

REPORT ON  
ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT  
IN  
INDIA

PREPARED BY  
THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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## SUMMARY OF RECOMMENDATIONS

Recommendation 1: Advocate for more resources, and streamline current practices to maximize currently available resources.

Recommendation 2: Develop policies and implementing guidance to assist the zonal offices and SPCBs in implementing compliance and enforcement programs. As these policies and guidance are developed, effective organization will necessitate that a system for cataloguing and distributing the guidance in a timely manner also be developed.

Recommendation 3: Establish the authority to use self-monitoring, self-recordkeeping, and self-reporting as direct evidence of a violation in the courts (and administratively should such a process be established); develop and distribute the necessary policies and implementing guidance; and provide training to SPCBs.

Recommendation 4: Establish opacity standards and test methods for emissions from stacks; develop implementing policies and guidance; and establish the necessary training infrastructure.

Recommendation 5: Develop national guidance on minimum inspector training requirements; develop and fund a compliance and enforcement training program to implement the requirements; and ensure that all SPCBs are aware of the program and the schedule of courses.

Recommendation 6: Develop a policy and provide implementing guidance that requires regulated industries to provide bank guarantees for negotiated compliance schedules incorporated in directives issued by the Boards.

Recommendation 7: Utilize current statutory provisions to establish civil administrative authority; establish the infrastructure for managing administrative cases; develop the necessary enforcement response and penalty policies; and provide training for the states.

Recommendation 8: Develop educational materials and compliance assistance tools for the regulated community, especially small businesses, and distribute the materials to all regulated sources.

Recommendation 9: Develop measures of success for the compliance and enforcement program utilizing a variety of parameters, and communicate these measures and the rationale for why they are needed to SPCBs, the regulated community, and the public.

Recommendation 10: Develop a uniform computerized system for collecting, maintaining and utilizing compliance and enforcement data at the national as well as the state level; develop the necessary implementing policies and guidance; and ensure that the SPCBs are aware of them.

Recommendation 11: Establish a support organization to facilitate communication among SPCBs on important environmental compliance and enforcement issues, and between CPCB and the Boards.



If implemented, all of the recommendations would greatly improve compliance with India's environmental statutes, regulations, and permit conditions. However, two recommendations, Recommendations 3 and 7, would have the most significant, immediate, and far reaching effect if implemented. The recommendations may be implemented independent of each other, but the success of Recommendation 3 would be substantially enhanced by the implementation of Recommendation 7.

Recommendation 3 focuses on the establishment of authority to use self-monitoring, self-recordkeeping, and self-reporting as direct evidence of a violation in the courts (and administratively should such a process be established). Currently, India requires industry to monitor some compliance parameters, but uses the information only as an indicator of compliance. The government does not utilize it as direct evidence of a violation in the courts. Instead the government relies solely on legal samples that are resource-intensive and time-consuming to collect; are frequently challenged for procedural deficiencies; and often are not representative of a facility's compliance status. Shifting the burden of compliance monitoring away from the government to the regulated community would enable the government to evaluate and determine compliance for a larger number of regulated sources on a more frequent basis in a more cost-effective manner. It would eliminate many of the procedural challenges because the information is gathered by the source. It also would provide information of a facility's compliance on an on-going basis; thus, providing information on continuous compliance. This approach has the added benefit that industry compliance rates improve merely as a result of industry's increased focus on their operational practices to ensure that they are operating in compliance. Concerns with the accuracy and reliability of the data can be addressed with currently available criminal sanctions for falsification of data.

Recommendation 7 focuses on the utilization of current statutory provisions to establish civil administrative authority. The ability to address violations and assess penalties administratively without resorting to the courts would enable the government to address violations in a more timely, cost-effective manner. An immediate and predictable enforcement response by the Government would have a significant deterrent effect on the regulated community. This approach also would reduce the environmental workload of the courts and enable them to focus on the most egregious violations and repeat violators.

## INTRODUCTION

On January 16, 2001, the United States Environmental Protection Agency (EPA) and the India Ministry of Environment and Forests (MoEF) signed a memorandum of Understanding that provided a framework for policy and technical cooperation between the two agencies. One of the areas of cooperation is environmental governance, which includes activities such as strengthening environmental law regimes; assuring compliance with environmental requirements; and providing public access to environmental information. As part of this bilateral relationship, the EPA has been working with the India Central Pollution Control Board (CPCB) on various efforts to enhance the capacity of the Indian environmental compliance and enforcement program. In January 2003, the EPA and CPCB jointly agreed it would be valuable for EPA with assistance from the CPCB to conduct a holistic review of the Indian compliance and enforcement program at both the national and state levels of government to determine where improvements could be made, and long-term projects initiated.

The institutional analysis was initiated in November 2003. A EPA team accompanied by representatives from the CPCB and United States Asia Environmental Program (USAEP) visited various environmental organizations in India to develop a more comprehensive understanding of the Indian environmental compliance and enforcement program, and compile information to support the development of recommendations for a long-term program. Specifically, the team met with representatives from CPCB headquarters in Delhi and three of the six CPCB zonal offices, seven state pollution control boards (SPCBs), and other government officials with responsibility for environmental programs in India. The meetings were based on approximately 150 questions that were prepared in advance and revised as information was gathered.

In the Western Zone, the team met with the Maharashtra and Gujarat SPCBs, and the Deputy Commissioner of Transport for Maharashtra. Following that meeting, they conducted a site visit and met with representatives from the Thane-Belapur Common Effluent Treatment Plant in Mumbai. In addition, the team met with representatives of the Thane-Belapur Industries Association to view a hazardous waste treatment facility and discuss issues associated with it. Based on a prior visit to India, EPA already had baseline information on the Tamil Nadu SPCB compliance and enforcement program.

In the Southern Zone, the team met with the Karnataka and Andhra Pradesh SPCBs. They also met with the Principal Secretary of Ecology and Environment, Government of Karnataka in Bangalore, and the Principal Secretary of the Government of Andhra Pradesh in Hyderabad. In addition, they accompanied staff on two inspections in Bangalore. The opportunity to observe inspections enabled the team to witness legal sampling, and assess the conduct of inspectors as they evaluated facility compliance with environmental requirements.

In the Eastern Zone, the team met with the West Bengal, Bihar and Orissa SPCBs. They also met with the United States Consul General in Kolkata to discuss the compliance and

enforcement component of the MOU and obtain his perspective on program needs and opportunities for collaboration. In addition, they met with the US South Asia Environment Advisor from the US Embassy in Kathmandu, Nepal and discussed regional environmental issues.

Following the meetings with key managers and staff in CPCB headquarters, the team met with the Chairman and the Member Secretary to discuss the prior meetings, and their preliminary findings and recommendations.

During the November 2003 trip, the team also had the opportunity to gather pertinent compliance and enforcement information as part of the effort to evaluate potential training institutes. Specifically, the team met with representatives from the following organizations:

- \* Centre for Environmental Science & Engineering, Indian Institute of Technology (IIT), Mumbai
- \* National Environmental Engineering Research Institute (NEERI), Mumbai
- \* Gujarat Environmental Management Institute (GEMI), Vadodara
- \* Center for Environmental Education (CEE), Ahmedabad
- \* Environmental Management and Policy Research Institute (EMPRI), Bangalore
- \* National Law School of India University, Bangalore
- \* Administrative Staff College of India (ASCI), Hyderabad
- \* Environment Protection Training and Research Institute (EPTRI), Hyderabad
- \* Environmental Management Center, Indian Chamber of Commerce (ICC), Kolkata
- \* Centre for Development and Environment Policy, Indian Institute of Management (IIM) Kolkata
- \* National Productivity Council (NPC), Delhi

Supplemental information was collected via Internet searches, as well as more traditional literature searches, and through ongoing dialogue with colleagues in India and the United States. Based upon these initial efforts, EPA developed the draft report, "Recommendations to Improve India's Compliance and Enforcement Program" and submitted it to MoEF and the CPCB in May 2004.

During subsequent visits to India, EPA continue to gather information and solicit feedback on the draft findings. As part of these efforts, EPA was able to meet with representatives from Goa, and the SPCBs for Madhya Pradesh, and Kerala. EPA also had an opportunity to accompany inspectors from the Maharashtra SPCB on site visits to cement plants and thermal power plants in the State. In addition, EPA was able to meet with former staff of the Maharashtra SPCB to discuss the structure, implementation, and enforcement of prior local requirements regulating visible emissions from certain types of stacks.

This report reflects all of the information gathered during these visits, as well as comments received on the draft recommendations. It provides an overview of the Indian



compliance and enforcement program, and identifies areas where improvements or changes can be made that will increase the efficiency and effectiveness of India's efforts in this area. This report does not comment on the national environmental goals established by India or the stringency of their requirements, but instead focuses on the functions and tools necessary to ensure that existing goals are achieved and current environmental requirements are met.

This report was developed utilizing international principles for ensuring compliance with environmental requirements, as well as the environmental lessons learned over the past thirty years in the United States. Reliance on the United States experience is appropriate because India is similar to the United States in many ways. Namely, both countries have:

- \* Large populations and diverse, geographic areas.
- \* Diverse industrial bases.
- \* Similar legal systems that stem from the British common law.
- \* Environmental laws that are established primarily at the federal level, but may be supplemented by independent state requirements.
- \* Environmental statutes and requirements that are established primarily at the national level, but are implemented primarily at the state level.
- \* Enforcement at both the federal and state levels of government, but primacy at the state level.
- \* A large number of independent states with diverse economies, environmental challenges, and environmental capabilities.
- \* Democratic systems that recognize the importance of public awareness and involvement.

The differences between the United States and India relate more to the relative maturity of their environmental programs, and thus the type and extent of the environmental challenges that each faces. The differences also relate to the economic resources that are available to address such challenges. However, these differences do not affect the legal structures and tools that would be useful in addressing environmental problems, but which tools are selected, how and when the tools are used, and how long before change can be expected.

For the purpose of the institutional evaluation, EPA segregated India's environmental compliance and enforcement program into three distinct groups of regulated entities - municipal facilities, small industrial facilities, and medium-to-large industrial facilities.

Municipal facilities place a significant burden on the environment. However, pollution from these types of facilities is not easily addressed through traditional compliance and enforcement programs. Municipal facilities are subject to the same environmental statutes and requirements as other industry categories, and technology is available for them to comply with those requirements. However, many of the non-compliance problems stem from infrastructure problems and the need to install expensive environmental controls that require significant public financial investments before measurable reductions in pollution can be realized. Many state

governments simply lack the resources to address the problems. Furthermore, traditional enforcement approaches such as shutting down a facility are not viable options. Municipal facilities provide essential services that can not be interrupted. As a result, the Indian government has focused thus far primarily on providing compliance assistance for municipal facilities.

