



## **IMPACT OF INDUSTRIAL POLLUTION ON HEALTH AND ENVIRONMENT - A STUDY OF GREATER HYDERABAD**

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### **Introduction**

Environmental pollution is one of the serious problems faced by the people in the country, especially in urban areas, which not only experiences a rapid growth of population due to high fertility, low mortality and increasing rural-urban migration, but also industrialization which is accompanied by growing number of vehicles. In India, the rapid increase of human numbers combines with desperate poverty to deplete and pollute local resource bases on which the livelihood of present and future generations depends. Though the relationship is complex, population size and growth tend to expand and accelerate these human impacts on the environment.

According to the World Development Indicators report in 1997, 1.5 billion people live exposed to dangerous levels of air pollution, 1 billion live without clean water and 2 billion live without sanitation. The increase of population has been tending towards alarming situation. Population impacts on the environment primarily through the use of natural resources and production of wastes and is associated with environmental stresses like biodiversity, air and water pollution and increased pressure on arable land. India is one of the most degraded environment countries in the world and it is paying heavy health and economic price for it.

In the state of Telangana around 6000 industries are registered by 2013-14 out of which around 2000 are large & medium scales and around 4000 are small scale industries. Of these registered industries around 5000 industries are categorized as "polluting industries". In addition, there are several industries operating illegally or established from single window clearance cell with false declarations. The Pollution Control Board [TSPCB] to keep the pollution under control periodically monitors majority of these polluting industries. The industries are categorized as red, orange and green in which the Central Board office plays pivotal role in the case of red category industries and the other two are under the- purview of zonal/regional offices. Yet, this is a Herculean task - as during the inspection either the industry will be shutdown or the management will tell that the pollution equipment is either under repair or under maintenance. This is common practice with polluting industries to avoid any action. The main problem in the monitoring of these industries is that the industries were started with old technology when there were few industries and the pollution load was less. Now both registered and unregistered industries have grown and thus pollution load also has grown multifold. Majority of the polluting industries are located in and around the capital city. Major percentage of industries in these industrial areas consists of Synthetic Organic Chemicals (bulk drugs and intermediates), Oil Refineries, and Textiles, Tanneries, Electroplating units and Distilleries. Researcher tries to present a situation in greater Hyderabad metropolitan city with regard to industrial pollution impact on health and environment. By taking some case studies like Jeedimetla, Nacharam, Patancheru etc,

### **Study Area**

Hyderabad is the capital city and most populous city of the Indian state of Telangana. The Hyderabad Corporation and the Secunderabad Corporation were established in 1950 via the Hyderabad Corporation Act. In 1955, the Hyderabad Municipal Corporation Act merged the municipal corporations overseeing Hyderabad and neighboring Secunderabad.

The city of Hyderabad has an estimated population of around 8 million. Greater Hyderabad metropolitan area has an estimated metropolitan population of 9.6 million, making it an A-1 status city. Greater Hyderabad metropolitan area which incorporates 12 surrounding municipalities is the second largest in terms of land area in the country after Delhi. The former Andhra Pradesh government has passed the GO 261 that is related to the creation of Greater Hyderabad. The Greater Hyderabad Municipal Corporation was formed on 16 April 2007 by merging 12 municipalites and 8 gram panchayats with the Municipal Corporation of Hyderabad. The municipalities are L. B. Nagar, Gaddi annaram, Uppal Kalan, Malkajgiri, Kapra, Alwal, Qutubullapur, Kukatpally, Serilingampalle, Rajendranagar, Ramachandrapuram and Patancheru. All these municipalities are in Rangareddy district. The panchayats are Shamshabad, Satamarai, Jallapalli, Mamdipalli, Mankhal, Almasguda, Sardanagar and Ravirala.

### **Resource Degradation**

Haphazard growth of Hyderabad has degraded natural resources like water, air, and soil. Environmental pollution has reached alarming levels in the last 5-6 years. This has been chiefly due to industries and automobiles. Effluents of several bulk drug industries are stored in open pits. This led to extensive ground water pollution affecting the sources of agricultural and drinking water needs of the surrounding colonies. Several lakes have been inundated with effluents from industries, including



Hussainsagar. Environmental conditions in Ramanthapur and Uppal areas continue to be the cause of concern. Most of the industries are in the midst of residential areas, with no proper drainage system and without any effective monitoring of the industrial discharges.

