that revealed serious groundwater contamination along the ECP. This area is severely ecologically burdened by industries, yet GPCB sees it fit to grant permission to new industries in this area (e.g. Loxim Industries was given permission to begin dye manufacturing in Ekalbara despite the local environmental scenario).

² *Pollution Board Reviewing Air Quality In Cities*, Nirmala Ganapathy, New Delhi 14, 2004

1. We can not trust the government claim that "air pollution is under control." Regulatory agencies do not collect enough data to make valid statements; at best, they might say that the meager parameters they test are within limits at specific locations.
2. The sparse parameters for testing reflect a casual attitude towards the issue of air pollution. The state gives us the same message as the industries themselves: air pollution simply is not a concern.
3. If the status quo remains, the industrial air pollution problem is hopeless. There is neither enough data nor enough political will to take action against air pollution. The health of our workers and citizens is at stake, and only drastic changes will improve the situation.

Industries prefer not to install any protective units for air pollution to save both the initial capital and recurring expenditures. The industry inertia can be countered only by regular, systematic, area specific monitoring of emissions and enforcement of clean production.

Will the government simply wait until a Bhopal-like toxic cloud consumes Gujarat? Whereas lives were lost and ruined in an instant in Bhopal, we are facing a slow and silent Bhopal in our own backyard. Entire crops are wiped out by single releases of industrial emissions; rich agricultural lands are devastated due to chronic exposure of such emissions. The health of our people is deteriorating, and cancers caused by exposure to chemicals is rising. What amount of damage is "sufficient" for the government to take deliberate action?

In response to the egregious state of monitoring of industrial air pollution, Paryavaran Suraksha Samiti puts forth the following demands to the Government:

- 1) Complete material balance sheets to be prepared for each industry to hold them accountable for chemicals that they use and release into the environment;
- 2) That the Government admit and apologize before the nation that it has failed in its duty to monitor industrial pollution that is poisoning the public;
- 3) Creation of an exhaustive list of norms for all chemicals released into the environment by industry;
- 4) Immediate data collection and analysis of air samples at all industrial estates, along all effluent channels and at effluent dumping sites;
- 5) That the Pollution Control Boards conduct regular testing of air samples at each industrial estate, effluent processing and disposal site, and wherever chemical industries are located – all findings must be made public;
- 6) Clear identification of source industries to be made public;
- 7) That the pollutants monitored correspond to the industries located in the sampling area;
- 8) That more locations are sampled so that specific industries can be identified and held accountable;
- 9) Stricter enforcement of air emissions law and norms;
- 10) Stronger implementation of laws outlining installation of clean-production mechanisms;

11) Enhanced air emission legislation with corresponding stronger penalties and punishment for defaulters;

12) Health treatment and appropriate compensation to affected peoples

Because the Government has a hollow understanding of the air quality situation, only mega disasters prompt action. Disasters are only recognized when a large number of innocent lives are lost. At those times, the Government goes through rigmarole of crocodile tears, surveys, inquiry commissions and the like. And then again, the Government inevitably returns to "business as usual." The Gujarat Disaster Management Authority has no concept of chemical emergency. It is in this context that PSS plans on conducting surprise tests from time to time at various locations and will make our findings public. It is unacceptable for the public to suffer because of the Government apathy.

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Vadodara Petrochemical Complex: Sample A				
S No	Chemical found	Levels detected (ug/m3)	Health Effects	Target Organs
1.	Carbon Disulphide	16.8	Dizziness, headache, poor sleep, weakness, exhaustion, anxiety, weight loss; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system
2.	Acetonitrile	5.7	Irritation nose, throat; nausea, vomiting; chest pain; weakness, exhaustion	Respiratory system, cardiovascular system, central nervous system, liver, kidneys
3.	Isopropyl Alcohol	7.09	Irritation eyes, nose, throat; drowsiness, dizziness, headache; dry cracking skin	Eyes, skin, respiratory system
4.	Acrylonitrile	5.2	Irritation eyes, skin; headache; sneezing; nausea, vomiting; weakness, exhaustion, dizziness; skin [potential occupational carcinogen]	Eyes, skin, cardiovascular system, liver, kidneys, central nervous system Cancer Site [brain tumours, lung & bowel cancer]
5.	Methyl Ethyl Ketone (2-Butanone)	5.09	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system
6.	1,2 Dichloroethane	12	Irritation eyes, central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eyes, skin, kidneys, liver, central nervous system, cardiovascular system Cancer Site [in animals: forestomach, mammary gland & circulatory system cancer]
7.	Toluene	14	Irritation of eyes, nose, weakness and exhaustion, confusion, muscle fatigue, liver injury, kidney damage	Eyes, skin, respiratory system, Central nervous system, liver and kidney