Small scale industries (SSI) have been addressed through a combination of compliance strategies. Many of the smaller, more polluting facilities that were marginally profitable have been shut down by government action. Others have been grouped and co-located in industrial centers with shared common effluent treatment systems. This approach has reduced the economic burden of complying with environmental requirements, while at the same time it has significantly reduced pollution from these previously uncontrolled sources. Finally, compliance assistance has been provided to these facilities to educate them on environmental requirements and assist them in selecting appropriate controls.

The medium-to-large industrial facilities have been the primary focus of governmental efforts to reduce pollution in recent years. Through a series of Supreme Court actions and regulatory efforts by both national and state pollution control boards, the number of medium-to-large facilities with no environmental controls or inadequate treatment has been dramatically reduced. Some were shut down, but the majority installed control equipment. Compliance assistance was provided to many to assist them in the selection of appropriate controls. The remaining few facilities that continue to pollute because of lack of controls are before the courts. Attention is now beginning to shift to changes and environmental improvements that "go beyond compliance".

In spite of the advances that have been made, medium-to-large facilities continue to release harmful pollutants into the environment. Although they have generally demonstrated an ability to comply with environmental requirements, they have not demonstrated the ability to "continuously" comply.

Control of pollution in any country moves in evolutionary phases. The first is the adoption of laws. The second is the awareness or acceptance that these laws should be implemented. During this phase, significant progress is made in the reduction of pollution by aggressively forcing facilities to install controls. India is in this phase, especially as it relates to medium-to-large industrial sources of pollution. The next evolutionary phase for these sources is ensuring "continuous compliance" with environmental requirements. India is at the point where actions need to be taken to move into this next phase if further pollutant reductions are to be realized.

From an environmental management perspective, continuous compliance should not be viewed as merely the desire to have perfection in the system. Instead it should be viewed as a means for ensuring that environmental goals and anticipated pollutant reductions are met and maintained over time. Even marginal deviations from environmental requirements can result in



significant environmental insults. For example, a control device that is designed and expected to reduce pollution by 99.5 percent, but malfunctions or is not operated an average of one day a month, is in reality reducing pollution by only 96 percent. While a facility may argue that this deviation of 3 percent is acceptable given the array of operational variables it must continually address, the insult to the human health and the environment is significant.

This report focuses primarily on the medium-to-large facilities; however, the recommendations can be used to address the small industrial facilities as well, and ultimately as resources allow, municipal facilities.

For the purposes of this report, EPA also focused on the air and water environmental compliance and enforcement programs. Implementation of the hazardous waste program is not as advanced as the air and water programs, and thus, does not provide the same opportunity for an in-depth analysis. Nevertheless, the recommendations in this report can be applied to compliance and enforcement of the hazardous waste requirements equally.

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## CHAPTER 1: BACKGROUND

### I. ENVIRONMENTAL LAWS

By agreement, the EPA evaluation focused on compliance and enforcement issues associated with the implementation of the Water (Prevention and Control of Pollution) Act of 1974; the Air (Prevention and Control of Pollution) Act of 1981; and the Environment (Protection) Act of 1986. The framework of all three acts is similar. Authority to implement them is vested in both the Central Government as well as the States. They are administered primarily through cess collection and a fee-based system, with extensive authority to collect information, monitor activities, and inspect facilities. Facilities can be closed for failure to comply with the Acts, and violations can be addressed criminally with fines assessed and individuals imprisoned. A brief summary of each Act with an emphasis on the provisions related to compliance and enforcement is provided below:

#### Water (Prevention and Control of Pollution) Act of 1974 (the Water Act)

Water is a subject in the State List under the Indian Constitution; hence, only state governments can enact water pollution legislation. However, Article 252 of the Indian Constitution empowers Parliament to enact laws on state subjects for two or more states, where the State legislatures have consented to such legislation. Thus, the Water Act was passed by Parliament pursuant to enabling resolutions by twelve states.

The Water Act vests regulatory authority in State Boards and empowers these Boards to establish and enforce effluent standards for factories discharging pollutants into bodies of water (Section 17). Pursuant to Section 2A of the Environment Protection Act (EP Act), the Central Government has published Environment Protection Rules (EPR) establishing general and industry-based standards for certain types of effluent discharge (Schedules I and VI, EPR). These standards take precedence.

The Boards control sewage and industrial effluent discharges through a comprehensive permitting system where the Boards can approve, reject, or condition applications for consents to discharge (Section 25). The Water Act empowers State Boards, upon 30 day notice, to execute any work required under a consent order which has not been executed, and recover expenses for such work from the facility (Section 30). There is no requirement for community consultation or transparency in the review and issuance of consents to operate; however, the courts have intervened on this issue to allow for such consultations, and some State Boards now provide an opportunity for the public to comment.

The Boards are empowered to utilize a variety of tools to enforce the Water Act. They have broad authority to collect information either directly themselves or from facilities (Section 20); take water samples for analysis (Section 21); and enter and conduct inspections at any time

(Section 23). The Boards may take emergency measures if they determine that an accident or other unforeseen event has polluted a stream or well (Section 32). These measures include removing the pollutants, mitigating the damage, and issuing orders to the polluter prohibiting effluent discharges. They can make applications to the courts to restrain pollution (Section 33). They may issue directions to close facilities, or withdraw their supply of power or water by an administrative order (Section 33A). Failure to comply can be prosecuted criminally, and is punishable by fines and imprisonment (Sections 41, 42, 43, 44, 45, 45A). The sanctions vary depending on the nature and duration of the violation, as well as the existence of previous offenses. Both the company and the individual responsible for the offense can be held liable and subject to sanctions; however, individuals may raise the defense that the violation was committed without their knowledge or that they exercised all due diligence to prevent the offense (Section 47). The names of offenders can be published (Section 46).

In addition to the enforcement authority vested in the Boards, the Water Act authorizes citizens to bring legal action and gives them the authority to sue State Boards for the release of relevant information and reports (Section 49).

A Central Board performs the same functions for Union Territories. In addition, among other responsibilities, it coordinates activities among the states; advises the Central Government on water pollution issues; and develops a comprehensive plan for the control and prevention of water pollution (Section 16). If a State Board fails to comply with a Central Board direction, and because of this failure, an emergency arises, the Central Board may be directed by the Central Government to perform the functions of the State Board (Section 18).

A separate, but important, Act to note is the Water Prevention and Control of Pollution Cess Act of 1977 (Water Cess Act). It was enacted to provide the Boards with a source of revenue to implement the Water Act. It creates economic incentives for pollution control through a differential tax structure, and requires local authorities and specified industries to pay a cess (tax) for water consumption. The Central Government, after deducting collection expenses, allocates the monies among the Central Board and the states to implement the Water Act. It also creates economic incentives through rebates on the applicable cess when effluent treatment equipment is installed and the facility is meeting the applicable norms.

#### Air (Prevention and Control of Pollution) Act of 1981 (the Air Act)

Under Article 253 of the Indian Constitution, Parliament is authorized to make laws to implement decisions taken at international conferences. Parliament used this authority to enact the Air Act as a result of the 1972 United Nations Conference on the Human Environment in Stockholm, Sweden.

Under the Air Act, the State Boards are given the authority to designate air pollution control areas (Section 19), and neither the Boards nor state governments can exempt a polluter from the Air Act if they fall within a designated area. See *K. Muniswamy Gowda v State of*

*Karnataka* 1998 (3) Kar.OL.J.594. All industries operating within these designated areas must obtain a consent to operate from the State Boards (Section 21). As with the Water Act, there is no requirement for community consultation or transparency in the review and issuance of consents to operate; however, some State Boards now provide an opportunity for the public to comment. Polluters outside those areas can not be prosecuted by the State Boards.

The Air Act empowers State Boards to prescribe emission standards for industry after consulting with the Central Board and noting their ambient air quality standards (Section 17(g)). This authority overlaps with the EP Act, which empowers the Central Government to establish emission standards. Norms established pursuant to the Environment Protection Rules (EPR) take precedence; thus, most State Boards re-notify the EPR standards under the Air Act. The rules framed under the EP Act prescribe emission norms for specific industries (Schedule I, EPR), and general emission standards which are concentration-based, equipment-based, and load/mass-based (Part D, Schedule VI, EPR). The general standards apply in the absence of industry-specific norms (Rule 3). In addition to the emission norms, National Ambient Air Quality Standards (NAAQS) are notified for industrial, residential and rural areas and sensitive regions (Schedule VII, EPR). The NAAQS are established at levels intended to protect public health, vegetation, and property with a margin of safety.

State Boards are empowered to utilize a variety of tools similar to those available under the Water Act to enforce the Air Act. They have authority to issue directions to facilities on the use of their facility (Section 21). They have broad authority to collect information either directly themselves or from facilities (Section 25); take air samples for analysis (Section 26); and enter and conduct inspections at any time (Section 24). The Boards may take emergency measures if they determine that an accident or other unforeseen event has resulted in air pollution (Section 23). These measures include removing the pollutants, mitigating the damage, and issuing orders to the polluter prohibiting the emission of air pollutants into the atmosphere. They can make applications to the courts to restrain pollution (Section 22A). They may issue directions to close facilities, or withdraw their supply of power or water by an administrative order (Section 31A). Failure to comply can be prosecuted criminally, and is punishable by fines and imprisonment (Sections 37, 38, 39). The sanctions vary depending on the nature and duration of the violation, as well as the existence of previous offenses. Both the company and the individual responsible for the offense can be held liable and subject to sanctions; however, individuals may raise the defense that the violation was committed without their knowledge or that they exercised all due diligence to prevent the offense (Section 40).

In addition to the enforcement authority vested in the Boards, the Air Act authorizes citizens to sue industry directly, and gives them the authority to sue State Boards for information and reports relevant for developing a case (Section 43).

A Central Board performs the same functions for Union Territories. In addition, among other responsibilities, it coordinates activities among the states; advises the Central Government on air pollution issues; and develops a comprehensive plan for the control and prevention of air



pollution (Section 16). If a State Board fails to comply with a Central Board direction, and because of this failure, an emergency arises, the Central Board may be directed by the Central Government to perform the functions of the State Board (Section 18).