Modern industrial development, particularly of the chemical industries in Hyderabad started with the location of Indian Drugs and Pharmaceuticals at Balanagar. Though not recognized then, its location has been the source of all problems of pollution in Hyderabad - it is located in the catchment area of Hussainsagar and in the windward direction of Hyderabad. A host of industries developed on the upstream of all water channels of Hyderabad, thus, subjecting the residents to numerous problems. Establishment of IDPL resulted in the proliferation of chemical and pharmaceutical industries in Jeedimetla, Kukatpally and surrounding areas. Due to a vacuum in the Town planning policy, industries and residential areas developed alongside each other. In the process, prime agricultural land and a series of percolation tanks upstream of Hussainsagar were obliterated.

### **Jeedimetla**

Jeedimetla, supposed to be India's biggest small-scale industrial area, is virtually a gas chamber. Solid wastes can be seen dumped everywhere, industrial effluents take gravitational course and end up in roadside pits and the ambient air is befouled by a variety of pollutants. Air pollution is rampant in the industrial zones caused by boilers, process fumes and automobiles. Ground water pollution is extensive; accidents are frequent while the effect on human health is continuous and maximum. After considerable public pressure, a common effluent treatment plant was established. But this might not be the complete answer to the pollution problems in this area.

### **Azamabad**

Azamabad industrial area finds itself among the residential areas of Ramnagar, Vidyanagar, Musheerabad and Baghlingampally, despite being on the outskirts of Hyderabad 40 years back. At present, the only option is shift out the industries in this area. Presence of these industries is a continuous health hazard to the surrounding residents.

### **LB Nagar**

The South India Research Institute, popularly called Siris, a pharmaceutical company at LB Nagar, Siris was set up in 1966 as a bulk drug manufacturing unit. One of the largest manufacturers of Acetyl Salicylic Acid (Aspirin) in the world, Siris claims to be the first to manufacture Analgin in the private sector. The company is more into production of bulk drugs and manufactures Sulphamethoxazole, Ciprofloxacin and Analgin. The Siris factory releases waste water and gases it causes air, water, noise pollution which effects local area people on health related problems. The ground water is totally unfit, not only for drinking but also for bathing and washing of clothes. Residents of local colonies Saroornagar, HUDA quarters, Doctors' Colony, Venkateshwara Colony and Brindavan Colony are depending purely on Krishna water supply for all their needs.

### **Nacharam**

The Nacharam Industrial Development Area is situated in the northeastern part of Hyderabad, The Nacharam Industrial Park has 340 industrial units while Mallapur has about 200 industries. "Industries located outside IDA Mallapur dump their industrial wastes in open spaces, and causing to air, water, soil and noise pollution.

Nacharam is another typical example where an industry coexists with human habitat. A bone-meal factory, which was a continuous source of obnoxious smell and foul air, was shifted out owing to public pressure. There was a proposal to lay a pipeline to carry effluents of all the industries in Nacharam to Amberpet to be let out into River Musi. Presently, the ground water in an area of 100 sq.km. is polluted by nitric acid. Usage of hazardous chemicals on a large scale both in transport, storage and manufacturing processes in the midst of residential areas has potential ramifications, which have been generally ignored by everybody.

The Residential association regretted that they were being "unfairly" blamed for the increasing levels of pollution in the surrounding areas. They felt that the Andhra Pradesh Industrial Infrastructure Corporation (APIIC) too had to share the blame for groundwater pollution and relentless dumping of effluents into Raa Cheruvu. Lack of a buffer zone and absence of infrastructure like effluent treatment plant, drainage facilities and protected water supply had led to gradual decay of surroundings.

### **Kattedaan**

Katedaan industrial area poses the same problem as Jeedimetla and Azamabad, and more. It lacks many infrastructural facilities with most of the industries belonging to small-scale sector. Though situated in Medak and Ranga Reddy districts, industrial area of Patancheru, Bollaram and Cherlapally are nearer to Hyderabad due to territorial proximity. Kattedaan an industrial area, and Noormohammed kunta is polluted cheruvu with industrial pollution of kattedaan. It is Hyderabad's own



pink sea. No one cannot miss the colour or the pungent odour. Situated along National Highway 7, Noor Mohammed Kunta forces road-users to hold their breath. Passengers of trains rolling into the nearby Shivrampally railway station do a double take.