Ekalbara: Sample B				
S No	Chemical found	Levels detected (ug/m3)	Health Effects	Target Organs
1.	Acetone	32	Irritation eyes, nose, throat; headache, dizziness, Central Nervous System depression; skin diseases	Eyes, skin, respiratory system, central nervous system
2.	Toluene	31	Irritation of eyes, nose, weakness and exhaustion, confusion, muscle fatigue, liver injury, kidney damage	Eyes, skin, respiratory system, Central nervous system, liver and kidney
3.	Chloroform	34	Irritation of eyes, skin; dizziness, mental dullness, nausea, confusion; headache, weakness, exhaustion; enlarged liver [potential carcinogen]	Liver, kidneys, heart, eyes, skin, Central nervous system Cancer Site: [in animals: liver and kidney cancer]
4.	Methylene Chloride	18	Irritation eyes, skin; weakness, exhaustion, drowsiness, dizziness; numbness, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, respiratory system Cancer Site: [in animals: lung, liver, salivary & mammary gland tumours]
5.	Benzene	11	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, weakness, exhaustion; skin dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow Cancer Site [leukaemia]
6.	2- Butanone	5.7	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system
7.	Carbon Disulphide	18.8	Dizziness, headache, poor sleep, weakness, exhaustion, anxiety, weight loss; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system
8.	Isopropyl Alcohol	44	Irritation eyes, nose, throat; drowsiness, dizziness, headache; dry cracking skin	Eyes, skin, respiratory system
9.	Ethanol	37	Irritation eyes, skin, nose; headache, drowsiness, weakness, exhaustion, cough; liver damage; anaemia; reproductive, teratogenic effects	Eyes, skin, respiratory system, central nervous system, liver, blood, reproductive system

Ankleshwar: Sample C

S No	Chemical found	Levels detected (ug/m3)	Health Effects	Target Organs
1.	Hydrogen Sulphide	21.5	Irritation eyes, respiratory system; discharge of tears, dizziness, headache, weakness, exhaustion, irritability, insomnia; gastrointestinal disturbance	Eyes, respiratory system, central nervous system
2.	Methyl Mercaptan	35.6	Irritation eyes, skin, respiratory system, convulsions	Eyes, skin, respiratory system, central nervous system, blood
3.	Carbon Disulphide	42	Dizziness, headache, poor sleep, weakness, exhaustion, anxiety, weight loss; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system
4.	Dimethyl Disulphide	18.8	--	--
5.	Ethanol	280	Irritation eyes, skin, nose; headache, drowsiness, weakness, exhaustion, cough; liver damage; anaemia; reproductive, teratogenic effects	Eyes, skin, respiratory system, central nervous system, liver, blood, reproductive system
6.	Acetone	77	Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eyes, skin, respiratory system, central nervous system
7.	Isopropyl Alcohol	29	Irritation eyes, nose, throat; drowsiness, dizziness, headache; dry cracking skin	Eyes, skin, respiratory system
8.	Methylene Chloride	7.8	Irritation eyes, skin; weakness, exhaustion, drowsiness, dizziness; numbness, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, skin, cardiovascular system, central nervous system Cancer Site [in animals: lung, liver, salivary & mammary gland tumours]
9.	Methyl Ethyl Ketone (2-Butanone)	6.7	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system
10.	n-Hexane	9.69	Irritation eyes, nose; nausea, headache; peripheral neuropathy: numb extremities, muscle weakness; dermatitis; dizziness	Eyes, skin, respiratory system, central nervous system, peripheral nervous system
11.	Benzene	52.0	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, weakness, exhaustion; skin dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow Cancer Site [leukaemia]
12.	Carbon Tetrachloride	8.5	Irritation eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, [potential occupational carcinogen]	central nervous system, eyes, lungs, liver, kidneys, skin Cancer Site [in animals: liver cancer]
13.	Trichloroethene	19	Irritation eyes, skin; headache, visual disturbance, weakness, exhaustion, dizziness, tremor, drowsiness, nausea, liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system Cancer Site [in animals: liver & kidney cancer]
14.	Toluene	130	Irritation of eyes, nose, weakness and exhaustion, confusion, muscle fatigue, liver injury, kidney damage	Eyes, skin, respiratory system, Central nervous system, liver and kidney
15.	Ethyl Benzene	10	Irritation eyes, skin, mucous membrane; headache; dermatitis, coma	Eyes, skin, respiratory system, central nervous system
16.	m, p- Xylenes	5.7	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys

**Comparison with International Standards
Vadodara Petrochemical Complex: Sample A**

S No	Chemical found	Levels detected (ug/m3)	Health based Screening levels (ug/m3)	Number of times exceed the screening levels (approx)	Carcinogen
1.	Carbon Disulphide	16.8	3	14	No
2.	Acetonitrile	5.7	62	--	No
3.	Isopropyl Alcohol	7.09	--	--	No
4.	Acrylonitrile	5.2	0.0280	185	Yes
5.	Methyl Ethyl Ketone (2-Butanone)	5.09	1000	--	No
6.	1,2 Dichloroethane	12	0.740	162	Yes
7.	Toluene	14	400	--	No