#### Environment (Protection) Act of 1986 (the EP Act)

The EP Act was enacted under Article 253 of the Indian Constitution, and stems from the 1972 United Nations Conference on the Human Environment in Stockholm, Sweden. It is umbrella legislation designed to provide a framework for the Central Government to coordinate the activities of the various central and state authorities established under previous laws, such as the Water and Air Acts. It is also enabling legislation which articulates India's basic legislative policy on environmental protection, and delegates extensive powers to the executive branch to develop implementing rules and regulations. Implementation of the EP Act can be delegated to the States.

The scope of the EP Act is broad. Section 3(1) empowers the Central Government to "take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution." Specifically, the Central Government is authorized to set new national standards for the quality of the environment (ambient) as well as standards for controlling emissions and effluent discharges; to regulate industrial locations; to prescribe procedures for managing hazardous substances; to establish safeguards for preventing accidents; and to collect and disseminate information regarding environmental pollution. These authorities can be delegated (Section 23). Pursuant to Section 24, the EP Act and subordinate rules or orders issued under Sections 6 and 25 override all other laws.

Enforcement of the EP Act is similar to that of the Water and Air Acts. The Central Government is given the authority to collect information; take samples for analysis; and enter and conduct inspections at any time (Sections 10, 11, 20). It also may take emergency measures if a determination is made that an accident or other unforeseen event has resulted in the discharge of environmental pollution (Section 9). The Central Government may issue directions to close facilities, or withdraw their supply of power or water by an administrative order (Section 5). Failure to comply can be prosecuted criminally, and is punishable by fines and imprisonment (Section 15). The sanctions vary depending on the nature and duration of the violation, as well as the existence of previous offenses. Both the company and the individual responsible for the offense can be held liable and subject to sanctions; however, individuals may raise the defense that the violation was committed without their knowledge or that they exercised all due diligence to prevent the offense (Section 16). If any act or omission constitutes an offense punishable under the EP Act as well as another law, the offender is liable under the other law and not the EP Act (Section 24).

As with the Water and Air Acts, the EP Act authorizes citizens to enforce the Act directly. (Section 19). They must provide the Central Government with 60 days advance notice

of their intention to file a complaint; thus, providing the government with an opportunity to take appropriate remedial action.

## II. GOVERNMENT INSTITUTIONAL STRUCTURE

At the national level, the responsibility for developing and managing a nation-wide environmental program resides with the Ministry of Environment and Forests (MoEF). The Ministry, in turn, established the Central Pollution Control Board (CPCB) as the primary organization responsible for developing, implementing, enforcing environmental regulations and programs. Environmentalists, non-governmental organizations and academics have recommended that the two organizations be merged into an autonomous agency, similar to the EPA, but there is no indication that such a proposal is actively being considered by the Government.

The MoEF is the political arm of India's environmental organization at the national level and is responsible for representing environmental needs to elected bodies. They are authorized to establish autonomous Boards to implement the environmental program.

One such Board is the CPCB. Board members are appointed by MoEF and the Board consists of a full-time Chairman and a Member Secretary, as well as representatives from the Central Government, State Boards, private sector interests, and government owned corporations. This Board serves as India's national environmental agency, and has primary responsibility for implementing and enforcing environmental statutes and laws. The Chairman and the Member Secretary have dual responsibilities. They sit on the Board, and serve as the head of the environmental agency. The CPCB has a central office in Delhi, and six zonal offices located in Vadovara, Bangalore, Calcite, Bhopal, Kanpur, and Shilong. The CPCB is primarily focused on developing national strategies and technical guidance; compiling information about environmental compliance for both the public and government use; determining if violations and alleged violations will be addressed by CPCB or the appropriate State Board; directing government prosecutions; providing technical assistance in judicial cases; and monitoring implementation of judicial decisions.

Within the CPCB central office in Delhi, the following have responsibilities related to compliance and enforcement:

- \* The Chairman and the Member Secretary: All CPCB decision-making powers are vested in these two positions.
- \* Pollution, Assessment, Monitoring & Survey Division: Conduct sampling to support matters before the courts.



- \* Pollution Control Planning Division: Coordinate activities with the State Pollution Control Boards (SPCBs) and address matters relating to Parliament.
- \* Policy, Law & Small Scale Industries Division: Develop a program for improving the compliance of small scale industries, and provide limited legal support.
- \* Pollution Control Implementation Divisions (three separate divisions are organized around significant industrial sectors): Develop sector-specific rules and standards; develop compliance and enforcement policies/strategies; and review enforcement related matters for alleged violations or potential court actions.
- \* Information Management Division: Develop compliance and enforcement data systems and provide related guidance to SPCBs.
- \* Infrastructure & Laboratories Division: Manage the certification of laboratories that are recognized to perform legal sampling activities.

The CPCB zonal offices are the primary implementing arm. They conduct inspections and detailed technical investigations; provide technical assistance to the regulated community; develop recommendations for enforcement actions; and respond to CPCB and Court-issued directions.

The State structure parallels that of the national level with responsibility divided between state ministries of environment, and SPCBs. The cabinet-level ministries have wide-ranging responsibilities which include addressing the political and policy aspects of environmental management and appointing the State Board. Generally, they have very small staffs, and thus do not manage the day-to-day implementation of the environmental statutes and regulations.

The day-to-day management of environmental programs is the responsibility of SPCBs. Like the CPCB, each SPCB has a Chairman and a Member Secretary. The size of each SPCB is determined by the State Government, but it is also influenced by the amount of fees and cess collected. Most SPCBs have a central office with responsibilities similar to the CPCB central office. These responsibilities include developing state guidance, policies, and strategies; reviewing and addressing major violations; and providing information to CPCB. Many SPCBs have established regional offices (called zonal offices in some states), and in the larger states, sub-regional offices have been established. This sub-division is necessitated by the total number of regulated facilities; the prescribed inspection frequencies; and the geographic areas and distances that must be covered when evaluating compliance. This reduces the response time to address complaints and provides a local presence for the SPCB.

Responsibilities of the regional and sub-regional offices vary from state-to-state, and depend greatly on which activities the central office feels can be delegated to these offices. As the primary field component of the SPCB, these offices conduct the majority of the inspections;



take legal samples; review compliance with SPCB directions; and may take lesser enforcement actions. A major difference between the CPCB zonal offices and the SPCB regional and sub-regional offices is that state subordinate offices are delegated more responsibilities to enforce against smaller and less polluting facilities than the zonal offices.

### III. JUDICIAL STRUCTURE

The basis for the judicial activism in the environmental arena lies with the fact that both the Supreme Court and the High Courts have concurrent jurisdictions for the enforcement of fundamental rights; thus, a complainant may seek redress in either. The right to a clean environment is considered a fundamental right, and the Supreme Court and the High Courts have exercised power on a wide range of environmental issues under Articles 32 and 226, respectively. If the High Court is approached first, and the petition for relief is dismissed on its merits, a further petition to the Supreme Court is precluded under the principle of *res judicata*. However, the petitioner may still appeal under Article 133, or obtain special leave to appeal under Article 136.

The Supreme Court and High Courts have incorporated the following fundamental principles in their decisions:

- \* The polluter pays principle where the violator is liable to make good the loss caused by his/her actions regardless of whether he/she took reasonable care.
- \* Absolute liability for cases dealing with hazardous substances where fault need not be established.
- \* Precautionary principle where it is better to err on the side of caution in the absence of information.
- \* Prevention principle to address polluters who would continue polluting the environment because it is cheaper to pay for the pollution than prevent it.
- \* New burden of proof principle where the "onus of proof" is on the individual to show that his/her action is environmentally benign.
- \* Sustainable development where the right to development must be met so as to equitably meet the developmental and environmental needs of present and future generations.
- \* Public trust doctrine where the State is holding natural resources as a trustee and can not commit breach of trust.

\* Inter-generational equity where the present generation is a trustee and guardian of the environment for succeeding generations.

In addition to the superior courts, the subordinate civil courts exercise powers with regard to public and private nuisances. See the Code of Civil Procedure, 1908, Sections 9 and 91. Criminal courts exercise powers under various sections of the Indian Penal Code (IPC) dealing with offenses related to the environment. For example, under Chapter XIV, Section 277 of the IPC, it is a crime to foul the water of a public spring or reservoir, and under Section 278, it is a crime to make the atmosphere noxious to public health. Chapter 10 of the Code of Criminal Procedures, 1973, contains provisions for enforcement of various provisions of substantive law.

Offenses created by Sections 41-50 of the Water Act, Sections 37-46 of the Air Act, and Sections 15-17 of the EP Act are tried in the criminal courts. The appropriate criminal court is identified on the basis of territorial jurisdiction, and is dependent on its power to impose sentences of imprisonment to any person. The appeals on the criminal side are governed by the laws relating to criminal procedure.

In addition to the civil and criminal courts, appellate powers have been established by the various environmental acts. For example, the Water Act contains provisions for appeals to an appellate authority, to be constituted by the state government to deal with appeals by persons aggrieved by orders of the State Board. See Sections 26 and 26. The Air Act has similar provisions (See Section 31), as does the EP Act (Sections 3(3) and 25). Various states, such as Maharashtra, Madhya Pradesh, Andhra Pradesh, Haryana, and the Delhi Administration have established such bodies. Generally, the appeals lie with various officers or Departments of the government, and do not consist of a Judicial Member.

Environment Tribunals have been established pursuant to the National Environmental Tribunal Act of 1995 and the National Appellate Authority Act of 1997. However, neither is currently functional. The first Tribunal had jurisdiction to award compensation, but never came into existence. The second did not have the jurisdiction to award compensation, but did come into existence. Unfortunately, no new Chairman was appointed after the first Chairman's three-year term ended.

The Supreme Court also has been effective in convincing the High Courts in certain states to devote a greater share of judicial resources to environmental cases. For example, the High Courts in Mumbai, Calcutta, Chennai and Gujarat have designated a "green bench" to hear environmental cases.

Regardless of whether the offenses are heard in a civil or criminal court, environmental cases are not given priority over other cases before the court, and final resolution of an environmental case often takes a very long time. As a result, India is evaluating the need for specialized environmental courts with exclusive jurisdiction with regards to environmental



cases.<sup>1</sup> Such courts are deemed advantageous because they allow the courts to address cases immediately, monitor them over time, and ultimately resolve them in a more expeditious manner than the current system. They also allow the courts to access independent expert advice on environmental matters, and not be forced to rely upon evidence adduced by the parties.