For years this water body has been the bane of the people living nearby. Thanks to the Kattedan industrial belt nearby, Noor Mohammed Kunta is totally polluted. Industrial effluents and waste constantly trickle in, giving it the pink colour. The groundwater pollution level is so high that downstream lakes, Shivrampally cheruvu and Oora cheruvu, are contaminated. These three lakes are a part of the historic Mir Alam lake basin.

The Telangana Pollution Control Board inspected the industrial units located at Kattedan and identified 255 of them. Forty of them were found to be generating liquid effluents in small and large quantities. The textile units were served closure orders for discharging untreated effluents into the Kunta, but the order was revoked when one of them acquired sufficient land to utilise treated effluents for land application.

A study conducted by the National Geophysical Research Institute (NGRI) has revealed high levels of arsenic, lead, strontium and other heavy metals in the soil and water in Kattedan. "The long-term effects of lead poisoning may be pronounced in the next generation," he pointed out. Water samples collected by the NGRI also revealed high levels of lead, strontium and selenium in the area.

### **Pattancheru**

Pattancheru industrial development area is one of the 13 industrial development areas in greater Hyderabad Region this is also most contaminated areas identified by the CPCB. The largest in 440 hectare area industrial estate located in Patancheru. Some of the biggest bulk drugs and pharmaceutical industries located here, Patancheru Mandal, one of the most industrial polluted areas of India. The data for the study are drawn from fourteen villages which are: Patancheru, Ganapatigudem, Aratla, pocharam, Lakadarm, Gandigudem, Byathdole, Chiduruppa, Ismailkhanpet, Inole, Bacchugudem, Isnapur, Pasamahilaram and Kistareddypet. The rationale behind the selection of these villages was that these villages were mostly affected by the discharge of industrial effluents and also affected socioeconomically because of industrial pollution. About 14 villages around Patancheru industrial area have fallen victim to industrial pollution. Patancheru is known more as one of the water polluted area than as a major industrial estate of India.

National Geological Research Institute (NGRI), Central Pollution Control Board (CPCB), and National Environmental Engineering Research Institute (NEERI) have surveyed the Nakkavagu at different point of time. It has been found by these agencies that the drain is highly polluted having no dissolved oxygen, immediately after the outfall from the common effluent treatment plant. The water quality of Nakkavagu has deteriorated to the extent of no life surviving in it, resulting in acidification, increase in Total Dissolved Solids (TDS), decrease in dissolved oxygen and decrease in biological diversity. The water is not suitable for irrigation. It is also observed that this water flows into the kacha bed of the Nakkavagu and percolates into the ground water, thus polluting the groundwater. The ignorant farming community stopped irrigation when Nakkavagu got polluted, but tried to dig open wells and tube wells just away from Nakkavagu. Without knowing the phenomenon of pollutants entering groundwater, they borrowed money to dig wells, but lost everything. Industrialisation in Patancheru has not only contaminated water sources but also affected the atmosphere there. The main cause of the air pollution is the presence of chemical industries. Among them Voltas Limited, Qure Drugs, Hinustan Floro carbons, A.P. Metallurgical Engg, Chandra Pharamaceuticals are the main culprits and chemical industries add fuel to the fire.

Major industries causing air pollution are:

1. Pesticide units
2. Bulk drug industries
3. Particleboard industries
4. Steel rolling industries
5. Common effluent treatment plant
6. Distillery

### **Pollution of Water Bodies**

In addition to encroachments, pollution of lake waters by untreated domestic sewage and toxic industrial effluents has been going on unabated over the years. Many lakes which provided drinking water earlier no longer serve the same purpose. While there were six very old industrial areas in the Hyderabad city corporation limits (Azamabad, Musheerabad, Sanathnagar, Kavadiguda, New Bhoiguda, and Lalaguda), eleven new industrial estates have come up around the city in course of time. Many of the industrial estates are located in the foreshore areas of the lakes. Of the 38 lakes identified as potential sources of



drinking water, bacteriological and chemical tests revealed that the water of only 6 lakes was in a usable condition. The tests showed negative reports for the waters of other lakes.