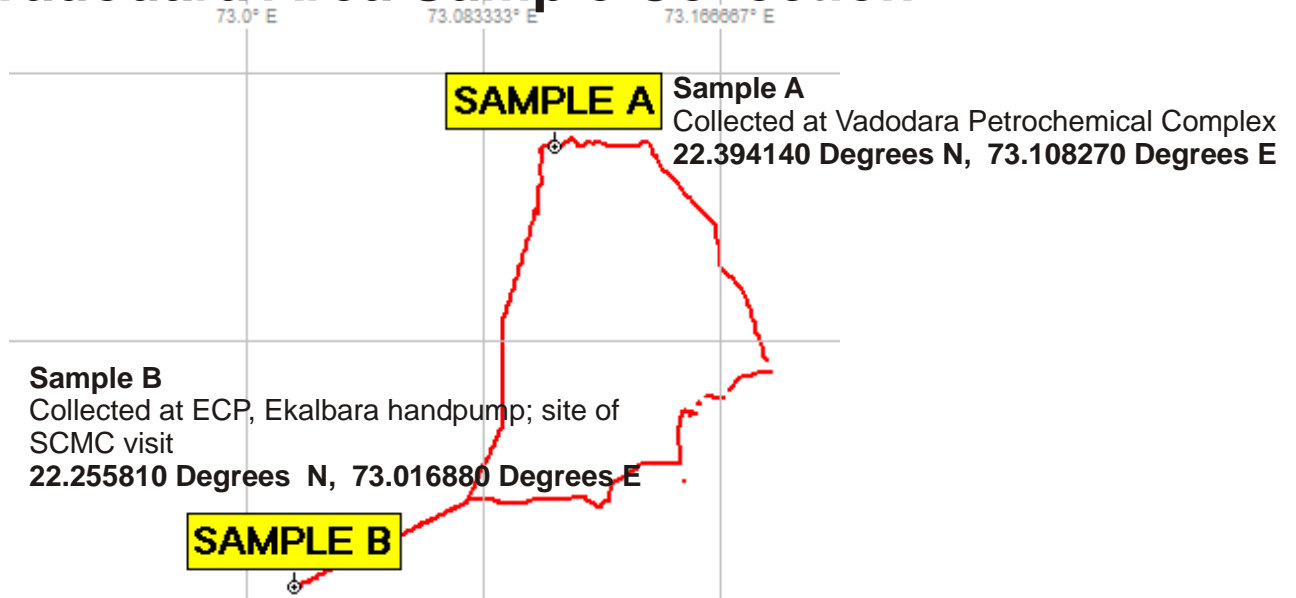
**Comparison with International Standards
Along Effluent Channel Project: Sample B**

S No	Chemical found	Levels detected (ug/m3)	Health based Screening levels (ug/m3)	Number of times exceed the screening levels (approx)	Carcinogen
1.	Acetone	32	370	--	No
2.	Toluene	31	400	--	No
3.	Chloroform	34	0.0840	404	Yes
4.	Methylene Chloride	18	4.09	4.4	Yes
5.	Benzene	11	0.250	44	Yes
6.	2- Butanone	5.7	1000	--	No
7.	Carbon Disulphide	18.8	3	6.2	No
8.	Isopropyl Alcohol	44	--	--	No
9.	Ethanol	37	--	--	No

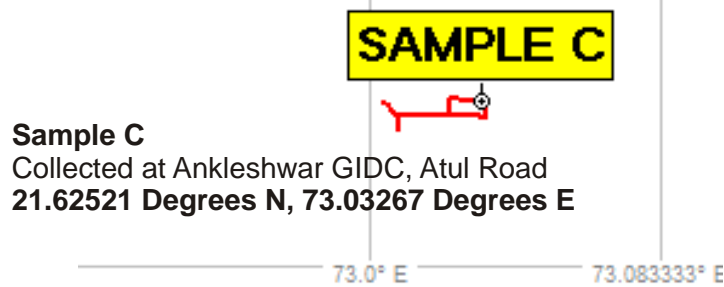
**Comparison with International Standards
Ankleshwar GIDC: Sample C**

S No	Chemical found	Levels detected (ug/m3)	Health based Screening levels (ug/m3)	Number of times exceed the screening levels (approx)	Carcinogen
1.	Hydrogen Sulphide	21.5	1.0	21.5	No
2.	Methyl Mercaptan	35.6	2.1	16.9	No
3.	Carbon Disulphide	42	3	14	No
4.	Dimethyl Disulphide	18.8	--	--	--
5.	Ethanol	280	--	--	No
6.	Acetone	77	370	--	No
7.	Isopropyl Alcohol	29	--	--	No
8.	Methylene Chloride	7.8	4.09	1.9	Yes
9.	Methyl Ethyl Ketone (2-Butanone)	6.7	1000	--	No
10.	n-Hexane	9.69	210	--	No
11.	Benzene	52.0	0.250	208	Yes
12.	Carbon Tetrachloride	8.5	0.130	65	Yes
13.	Trichloroethene	19	1.10	17.2	Yes
14.	Toluene	130	95.8	1.3	No
15.	Ethyl Benzene	10	1100	--	No
16.	m, p- Xylenes	5.7	--	--	No

Vadodara Area Sample Collection



Ankleshwar GIDC Sample Collection



Activist Preparing the Bucket for Sampling (Right)