#### IV. RESOURCES

Obtaining the information necessary to document and evaluate the adequacy of resources at both the national and state level to implement India's environmental laws proved insuperably difficult. Piecemeal information was provided during meetings with CPCB each of the CPCB zonal offices, and individual SPCBs. However, information on the total resources available at both the national and state level to implement the environmental laws was not available, nor was more specific information on the resources devoted to compliance and enforcement activities.

##### Central Government

There are approximately 800 individuals within the MoEF associated with environmental pollution control. There are only about 500 individuals within the CPCB.

The 500 CPCB employees are distributed among the Headquarters office in New Delhi, the six zonal offices, and the national laboratory. Approximately 300 of the 500 can be classified generally as providing managerial or administrative support. The remaining 200 are classified as technical or scientific. Approximately 80 of the 200 technical/scientific personnel are assigned to manage ambient monitoring and infrastructure activities, including laboratory work. The remaining 120 technical/scientific individuals are associated with environmental pollution control, and have some functions that relate to compliance and enforcement. However, they have a broad range of responsibilities that extend beyond the traditional compliance and enforcement activities such as the development of regulations; the review of technologies; and the development of technical reports and strategies. Thus, their time is divided among the functions, and the work hours actually available for compliance and enforcement activities at the national level is less than 120 individuals. Approximately 40 of the individuals are located in the Headquarters office, and are assigned primarily to the four sector-specific divisions and the Policy, Legal, and Small Sector Division (PLS). The remaining 80 individuals are distributed among the six zonal offices.

The Headquarters compliance and enforcement staff are responsible for developing national strategies to address groups of major polluters and monitoring implementation by SPCBs. Examples of such plans are the Ganga Action Plan to address "Grossly Polluting

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<sup>1</sup> The status of such a proposal is unclear. However, for more information on the issue, see the One Hundred Eighty Sixth Report on Proposal to Constitute Environment Courts, Law Commission of India, September 2003.

Industries" on the Ganga River; the list of 17 industrial categories with a high pollution potential for air, water and/or hazardous waste categories; and the Charter on Corporate Responsibility for Environmental Protection (CREP).

Headquarters staff also are responsible for developing annual action plans and reports on activities and success; developing technical assistance documents; reviewing zonal office recommendations for resolving violations and advising the Member Secretary and the Chairman on the appropriate enforcement response; providing administrative support and technical assistance on parliamentary concerns; responding to public complaints; and providing technical assistance to the courts and implementing and monitoring court-ordered environmental directives.

The few direct enforcement actions taken by the CPCB are generally done by the zonal offices. Table 1-1 shows the staff breakdown in three of the larger zonal offices that EPA visited.

The head of the zonal office is usually a Senior Environmental Engineer who performs technical tasks in addition to providing overall office leadership. The technical staff are primarily engineers and focus their compliance activities on the review of facility operations. Generally, the individuals classified as scientists collect and analyze the compliance monitoring samples.

Table 1-1 CPCB Zonal Office Staff			
	Southern	Eastern	Western
Technical	4	5	4 (4)
Scientific	13	14	8 (14)
Legal	attorneys are contracted as needed and if resources are available		
Administrative	12	10	6 (10)
Total	29	29	18 (28)
Comments			(#) includes contracted staff

Since primary enforcement responsibility is entrusted to the States, the CPCB zonal offices focus their attention on the larger, more problematic facilities with known significant violations. Since SPCBs have responsibility for conducting routine inspections, the CPCB zonal offices have the ability to conduct more in-depth investigations which are much more resource intensive requiring multiple inspectors over several days. They also focus their inspection resources on facilities that are or recently have been the focus of an enforcement action. The number conducted by each zonal office varies depending on the number of states in the zonal



area; the number, type and complexity of sources; and the available resources. For example, the geographic region covered by the Southern Zonal Office is highly industrialized. Table 1-2 provides the number of inspections by State conducted by the Southern Zonal Office from 1999-2003. Assuming that the technical staff have primary responsibility for conducting inspections, each of the four inspectors conducted 19 inspections in 2002-2003.

Table 1-2 CPCB Southern Zonal Office Inspections Conducted By State				
State	1999-2000	2000-2001	2001-2002	2002-2003
Andhra Pradesh	5	8	13	14
Karnataka	2	18	25	17
Kerala	2	3	7	8
Pondicherry	1	6	3	2
Tamil Nadu	2	10	22	32
Goa	-	6	3	2
Total	12	51	73	75

Unlike many countries, India does not have individuals who are employed solely to monitor and enforce the environmental laws/regulations. All individuals perform many diverse functions. This is especially true in the CPCB zonal offices where staffing is so limited that individuals are required to be familiar with environmental pollution from many industrial types, and across all environmental media (air, water, waste, etc.). For example, the Eastern Zonal Office reported the following responsibilities for environmental engineers.

- \* Coordinate with SPCBs.
- \* Conduct surprise inspections of polluting industries.
- \* Conduct surveillance of Water & Air Quality Monitoring Stations.
- \* Follow-up on CREP commitments, problem area action plans, public complaints, and court directives.
- \* Update pollution source inventories.
- \* Conduct performance evaluations of pollution control measures in selective industries.
- \* Conduct pollution assessments and monitor non-industrial sources such as vehicular pollution and leachates from solid waste sites.
- \* Conduct case studies on noise pollution.
- \* Review and monitor bio-medical, hazardous and solid waste management practices.

Completing all the responsibilities assigned to a zonal office is challenging and any unplanned, additional work creates difficulties completing the necessary work in a timely

manner. While the official work week is 40 hours, senior officers are required to work extra hours without compensation as part of their normal responsibilities, and junior officers work additional hours for compensatory time. Although all zonal offices visited by EPA expressed the need for more manpower at all levels, they stated that their most critical need was for additional trained engineers and scientists, not additional administrative support. The CPCB protocol requires that statutory reviews be conducted by individuals at a "senior engineer" grade level, and that they can not be performed by an individual at an "engineer" or "assistant engineer" level. The CPCB hiring practices require that new technical hires must have a masters in engineering or science, and start at the assistant environmental engineer level. Advancing to a senior level position can take many years and such advancement is often limited by the need to ensure a mix of levels and a quota on the number of senior level individuals that an office or division can have. Furthermore, promotion of individuals to senior levels is controlled by the senior political level. Promotions from Assistant Environmental Engineer to Environmental Engineer must be approved by the Chairman of CPCB and promotion from Environmental Engineer to Senior Environmental Engineer must be approved by the Minister of MoEF. Such personnel requirements do not make the most effective use of existing staff and adversely affect morale.

In addition to the technical/scientific staff, the CPCB has four attorneys in the Headquarters office. Again, these individuals have responsibilities beyond those associated with compliance and enforcement activities (e.g., reviewing/analyzing draft statutes and new regulations), and thus, the work years actually total less than four. As a result, few direct enforcement actions are taken by CPCB, with most of those taken managed by the zonal offices with the assistance of contract attorneys.

Beyond the technical/scientific staff, there are no professionals with specialized education and/or experience to address critical compliance and enforcement activities beyond those directly tied to inspections, and sampling and analysis. For example, there are no policy analysts or statisticians to develop strategic compliance plans with identifiable goals and measures of success; analyze statutes, regulations and compliance and enforcement issues to develop national policies; or evaluate the effectiveness of delegated state programs. There are no training specialists to develop and deliver compliance monitoring training materials. There are no computer experts to design compliance and enforcement data bases and develop systems to manage the flow, analysis, and use of the data. There are no communication specialists to facilitate communication between CPCB and SPCBs or among SPCBs. As a result, activities in these areas are minimal or non-existent at the national level.

The CPCB has the ability to use contracted services. As mentioned above, outside attorneys are hired to serve as counsel in preparing legal documents and representing the CPCB in court. However, in many substantive areas where manpower shortages are the most critical, contractors are not allowed to perform "inherently government functions". For example, contractors can not be used to collect a sample from an industrial outfall if that sample has the potential to be used in a court proceeding.



## State Government

As the primary implementing authority for India's environmental programs, States have a broad range of responsibilities such as: participating in the development and implementation of national initiatives; providing information to CPCB on programs and activities; establishing control programs for the State and issuing state-specific regulations as necessary; developing state policies and strategies; developing state data bases to manage and track activities; managing the consent to establish (CFE) and consent to operate (CFO) processes; developing facility-specific pollution inventories; establishing facility-specific norms; monitoring facility compliance according to established frequencies; providing compliance assistance; monitoring compliance with state or court directives; directing facility-specific environmental improvements; addressing complaints; meeting with the public to discuss environmental issues; initiating enforcement actions; and providing technical assistance in enforcement actions initiated by both the State as well as citizens.

Of these listed activities, a disproportionate amount of time is spent on the consent process--issuing consents and periodically renewing them. There is significant pressure on the State Boards from the regulated community to receive consents within the mandated time frame. The time for processing consents is relatively tight, and is exacerbated by the large number of facilities requiring consents and/or renewals within any given time period. This pressure often translates into political pressure from elected officials to expedite the consent process for individual facilities. There is also internal monetary pressure to issue consents as quickly and as efficiently as possible since the fees associated with the program represent a significant portion of the operating budget of many State Boards. As a result of this emphasis, there is limited time to address traditional compliance and enforcement activities such as compliance inspections.

The resources available at the state level vary greatly depending upon the size of the regulated community, the fees collected, and perhaps more importantly, the emphasis that a particular State places on environmental issues. Reportedly, some States have a limited staff of only a dozen, while other States have staffs with over 600 individuals. Some states do not have the resources necessary to purchase and maintain an adequate fleet of government vehicles to travel to and from inspections. Resources are also insufficient in some states to ensure that inspectors have monies for meals and board such that they are not forced to accept the hospitality of the regulated facility they are inspecting. This creates, at a minimum, the appearance of a conflict of interest.

As stated above, many SPCBs have established regional offices (called zonal offices in some states), and in the larger states, sub-regional offices have been established. This subdivision is necessitated by the total number of regulated facilities; the prescribed inspection frequencies; and the geographic areas and distances that must be covered when evaluating compliance. This reduces the response time to address complaints and provides a local presence for SPCBs.

Responsibilities of the regional and sub-regional offices vary from state-to-state, and depend greatly on which activities the central office believes can be delegated to these offices. As the primary field component of SPCBs, these offices conduct the majority of the inspections; take legal samples; review compliance with SPCB and court directions; and may take lesser enforcement actions, especially those involving the smaller and less polluting facilities.