Continuous discharge of untreated industrial effluents into the water bodies has turned them into 'toxic ponds' almost devoid of any life. Some of the important polluted lakes/cheruvus are: Kazipalli cheruvu, Gandigudem cheruvu, Nagulal cheruvu, Kistareddypet cheruvu, Muktakanta cheruvu, Aminpur cheruvu, Bollaram cheruvu, Saki cheruvu, Muthangi cheruvu, Isnapur cheruvu, Chitkul cheruvu, Lakadaram cheruvu, Pedda cheruvu, Yerdanur cheruvu, Gummadidala tank, Bonthapalli tank, Jinnaram cheruvu, Kalateleal cheruvu, and Digwal cheruvu etc. Some of the important rivers/streams polluted by the industrial effluents are Bollaram, Isakavagu, Nakkavagu, and Manjeera. These industrial estates are 1. Jeedimetla, 2. Balanagar, 3. Chandulal Bardari, 4. Medchal, 5. Moulali, 6. Nacharam, 7. Cherlapalli, 8. Uppal, 9. Katedan, 10. Autonagar, and 11. Gagan Pahad industrial development area (EPTRI, 1996: 63). Andhra Jyothy (Telugu Daily), Hyderabad, 23 July 2003. (Upstream of Nakkavagu confluence). Due to seepage and infiltration from these polluted water bodies/drains and other waste dumps, the groundwater in the area are highly polluted. The drinking water sources of many villages in the area are highly polluted (Kishan Rao, 2001: 24-26). The pollution control board has been ineffective to a large extent in penalizing the polluting industries despite the provisions of the Environment Protection Act, 1986, the Water Act, 1974 and the Air Act, 1981. Rampant corruption and the industrialist-politician-bureaucrat nexus have played havoc on water bodies. The industrial lobby is so powerful that a sitting judge of the Andhra Pradesh High Court was transferred overnight for giving closure orders to the highly polluting industries in Patancheru area.

The water of Noormahammad kunta has turned thick red in colour due to the discharge of untreated effluents directly into the lake through the secretly laid pipelines by the textiles mills of Katedan industrial area. Rayakunta cheruvu in Jeedimetla industrial area has practically disappeared due to encroachments, release of effluents and dumping of solid wastes. In several water bodies in the industrial areas, toxic sludge has accumulated to a depth of 2-3 feet. Even as the local farmers try to let out rainwater also from such tanks, lest the accumulated storage further pollute ground water, tankers from industries release fresh loads of effluents secretly in the nights.

In a study done for HUDA, it was found that 18 water bodies were identified as the most polluted while 67 were polluted to a lesser extent. While the biological oxygen demand (BOD) should be less than 1 mg/litre for aquatic life to grow, it was 13.25 in Medchal cheruvu, 13.75 in Safilguda cheruvu, 12.0 in Saroornagar cheruvu, 18.4 in Durgam cheruvu, 29.25 in Langarhouse cheruvu, and 6.5 in Kapra cheruvu. Unabated discharge of domestic sewage from nearby colonies has made the water of Kothakunta cheruvu so polluted that its water is not found to be suitable for consumption not even by animals.

### **Musi River**

Until recently the Musi river was only sewage-sick. Alarmingly, today it also has become (industrial) effluents-sick. As long as it was only sewage-sick the problem of pollution was not that serious as it is today. Because of these effluents and their colours self-purification of waste water (sewage) is not taking place. The wastes (effluents) released by the industrial units located in Jeedimetla, Nacharam and Kattendan join the Musi while the effluents of other industrial estates move towards the Godavari river basin. Industrial estate-wise number of industrial units contributing objectionable effluents to MusiRiver are shown in Table. There are also units, other than those located in the above three estates, which release their effluents into Musi such as 'Siris' which is located at L.B.Nagar on National Highway road. Several other units belonging to the oldest industrial areas, listed out earlier, which are in the heart of the city also release their effluents into Musi.

Under the Water (Prevention and Control of Pollution) Act, 1974 it is compulsory for industries to provide adequate treatment for its effluents before they are released into natural courses. This Act, in the majority of the cases is ignored. It is said that the small scale industries contribute about 40 per cent of total industrial pollution load in the country. It is argued in the industrial circles that provision of Effluent Treatment Plant (ETP) in a small unit will be difficult and may not be financially viable and therefore, a Common Effluent Treatment Plant (CETP) is the solution. One such CETP is located in the Jeedimetla industrial estate and managed by industrialists themselves. But, as shown in Table 4 many of them did not take membership in the CETP. Out of 60 units only 47 are members. It is also said that many a times even the members do not get their effluents to CETP for treatment because they have to bear the treatment cost. Many industries are thus letting their effluents untreated into the natural courses. Some are discharging their concentrated effluents directly by tankers into Musi at two places, namely Nagole and Moosarambagh.

The Jeedimetla industrial estate alone discharges 55 million litres per day (mld) of domestic waste and 15 mld of industrial effluents daily, according to a survey made by the APPCB, leaving apart 182 other hazardous industries discharging a waste of about 34 thousand tonnes per year (Solid). As a result the quality of water in the river is dangerously discoloured. The disposed effluents of Jeedimetla ETP contain solids like sulphates, COD, BOD and lead etc. The values obtained are more than the permissible limits prescribed for industrial effluents for discharge into inland surface water. Therefore, the above



study says, the effluents need further treatment before they are disposed off. The colour of the industrial effluents which occupy the river waters does not allow the sunlight to penetrate inside. As a result, the growth of the desirable aquatic biota necessary for self purification (re-oxygenation) does not take place. Therefore, the water remains impure which is true of Musi. It contaminates groundwater, and hampers the use of `recreation facilities` and fishing which are indispensable to the vitality and well being of the community. Therefore, the study stresses on the need to remove the colours present in the Musi waters.

Musi water has become effluent-sick despite the presence of the Central and State Pollution Control Boards. As a result groundwater in the down-stream of the river is also contaminated. The borewells supplying drinking water are now lying unused as seen in a village called Peddagudem. Milk vendors of the villages who bring milk to the city go back from city with drinking water in their containers. People working in the fields, particularly women during the sowing season suffer from skin allergies. The animals also get loose motions frequently. Thus, the above list of morbidity can go to any length. It may be concluded that water quality of the Musi river is dangerously decoloured by the inorganic metals present in the industrial effluents which are directly released into the river by the industries of Hyderabad.

There has been no adequate collective effort on the part of industries as well as the State Government in handling the problem of degradation of Musi river which in turn affects the downstream population. The polluted water of the Musi river may be now working as slow poison for the downstream agriculture and human and animal health.

### **Hussainsagar**

Hussainsagar lake has not been used as a drinking water source since 1930 though it was originally constructed to supply drinking water. Located in the centre of the city, the lake area has shrunk from about 550 hectares to about 349 hectares (nearly 40 per cent decline) at present due to encroachments by both private and public agencies over the years.

Evidence based on satellite data reveals that the Lake has shrunk by about 300 acres in the last 25 years accessed on 5 December 2002. In addition to encroachment, the lake water got polluted severely due to the continuous discharge of untreated domestic sewage and toxic industrial chemicals for several years. Till a few years ago, the stink emanating from the lake was felt up to distance of several kilometres depending on the prevailing wind direction. About 15 mld (million litres a day) of industrial effluents containing mainly nitrates, phenols and cyanides from about 100 units under hazardous category in the Jeedimetla industrial estate, in addition to 55 mld domestic sewage, are released into Kukatpally Nallah which flows into.

Hussainsagar lake in the centre of the city. Twenty mld more of sewage enters this lake from three other nallahs (channels). In course of time, common effluent treatment plants (CEPTs) were set up in some industrial areas and the inflow of toxic effluents into this lake has reduced drastically. In addition, a 20 mld capacity sewage treatment plant (STP) has been constructed right in a corner of the lake to treat domestic sewage. Substantial quantity of untreated domestic sewage still flows into the lake from the nearby colonies.

In a judgment of far reaching importance on 1 December 2000, the Supreme Court of India prohibited setting up of water polluting industries within 10 km radius of these two water bodies in view of their importance in meeting the drinking water needs of the twin cities. The Court applied the `precautionary principle` to protect these two water bodies, and ordered the closure or shifting of the existing polluting industries within their 10 km radius. The Supreme Court further held that access to clean drinking water is a fundamental right under `right to life` in Article 21 of the Constitution of India and that the State is duty bound not only to provide adequate drinking water but also to protect water sources from pollution and encroachment.