Although local offices can be beneficial, they can increase overall operating expenses; exacerbate communication problems; spread the available expertise to the extent it is rendered ineffective; and result in inconsistent application and enforcement of environmental laws and regulations.

#### Case Examples:

The following two examples provide summary information on the resources available in two of the larger State Boards, and the major compliance and enforcement accomplishments in those states. They are illustrative of the workload challenges faced by SPCBs. They highlight the problem SPCBs face in addressing all regulated sources, and raise questions as to the thoroughness of the inspections, and whether compliance is being accurately assessed and addressed.

#### Maharashtra SPCB

The Maharashtra SPCB has 11 regional and 42 sub-regional offices throughout the State with the central office located in Mumbai. The staffing information for this SPCB is presented in Table 1-3.

Table 1-3 Maharashtra SPCB Staffing				
Department	Sanctioned	Filled	Vacancies	Dissolved
Chairman	1	1		
Member Secretary	1	1		
Technical	250	220	15	15
Legal	8	8		
Scientific	82	75	7	
Accounts & Administrative	378	351	27	
Total	720	656	49	15



These 656 individuals are responsible for addressing the 49,927 regulated facilities in the State of Maharashtra. Of these 656, the 220 technical are available for inspections, with the scientific staff providing analytical support. The facilities are classified as follows:

Red (high potential to pollute): 8,892  
Orange (medium potential to pollute): 9,008  
Green (low potential to pollute): 32,027

These facilities are then further categorized by the size of the capital investment:

Large (LSI)- > Rs500,000  
Medium (MSI)- Rs10,000-Rs500,000  
Small (SSI)- < Rs10,000

The Maharashtra policy for inspection frequency varies with color and size categorization, but all sources (49,927) have to be inspected at least once every three years. The policy for Large Red facilities is at least once per month, but not less than once per year. There are 1,031 Large Red facilities. In addition to inspections to evaluate compliance, the state conducts inspections as part of the consent renewal process. The national policy requires Red facilities to renew their permits annually.

In operational year 2002-2003, the Maharashtra SPCB conducted 13,298 inspections to determine compliance. If you multiply this number by three, that would equal 39,894 inspections. That number is approximately 10,000 short of the total number of inspections that would be required if all 49,927 facilities were inspected every three years as required by the Maharashtra guidance on inspection frequency.

During this same period, the SPCB also reviewed 678 complaints. They processed 9,264 CFEs, CFO, and renewals with 60 per cent of them being done by the regional or sub-regional offices. As part of the renewal process, the SPCB conducted 5,920 field inspections. Sampling activities included 13,540 effluent samples, 89 "legal" effluent samples, 1,608 stack tests, and 2,118 samples of hazardous waste. A total of 19,218 inspections were conducted during this time period. The average number of inspections per technical staff was 87 inspections per year.

The Maharashtra SPCB has recently been modifying its policies to cope with the workload demand. The SPCB has simplified the permit renewal process for certain categories of sources, and extended the life of the permits. The fees for processing the permit application have been increased to offset the reduction in renewal frequency. The Board also has reduced the workload burden on the senior level staff by delegating some decision-making responsibilities to regional and sub-regional offices. This delegation is differential, and based on both the size and potential-to-pollute categorization of the sources.

## Karnataka SPCB

The Karnataka SPCB has 27 regional offices in addition to the central office and laboratories. Bangalore is home for the central office and seven of the regional offices. Table 1-4 provides a summary of the staffing level for the Board.

Table 1-4 Karnataka SPCB Staffing			
Department	Sanctioned	Filled	Vacancies
Chairman	1	1	
Member Secretary	1	1	
Technical	190	126	64
Legal	7	1	6
Scientific	166	44	122
Accounts & Administrative	359	96	263
Total	724	269	455

As can be seen in the above Table, the SPCB is operating significantly below the sanctioned level. It does not have the authority to hire to the sanctioned level. In spite of this reduced staffing level, the Board is required to address 19,866 regulated sources, which are categorized as follows:

Red: 7,066

Orange: 3,349

Green: 9,441

In operational year 2001-2002, they conducted 1,705 inspections at Large sources, 1,528 inspections at Medium sources, 8,418 inspections at Small sources, and 1,134 other inspections. During the same period, 595 complaints were investigated. A total of 12,785 inspections were conducted during this time period. The average number of inspections per technical staff was 101 inspections per year, and this inspection rate has increased by approximately 10% per year.

In an attempt to raise revenue, the Board recently started charging industry for the cost of compliance monitoring that it conducts. This, however, does not address the inability of the Board to hire additional staff.



#### IV-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

##### EPA

The following data from the United States provides some basis for comparison, and is appropriate given that the two countries are similarly structured with a national program which includes regional/zonal offices, and state programs with further subdivisions within the state or delegations to local governments. Like India, the United States has other limited special authorities outside of the formal environmental bureaucracy that have partial responsibility for environmental programs such as fire departments for emergency releases or agricultural departments for issues dealing with pesticides usage and application. All numbers are approximate.

The EPA has a total of 18,000 employees located in the Headquarters office in Washington, D.C., the ten regional offices, and numerous laboratories and installations. Half of the employees are assigned to the ten regional offices. In FY 2004, EPA had 3,470 Full Time Equivalencies (FTE)<sup>2</sup> allocated to the compliance assurance goal which include administrative overhead, as well as environmental targeting; development of national strategies and policies; development and delivery of training; compliance monitoring; compliance assistance; data management; enforcement; and oversight and evaluation of state programs. In the United States, permitting activities are not included as part of the traditional compliance and enforcement program unless compliance and enforcement personnel review the permit for enforceability, or conduct a permit inspection. The EPA conducts relatively few permit inspections because this responsibility has been delegated to the states. Of the total 3,470 FTE assigned to compliance and enforcement programs, 900 are located in EPA Headquarters, and the remaining 2,570 FTE are in the regional offices.

1,200 individuals conduct compliance evaluations as part of their job. However, these 1,200 individuals are not full-time inspectors since they have other responsibilities. 350 FTE are budgeted for conducting inspections. In addition, there are another 100 FTE who conduct compliance investigations, but do not go into the field, and another 200 FTE that work as criminal enforcement agents.

The EPA has authority to supplement its inspection workforce with contractors and grantees in some programs such as underground storage tanks, mobile sources, and hazardous waste. There are over 100 such inspectors and they have authority in these programs to collect samples and evaluate compliance.

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<sup>2</sup> Please note: if there are 100 FTE allocated to a function, it does not necessarily mean that 100 individuals are assigned to that function. It could mean that 200 individuals perform this function on a half-time basis.

The EPA conducts approximately 18,000 inspections per year, which averages 33 inspections per year per FTE. This total includes multi-day team inspections of large sources, as well as single inspector inspections of smaller sources. These inspections are media-specific as a rule unlike the Indian inspections which are multi-media. For planning purposes, EPA estimates 220 work days per year. Under normal circumstances, it takes approximately one week in the United States to conduct a thorough inspection at medium-to-large sources. In addition to the site visit, this time includes targeting efforts; preparation time prior to the site visit to review past compliance history; and required compliance monitoring reports and records; evaluate similar facilities; prepare an inspection report; and provide assistance in any follow-up enforcement actions.

Of the total 3,470 FTE, 600 FTE are classified as attorneys, with 200 in Headquarters and the remaining 400 FTE in the Regions. They develop enforcement cases and resolve the majority of them through civil administrative procedures without involving the courts in the negotiations. An additional 12 FTE are assigned to staff the administrative appeals process.

#### United States State Governments

Based on the national compliance and enforcement data bases, the states conducted 84,400 inspections in FY 2004. The average number of inspections per inspector could not be calculated because EPA does not collect state data on FTE devoted to the environmental program. There is no data available on total local agency activities, but some larger local agencies conduct over 1,000 inspections per year.

#### Other Countries

After exhaustive literature searches via the Internet and discussions with colleagues, EPA was unable to locate data to evaluate and compare India's staff level with other countries. However, the Organisation for Economic Co-Operation and Development provides methodology for calculating total personnel needs according to the following steps:<sup>3</sup>

- \* Dividing facilities into categories according to their risk and precisely indicating how many facilities belong in each category (the division in India is available, but the overall numbers do not seem to be).
- \* Establishing the normal frequency of inspection per year (the national recommended standards are available, but may be too ambitious for the size of the available workforce).
- \* Estimating the regulatory effort per category, in hours or days spent at a certain type of facility (SPCB estimates vary, but are available in the larger states).

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<sup>3</sup> "Funding Environmental Compliance Assurance, Lessons Learned from International Experience" OECD, 2005, p. 42.



- \* Assessing the total time on inspection (this should include all of the activities discussed in the description of the EPA program).
- \* Assessing how much time (days) is spent annually on other tasks, annual leave, sick leave, meetings, etc.
- \* Calculating the effective time for inspection (days per year).
- \* Dividing the total time of inspection by effective time to evaluate the number of inspectors required (but not their profile, which is done separately).

## V. SOURCES OF REVENUE FOR STATE PROGRAMS

Very little of the operating budgets for State Boards comes directly from the Central Government, and the monies they do receive generally are not for compliance and enforcement activities.

They also receive very little from their respective state governments. As a general rule, the majority of resources are self-generated through fees. State Boards can receive up to 100 per cent of the fees collected for processing permit applications (CFEs, CFOs, and renewals), and up to 80 per cent of the CESS fees collected for water usage. However, the actual amount received may be less since this money is transferred to the SPCBs through the general state budget process. Not all SPCBs reportedly receive back the full amount. SPCBs also charge industry for laboratory analysis. However, the fees collected for this analysis may not be sufficient to cover the cost of the work. Currently, a national study is being conducted to evaluate the actual cost of providing sampling analysis and support to companies. In some states, such as West Bengal, State Boards are authorized to use monies forfeited through bank guarantee programs. Again, such monies are a relatively small source of revenue for the Board.

## VI. RECOMMENDATION

The following recommendation is in direct response to the background information reflected in this Chapter, but it incorporates findings and recommendations discussed in subsequent Chapters.

Recommendation 1: Advocate for more resources, and streamline current practices to maximize currently available resources.

The CPCB needs to continue to actively advocate for more positions for environmental compliance and enforcement programs at both CPCB and SPCBs. Successfully advocating for additional resources will require Boards to provide the appropriate authorities with more timely,

reliable data on compliance and enforcement activities, and develop quantifiable measures of success utilizing both output and outcome measures.

In the absence of a significant increase in resources, it is critical that the CPCB and SPCBs identify and develop ways to streamline current practices and processes to maximize currently available resources. Opportunities are discussed in the subsequent chapters and recommendations of this report, and include for example:

- \* Reassessing the balance between administrative and technical staff and fill vacancies with more technically competent individuals.
- \* Hiring and developing expertise beyond the traditional technical and scientific series to include attorneys, program analysts, computer experts, communication specialists, training experts, statisticians, etc.
- \* Establishing an inspector training program, and revising the personnel process to redefine and expand the responsibility of junior technical/scientific staff, and streamline the promotion process.
- \* Providing more independence to subordinate offices (e.g., CPCB zonal offices and SPCB regional offices) through delegation of added responsibilities.
- \* Developing standardized national policies and procedures for compliance and enforcement programs to avoid inconsistencies and duplication of effort by SPCBs.
- \* Developing better communication mechanisms to gather and distribute compliance and enforcement information, and thereby, avoid duplication of effort by SPCBs.
- \* Computerizing more of the compliance and enforcement information gathered and analyzed by staff.
- \* Shifting the focus of inspections so that more of the burden is placed on the regulated community to monitor compliance, and utilizing this self-monitored and self-reported data to enforce against violators.
- \* Developing civil administrative penalty authority by utilizing current statutory provisions to eliminate the need to initiate costly, resource-intensive and time-consuming judicial actions in the criminal courts.
- \* Conducting a comprehensive evaluation of cost recovery mechanisms, and the adequacy and allocation of current fees, and adjusting them accordingly.
- \* Evaluating potential new sources of revenue (e.g., penalties, bank guarantees).



## Rationale

As stated previously, obtaining the information necessary to document and evaluate the adequacy of resources at both the national and state level to implement India's environmental laws proved difficult. Piecemeal information was provided during meetings with CPCB, each of the CPCB zonal offices, and individual SPCBs. However, information on the total resources available at both the national and state level to implement the environmental laws was not available, nor was more specific information on the resources devoted to compliance and enforcement activities.

In spite of this deficiency in information, it is apparent that there are not sufficient resources at any level of government to adequately manage and implement the Indian environmental compliance and enforcement programs.

There are a number of factors that currently place a strain on the capacity of CPCB and SPCBs to fully implement their responsibilities and improve their infrastructure.

- \* The size of the country and the difficulty of travel have caused SPCBs to establish numerous regional and sub-regional offices. This allows for a quicker response to environmental problems and emergencies, and provides a visible presence of governmental authorities in local communities. Some states have more than 25 regional and sub-regional offices, plus separate laboratories. However, such a fragmented bureaucracy places monetary and structural strains on the Boards. This also places a strain on timely communication among the different offices which results in inconsistent implementation of regulations and interpretation of programs, and often times, duplication of effort. This can affect the perception of industry in siting and enforcement decisions. This very decentralized office structure is unique to India. In the United States, the only state that is similarly structured is the State of California.
- \* India has an aggressive environmental agenda. While this is desirable for protecting the environment and serving the public interest, it also places an implementing strain on the Boards. In the past few years, new programs have been introduced under the EP Act (e.g., hazardous waste management, bio-waste management, and control of plastics and used batteries) that have significant start-up needs and have added to the existing resource burdens without a comparable increase in resources.
- \* Because of the limited number of staff and the decentralized nature of SPCBs, technical staff necessarily have very broad responsibilities. While the technical staff are well-educated, dedicated, and hard working, the range of their responsibilities and the diversity of the regulated community makes it challenging to address the regulated universe and develop expertise in any given area.



- \* Although they are well-educated and generally competent, junior level staff are not able to conduct the full range of compliance activities. For example, in some SPCBs, they are not allowed to lead inspections and make compliance determinations, except in very rare situations. This minimizes their effectiveness, and increases the workload on senior level staff who usually work more than 40 hours per week without compensation to accomplish their assignments.
- \* Staff are generally hired at the entrance level and work their way into a senior position over time. Progress is hampered, however, by the relatively few senior level positions in both CPCB and SPCBs and the seemingly low turn-over rate. Furthermore, promotions are at the discretion of high level officials rather than those working most closely with the staff. For example, in CPCB, promotion to the senior level requires approval of the Chairman of MoEF. While this provides consistency, it adversely impacts morale and can be a disincentive for choosing public service as a career.
- \* Some SPCBs reported that they have not been able to hire up to their authorized staff targets due to budget restrictions and/or authorization constraints. Although the Boards can hire contractors to supplement their permanent staff, these contractors can not be used for work that is inherently governmental in nature (e.g., taking a legal sample).
- \* The unusually large number of sources combined with the aggressive environmental agenda generate a significant amount of paperwork. Most SPCBs lack the resources to develop the necessary computer systems to manage information flow and to track activities. As a result, a large amount of time is spent on administrative activities instead of actions that reduce pollution.
- \* Certain functions such as collecting CESS fees and fees to process CFEs and CFES are a significant source of revenue and comprise a large portion of the operating budgets for SPCBs. Thus, these functions are often given priority over other responsibilities that directly reduce pollutant loadings. In spite of the priority these activities receive, the Boards still fail to collect all the fees to which they are entitled (e.g., local bodies).
- \* Regulated facilities gather and maintain a significant amount of compliance and enforcement data at the direction of the Boards, but the information is not used as direct evidence of a violation. The perceived need to collect legal samples for all enforcement actions creates a burden and significantly reduces the ability of SPCBs to effectively monitor the continuing compliance status of regulated sources.
- \* The regulated community is encouraged to challenge the authority of the Boards because there is an extensive backlog of cases, and a number of courts are reluctant to hold industry accountable for environmental violations when there would be significant economic consequences. This further adds to the overall workload of the Boards.

\* The Supreme Court and High Courts are very active in environmental management. Although this activity has advanced India's environmental agenda and brought about environmental improvements, it has resulted in more work for the Boards because of the court-ordered directives. This unplanned work adversely affects the ability of the government to systematically address priority programs.

## CHAPTER 2: MONITORING COMPLIANCE

Monitoring compliance is critical to detect and correct violations; provide evidence to support enforcement actions; and evaluate program success. There are four potential sources of compliance information: (1) inspections conducted by program inspectors; (2) self-monitoring and self-reporting by the regulated community; (3) citizen complaints; and (4) monitoring environmental conditions near a facility.

Inspections are the backbone of most programs. They provide the most relevant and reliable information, but they can be very resource-intensive and time-consuming, and require careful planning to be efficient and effective. Standardized procedures are required to ensure that all facilities are treated equally, and that all necessary information is gathered.

Self-monitoring and self-reporting provides more extensive information on compliance, and shifts the burden of monitoring to the regulated community. It also increases the level of management attention devoted to compliance within a facility. However, it relies on the integrity and capability of the facility to provide reliable, accurate data, and significantly increases the facility's monitoring burden and paperwork.

Citizen complaints can detect violations that are not detected by inspections or reported by industry through their self-monitoring activities. However, this type of monitoring is sporadic and the government can not control the amount, frequency or quality of the information received.

Area monitoring is useful in detecting potential violations without entering the facility. However, it can be difficult to demonstrate a connection between the pollution detected and the specific source. It also is difficult or impossible to obtain precise information.

Additional information may be available from other sources such as government agencies with related functions (e.g., health departments), or environmental audits by third parties. Regardless of the source of information, a computerized system to store, access, and analyze the information is essential.

### I. PROGRAM POLICY AND GUIDANCE

CPCB asserted that they develop policies and implementing guidance as needed for the compliance and enforcement program. CPCB has developed national strategies to address groups of major polluters. Examples of such plans are the Ganga Action Plan<sup>4</sup> to address "Grossly

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<sup>4</sup> Initially, 264 industrial facilities were identified by the states of Uttar Pradesh, Bihar, and West Bengal through which the Ganga River flows. Sixty-eight of these facilities were classified as GPI. Through the Action Plan, the three SPCBs, with coordination and support



Polluting Industries”(GPI)<sup>5</sup> on the Ganga River; the list of 17 industrial categories<sup>6</sup> with a high pollution potential for air, water and/or hazardous waste;<sup>7</sup> and the Charter on Corporate Responsibility for Environmental Protection (CREP)<sup>8</sup>. Each of these strategies identified goals, and provided implementation strategies and time lines for meeting those goals.

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from CPCB, focused on increasing compliance monitoring of the targeted facilities; directing either the shutdown of a facility or the installation of new or upgraded effluent treatment plants; and bringing court action. By 1995, all 68 facilities reportedly had either shut down or had new or upgraded effluent treatment plants. The success of this initial program led to the classification of an additional 119 facilities along the Ganga River as GPI in 1997. By 2000, all but one facility reportedly had either installed an effluent treatment plant or been shutdown.

Following the success of the Ganga Action Plan, attention was directed in 1997 to address all GPI facilities that were discharging to rivers and lakes throughout India. Under this subsequent strategy, 851 facilities were identified for increased SPCB attention with coordination by CPCB. The strategy called for additional inspections, directives ordering compliance by specific dates, and actions brought against defaulters. Reportedly, as of 2000, 228 were closed, 589 installed the required effluent treatment, and only 34 facilities had not yet complied with the directives.

<sup>5</sup> A “Grossly Polluting Industry or GPI is defined as a facility that discharges 100 kg/day or more of BOD and does not have an adequate effluent treatment.

<sup>6</sup> Aluminum, Cement, Chlor-Alkali, Copper, Distillery, Dyes & Dye intermediates, Fertilizer, Iron & Steel, Oil Refineries, Pesticides, Petrochemicals, Pharmaceuticals, Pulp & Paper, Sugar, Tannery, Thermal Power Plants, and Zinc.

<sup>7</sup> The SPCBs identified 1551 non-complying facilities within these 17 categories. Initially, the strategy was similar to the Ganga Action Plan with an increased number of targeted inspections; directives; restrictions on consent renewals; and bringing court actions. However, in 1996, the Central Government under the EP Act began to take direct action against non-complying facilities. Out of the initial 1551 non-complying facilities, 1351 facilities reportedly have installed the necessary control equipment to achieve compliance; 178 have been shutdown; and legal action has been taken against the remaining 22 defaulting facilities. See the 2002-2003 Ministry of Environment and Forests Annual Report.