### **Effects of Pollution on Health**

study conducted by the Andhra Pradesh pollution control board (appcb) on the effect of air pollution on the health of people has shown that there has been an increase in heart ailments, bronchitis, asthma, hepatitis, tuberculosis, trauma, cancer and cerebro-vascular ailments over the last few years. The number of contact dermatitis cases went up from 6,993 in 1999 to 17,229 in 2000. The number of lung cancer cases went up from 46 in 1999 to 78 in 2000 while there was an increase in the case of leukemia from two in 1999 to three in 2000. "it is a cause of concern that heart ailments are affecting the young in the city," APPCB member-secretary told the times of India. The various heart ailments reported last year in the age group of 0-30 years was 13, in the age group of 31-40 years was 55, in the 41-45 age group was 59 and above 45 years was 135.

"The number of heart ailment cases is increasing among the young because of high levels of exposure to carbon monoxide and nitrous oxides. He said nitrous oxides, especially nitrogen dioxide causes sore throat, running nose and in severe cases pulmonary dysfunction. Leukemia is caused due to continuous exposure to benzene. Exhausts from trucks are a major cause



of bladder cancer, especially among truck drivers, while they also cause damage to mucous membranes, eyes, irritation, cough and cause cancer in cases of prolonged exposure, the APPCB study said. Another area of concern is increase in pulmonary diseases due to pulmonary dysfunctions among the young caused by ozone. The synergy between ozone and nitrous oxides causes asthma, the study said. Particulate matter released due to adulterated fuel, some of which gets absorbed into the blood, is the cause for cardio-vascular diseases, breathing problems and lung cancer in severe cases. Lead, released due to unburnt fuel, leads to a fall of 2.5 points in the IQ levels and also causes heart ailments and hypertension. "This shows that there has been an increase in respiratory ailments, from 40 per cent and 22 per cent per annum in the last four years," the study said. The total air pollution load in 1995 was 475 tonne a day while in 2001 it was 1123 tonne a day. In 2005, the APPCB proposes to bring it down to 648 tonne a day. The high court directed the state government on July 20, 2001, to "expeditiously decide on all aspects of vehicular pollution management in the twin cities"

Hyderabad's industrial mistreatment of the environment has led to the chemical poisoning of thousands of hectares of farmland outside Hyderabad as well as the birth of deformed, poisoned babies, the loss of child-bearing capacities in women, an extremely high incidence of "multi-toxics syndrome" in thousands of residents, and unexplained burns and rashes on people in and around the areas of these plants. (Shashikumar, VK. 4 June, 2005. See this online article for a moving photographic essay on the innocent industrial victims living on these poisoned lands).

Cancer rates in these outskirts of Hyderabad are 11 times the national average and heart disease is 16 times more prevalent. Of course these industrial areas are not only tremendous health risks to those in their immediate vicinity however, the millions of liters of untreated effluents, as the sewage of Hyderabad itself, ends up primarily in the Musi river and Hussain Sagar, significantly contributing to their demise. Additionally, because of seepage into the groundwater which serves as much the city's source of water due to inadequate HMWSSB supply, these people are exposed to a bouquet of poisonous chemicals, all at levels exponentially higher than is considered safe. What is most troubling here is that even though the fact that this water is very much unsafe has been very well documented in reports and even in newspapers, the vast majority of Hyderabadis have no idea that the water they drink.

### Conclusion

The fast pace of industrialization, galloping demand for energy and reckless exploitation of natural resources during the last century (20<sup>th</sup> century) have been mainly responsible for aggravating the problem of environmental pollution, which is now posing a serious threat to biodiversity and ecosystem processes in Urban Areas Like Hyderabad. Pollution crisis is a major problem the world over. It has adversely affected the lives of millions of people and caused many deaths and health disorders. Pollution production can be considered under the heading of the four major human activity sectors: industry, energy, transportation. With a marked increase in human population and the pace of industrialization, much of the globe has been inflicted with a whole new set of pollutants. Most of the industrial activities result in air and water emissions and contamination of the soil and of food as by-products of the processes involved in manufacture. Industrial pollution mainly damaging Health and Environment in Hyderabad and surrounding Areas like Patancheru, Jeedimetla, Nacharam, Kattedan and Uppal. A variety of approaches have been developed to manage existing pollution. These include punishment of polluters through regulation, taxation, fines, toxic tort suits, and other disincentives; encouragement of nonpolluting approaches through tax and other incentives; and education of the public. The major task of environmental protection and pollution control is vested primarily with the administrative and legal agencies. The judiciary is increasingly intervening in matters of grave threat to human habitations on account of industrial pollution. However, all the responses and interventions are translated in practical action by administrative agencies like the pollution control board.

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