<sup>8</sup> The CREP was released in March 2003, and is applicable to 2098 units in 17 categories of major polluting industries. It is a voluntary initiative by the participating units to ensure compliance with pollution control norms and standards. Voluntary measures include modernization of equipment and technology upgrades of productions processes; changing to new technologies; minimizing waste through the reduced use of raw materials and the recycling of wastes; improving housekeeping practices; and furnishing of bank guarantees by the defaulting industries until compliance is achieved.

The only implementing guidance referenced by the CPCB or any of the SPCBs was guidance associated with the classification of industries (Red, Orange, Green, and Large, Medium, Small), and the recommended inspection frequencies for facilities within each category. EPA was unable to obtain a copy of the guidance from either the CPCB or any of the individual SPCBs. Furthermore, individual states seemed to have differing interpretations of the guidance, and did not agree with the CPCB on the binding effect of the guidance since most have adopted different categories and inspection frequencies as discussed earlier. No other implementing guidance dealing with important issues such as the definition of an inspection; a definition of compliance; minimum consent requirements; the time frames for issuing directives; minimum data requirements; reporting requirements including schedules, content, and format; enforcement response plans; and regulatory interpretations were identified. In comparison to the technical documents developed and widely distributed by CPCB, there is no list of available compliance and enforcement-related documents, nor a central repository for this type of information

## I-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

### United States

EPA has traditionally been very active in developing national implementing guidance for each of the media-specific programs, and issuing statutory/regulatory interpretations for industry sectors in general and for individual facilities. Initially, the Agency did not have a uniform system for cataloguing and distributing these policies, and implementing decisions. This lack of organization adversely affected implementation of the program. To address the problems that arose, EPA established a formal docket system with hard copies of all policies and guidance documents issued by the Agency, and subsequently made them available via the Internet to all interested parties. In addition, EPA developed media-specific, publicly available, computerized systems to index Agency regulatory interpretations and applicability determinations. For example, under the air program, the Clean Air Act Applicability Determination Index (ADI) was developed for all decisions issued since the 1970s pursuant to the stationary source regulations. Currently, the ADI stores approximately 2,500 separate determinations and is available to the public on the EPA website. This significantly reduced the staff time needed to respond to regulatory questions and had the added benefit of placing industry on notice of EPA's position on implementation issues. This public notice and the precedence established in the process have enabled EPA to settle more cases without court involvement, and when court action is required, EPA has a stronger argument.

## I-2. RECOMMENDATION

Recommendation 2: Develop policies and implementing guidance to assist the zonal offices and SPCBs in implementing compliance and enforcement programs. As these policies and guidance



are developed, effective organization will necessitate that a system for cataloguing and distributing the guidance in a timely manner also be developed.

In addition to policies and guidance developed by the CPCB, this effort should include any major decisions or statutory/regulatory interpretations made by the CPCB or SPCBs that establish precedent, or have a national or multi-state impact. A computerized database of these documents would be the most efficient method of distribution, but is not necessary provided there are other recognized means of publication that are known and readily available to the all State Boards, the regulated community, and the public.

### Rationale

There is very little national implementing guidance for the compliance and enforcement program. As a result, SPCBs are forced to interpret statutes/regulations and design implementing programs on an ad hoc basis as they see fit. National guidance and a system for distributing this guidance and associated regional interpretations will:

- \* Enable SPCBs to make more efficient use of limited resources since staff will not have to analyze issues anew if CPCB or another Board has already addressed the issue.
- \* Enable SPCBs to implement programs in a fair, consistent and predictable manner.

## II. PROCESS OVERVIEW

### Central Government

Within the CPCB, the zonal offices conduct the majority of inspections. Experts from the CPCB Headquarters and/or the SPCBs may be used to supplement the zonal staff on certain in-depth studies of industry and special investigations

For the CPCB zonal offices, much of the targeting is done through the annual action plan. The plan, which is prepared by CPCB Headquarters in consultation with the zonal offices, identifies the number and types of inspections each zonal office should accomplish during the year. These inspections may be associated with a national strategy, a special project within the zonal area, the Environmental Surveillance Squad (ESS) program, or a court obligation. Inspections that are not covered in the annual action plan include public complaints of a significant nature, political inquiries, requests from SPCBs, or unplanned requests from CPCB that do not fall within the scope of national strategies.

As an example of the types of inspections that are conducted at the zonal level, Table 2-1 provides a breakdown of inspections by purpose for the Eastern Zonal Office. The Table covers inspections from 1998-2003 in that zonal area.



Table 2-1 CPCB Eastern Zonal Office Inspections Conducted By Purpose						
Purpose	1998-99	1999-00	2000-01	2001-02	2002-03	Total
R&D	1	29	57	36	18	141
ESS	45	89	13	8	26	181
Hazardous Waste	-	3	29	21	17	70
Court Directives and Public Complaints	9	7	13	27	3	59
Total	55	128	112	92	64	451

Zonal office inspections are usually more extensive than SPCB inspections and often take several days to complete. They not only collect samples, but review the process and control equipment as well. As a result, they believe that their compliance inspections generally identify more violations at a given facility than the compliance monitoring activities of SPCBs. If the zonal office intends to collect a legal sample to determine compliance, they are required to give the facility advance notice; however, notice can be given at the time of arrival at the facility. Generally, more advance notice is given if a stack test is required, which almost guarantees that the results will not be indicative of normal operating procedures. Usually, the zonal office monitors the facility's operations during a test to ensure that the facility does not manipulate the process during the actual testing. Inspections by the zonal offices are often attended by inspectors from the relevant SPCB, but they are not required to be present. Such inspections serve as a training opportunity for new state inspectors, and also provide the zonal office with an opportunity to obtain unbiased, more in-depth information about a facility from the state inspector who generally is more familiar with the facility.

As stated above, the zonal offices, in conjunction with experts from CPCB Headquarters and SPCBs, also conduct special investigations of industrial sectors to evaluate industry practices and the efficiency, accuracy and reliability of specific types of controls. These investigative studies provide a well-documented analysis of the industry, and are useful in understanding industrial processes, environmental controls, regulatory requirements, and identifying opportunities for more efficient, cost-effective controls and pollution prevention opportunities. These studies usually are published and made available to industry and the public for a nominal fee.

#### State Government

As discussed earlier, the CPCB developed an industrial classification system relating to both the potential-to-pollute and the size of capital investment as a means to facilitate the administration of India's pollution abatement and control program. This classification system

drives the compliance monitoring activities of SPCBs, and is the primary tool for targeting state inspections.

With respect to potential-to-pollute, facilities are categorized as Red, Orange, or Green as described in Chapter 1. There is a total of 64 types of industries nationally that have been categorized as Red on the basis that they have a significant potential to pollute or generate hazardous waste. There are 25 types of categories categorized as Orange, and an illustrative list of 55 categorized as Green.

With respect to the size of capital investment, facilities are categorized as Large, Medium, or Small as also described in Chapter 1.

CPCB developed guidance on national inspection frequencies and permit renewal cycles for each category, but none of the State Boards had copies of the guidance. In spite of this guidance, the frequencies varied among the States, with each asserting that their frequencies were consistent with the national policy. The Boards altered the guidance to meet their unique State needs and priorities, as well as to take into consideration the available resources. One approach has been to re-define the categories. For example, the West Bengal SPCB further classifies Red facilities as "Special Red" and "Ordinary Red". Another approach has been to modify the number and types of facilities in a given category. For example, the Andhra Pradesh SPCB includes a total of 95 types of industry in their Red category instead of the national standard of 64. The Gujarat SPCB has included 54 types due to the industry composition in that State. Yet another approach has been to change the inspection frequencies. These frequencies are influenced by the number of facilities in a given category, and the resources available to address the category. Table 2-2 reflects some of this variation.

Table 2-2 Inspection Frequencies			
State	RED	ORANGE	GREEN
Gujarat (19,000 total facilities)	once per month	once every 6 months	once a year
Andhra Pradesh	once every 2 years (1,114 facil.)	once every 3 years (3,608 facil.)	once every 5 years (625 facil.)
West Bengal	once every 2 years (6,103 facil.)	once every 3 years (7,474 facil.)	once every 5 years (5,959 facil.)

The state of Orissa further refines the frequency by overlaying the size of the facility on the potential to pollute category. Table 2-3 summarizes Orissa's frequency:



Table 2-3 Orissa SPCB Policy on Frequency of Inspections		
Industry Size	Category	Frequency of visits and sampling
LSI & MSI	RED	At least once per quarter
LSI & MSI	ORANGE	At least once per year
LSI & MSI	GREEN	At least once in two years on a random check basis
SSI	RED	At least once per year
SSI	ORANGE	At least once in three years
SSI	GREEN	At least once in five years on a random check basis

Given the available resources, many of these established evaluation frequencies do not appear to be realistic. Regardless of the frequency used, State Boards have difficulty in meeting them, and often the quality of the inspection suffers in order to attempt to meet the mandated frequencies. Less time is allocated per inspection, and thus the reported inspection is not as thorough or as comprehensive as perhaps it should be. Since there is no standardized definition of an inspection, it is difficult to assess whether the inspections are adequate, or to compare the level of activity from state-to-state.

The SPCBs are viewed under the laws as the primary compliance monitoring entities in India. Therefore, they conduct a tremendous number of inspections per year, and a significantly larger number of inspections than CPCB. No nation-wide statistics were available, nor was state information uniformly available for the same time periods. However the following information from different time periods is illustrative of the number of inspections being conducted annually. For example, in 2001-2002, Karnataka had 70 available individuals who conducted 13,380 inspections. In comparison, the Southern Zonal Office conducted only 25 inspections in Karnataka during this same time frame. In 2002-2003, the Maharashtra SPCB conducted 13,298 compliance inspections with approximately 220 individuals. In 2002-2003, Orissa CPCB conducted 2,260 inspections with approximately 43 available technical staff. In 2003-2004, Andhra Pradesh committed to 8,800 inspections with approximately 140 individuals available to conduct inspections.

The level of inspection activity in any state is influenced heavily by the type and level of other compliance monitoring activities that are undertaken in a given year, and the resources available to conduct these activities. For example, Maharashtra was responsible in 2002-2003 for conducting a range of activities as illustrated in Table 2-4 below.



Table 2-4 Maharashtra SPCB 2002-2003	
Inspections for Consent Renewals	5,920
Compliance Inspections	13,298
Effluent Samples	13,540
Law Evidence Effluent Samples (for court action)	89
Stack Tests	1,608
Hazardous waste samples	2,118
Complaints	688

These activities are illustrative of the activities of other states; however, the actual numbers vary. For example, the Karnataka SPCB responded to 672 complaints in 2001-2002 in addition to the 13,380 inspections they conducted during that time frame. The Orissa SPCB took 1,400 effluent samples and conducted 340 stack tests in addition to the 2,260 inspections conducted in 2002-2003.

Notice of an inspection is required, but it can be given upon arrival at a facility. Inspections at the state level are multi-media inspections which address air, water and hazardous waste requirements. As such, they require inspectors to have in-depth knowledge of each of the environmental statutes and implementing regulations. Many of the state inspection programs focus primarily on collecting legal samples in each of these media to determine compliance, and due to a variety of factors, many of these programs are further limited to the collection of legal water samples. Water samples are relatively easy to obtain, and can be collected relatively quickly with minimal effort and time. Sampling points are defined in the CFOs, and generally do not require special equipment or tools to collect. The sampling procedures are straight-forward and well-publicized. Facilities are accustomed to this type of routine sampling, and are prepared to provide such a sample. Furthermore, this type of sampling provides a source of fees to SPCBs, although the fees may not be sufficient to cover the cost of the sampling and analysis by the state.

In contrast, few legal air samples are collected. Often the legal sample must be collected through a stack test. Generally such tests require advance notice before the day of the inspection; thus, providing the facility an opportunity to ensure that they pass the test and can demonstrate compliance with the air standards. Such tests are very resource intensive, require specialized instrumentation, and require training that most inspectors have not had. Sampling procedures are not well-defined or understood by the inspector or industry; access points are not defined in the CFO's; sampling ports may not be accessible, or if accessible, unsafe; and inspectors are not covered by state-sponsored insurance in the event of an accident. Given that these tests usually

are not representative of a source's operation, few legal tests of compliance with air standards are conducted.

Sampling and analysis of hazardous waste suffers from similar problems. Sampling procedures are not well-defined or understood and sampling points are not defined. Hence, there is often disagreement between the SPCB and the regulated facility on the results of any such tests and whether they demonstrate non-compliance with the standards.

During inspections, state inspectors also have responsibility for evaluating facility compliance with other programs that are not directly related to emission requirements, such as recycling and reuse programs, and "greening" programs. For example, they evaluate the number of trees that have been planted and survived within a given time frame to determine whether India is meeting its overall goal to reforest the country. They evaluate whether the water used to irrigate these trees is wastewater from the facility, and use that information as an indication of whether the facility is meeting effluent standards.

Inspections generally can be conducted only by senior staff. Junior personnel are precluded from conducting separate inspections even at smaller, less polluting facilities. They may, however, collect legal samples at smaller facilities in some states. This approach does not make efficient use of capable, well-educated (masters degree) individuals, and significantly reduces the number of personnel available for conducting inspections. Furthermore, there are limited opportunities for advancement to the more responsible senior levels and interesting work which adversely affects morale.

The amount of time to complete an inspection is a function of the complexity of the facility; the type of inspection that is being conducted (e.g., whether an effluent sample or stack test is being conducted, or whether it is simply a walk through to see if anything has changed since the last inspection); the size of the inspection team (e.g., Andhra Pradesh uses an inspection team at larger, more complex facilities consisting of a senior environmental engineer, and an assistant or junior engineer, and a driver); the experience of the lead inspector; and the proximity of the facilities to one another (i.e., the closer together, the less traveling time). Estimates ranged significantly from state-to-state. One inspector indicated he could conduct inspections at two large facilities in one day. Another indicated that he could do a total of seven inspections at large and medium facilities in one day. Another indicated that he could conduct 20-30 inspections at small facilities in one day.

Regardless of the size of facility, there is tremendous pressure to complete inspections as quickly as possible. There are a number of reasons for this. The primary reason is the overwhelming workload of inspectors. They have a tremendous number of facilities to visit, and compliance inspections are only a part of their overall responsibilities which extend beyond those traditionally associated with compliance and enforcement such as issuing CFOs. Furthermore, greater priority is placed on issuing consents as quickly as possible in part because they are a primary source of funds in SPCB operating budgets. Another reason is that the inspection is not



considered complete until an inspection report is filed incorporating the checklist results and notes taken during the site visit. In addition to the inspection report, they must send follow-up letters to the facility to confirm agreements reached and tasks to be performed; and process any samples that were collected. These efforts can be quite time-consuming. Remote locations and the travel time between sites are additional factors that add pressure to complete inspections as quickly as possible.

Many inspectors have a great deal of knowledge of facilities based on prior inspections, and the more detailed consent renewal visits. This mitigates the need for detailed inspections on every visit. However, the limited scope of many inspections, the time spent on activities not directly related to compliance, and the average amount of time spent on a given inspection raises questions as to the adequacy of the inspections in evaluating compliance; the accuracy and reliability of published compliance rates; and whether India is meeting its pollution reduction goals.

Some SPCBs have developed special teams to supplement their regular inspection resources. However, these teams are for targeted activities and provide minimal assistance in alleviating the overall inspection burden. For example, the Andhra Pradesh SPCB has established three Task Force Inspection Teams that report directly to the Member Secretary. They are used primarily to investigate complaints throughout the state as opposed to conducting routine compliance inspections.

Several SPCBs indicated that they rotate their inspectors within their state to prevent them from becoming too "friendly" with industry. The Karnataka SPCB rotates its inspectors every three years. While this approach does reduce familiarity with industry and the opportunities for corruption, it is very disruptive to the personal lives of inspectors who often are forced to live separate from their families. It is difficult to relocate families, especially those with school-age children, every three years, and it is expensive to maintain two households on the government salary. This reduces morale within the inspector workforce; discourages qualified individuals from pursuing careers with the state government; and provides an incentive for good inspectors to leave the workforce for more desirable jobs in industry.

Rotation of inspectors undoubtedly reduces familiarity between inspectors and facilities, and minimizes the opportunities for corruption. However, it does not entirely solve the problem. Due to scarce government resources, and the remote location of facilities with no publicly available overnight accommodations, inspectors accept meals prepared by regulated facilities, and stay overnight at facility guest houses when conducting inspections of the facilities. This creates, at a minimum, the appearance of a conflict of interest.



## Case Studies:

### Karnataka SPCB

During the visit to the Karnataka SPCB, EPA accompanied the SPCB personnel on two inspections to observe the procedures and process used by inspectors. Both inspections were considered to be routine inspections of complex facilities. The EPA observations of the inspections are included as Attachment 1.

The first inspection was conducted at the MICO plant. This plant manufactures fuel injection equipment for diesel engines, and employs approximately 5,000 individuals. As a Large RED facility, it is normally visited once a month when legal samples are taken and routine (non-legal) sampling of effluents is done. A deputy environmental officer for the Karnataka SPCB with 16 years of inspection experience led the inspection. He had responsibility for the southern portion of the city of Bangalore, which includes 165 major facilities. Consistent with state practice, he routinely inspects the same facilities and had been to MICO on numerous occasions. The inspection team consisted of the deputy environmental officer and an assistant who collected the effluent samples. They were accompanied by a driver. A representative from the facility accompanied the team at all times. The on-site inspection took approximately three hours.

The second inspection was conducted at Cipla, a large pharmaceutical operation. It too was categorized as a Large Red facility. The inspection was led by a different, but equally qualified and experienced, deputy environmental officer for the Karnataka SPCB. The team consisted of the senior inspector, an assistant inspector, and a sampling assistant. They were accompanied by a driver. A representative from the facility accompanied the team at all times. The on-site inspection took approximately three hours.

The lead inspectors for both inspections conducted and documented their inspections in different ways, but overall, they were well-qualified (educated and experienced); and very knowledgeable of the individual facilities, the applicable environmental requirements, and the procedural requirements and norms. Both commanded the respect of the facility management based on this knowledge and experience. They had reviewed facility files prior to the inspection, and were aware of previous compliance problems and the directions that were given to address them. They were alert to changes in operation and physical conditions since their last visit and quick to question them. Both reviewed on-site, self-monitoring records and asked questions about the records, but viewed them only as an indicator of compliance since they did not believe that the data from such records could be used for enforcement, nor did they trust the accuracy of the data. Exit interviews with facility personnel were conducted and a detailed description of the inspectors' findings were provided. Inspection reports were prepared immediately following the inspections and letters with directions were sent to the facilities.

## Maharashtra SPCB

The positive experience with the Karnataka SPCB was replicated when EPA accompanied inspectors from the Maharashtra SPCB on site visits to cement plants and thermal power plants in the State. The inspectors were well-qualified, and very knowledgeable of the individual facilities, the applicable environmental requirements, and the procedural requirements and norms. As a result, they too commanded the respect of the facility management based on this knowledge and experience. During the site visits, the inspectors noted changes in operation since their last visit and checked progress on directives issued by the State as a result of previous inspections. Although the purpose of the visits was educational as opposed to evaluating compliance, the inspectors noted on-going particulate matter (PM) violations at one facility based on a review of continuous monitoring data.

The PM violations were identified at an extremely large government-owned thermal power plant, and highlighted the difficulty faced by State Boards in effectively addressing such violations. The State could initiate an enforcement action in the courts, but the action would be time-consuming and it would be years before the violations were addressed and the matter resolved. Furthermore, the inspectors did not believe that the self-monitoring data required by the State (continuous emission monitors documented emissions well above the standard over an extended period of time) could be used as direct evidence of a violation, and that a legal sample obtained through stack testing would be required to document the violations. The State could threaten closure, but this action is unrealistic given that India has critical energy needs that must be met, and shutting down one of the largest power plants and thus power to major portions of the country is not a viable option. No penalties could be levied by the State Board for continuing non-compliance since the Board does not believe it has this authority. Hence, the only option is to negotiate a compliance schedule to resolve the underlying violation. Given the lack of real enforcement options available to the State Board, the Board is at a distinct disadvantage in any negotiations and has no real leverage to compel the facility to comply with the norms as quickly as possible. A citizen suit was deemed the best approach for obtaining compliance in a timely manner.

### III. SELF-MONITORING, SELF-RECORDKEEPING, AND SELF-REPORTING

The Government requires sources via regulation and through CFOs to self-monitor, maintain records, and self-report specific pollutants and parameters in both the air and water program. For example, in the air program, it requires facilities to monitor pollutants such as sulfur dioxide, carbon monoxide, nitrogen oxides, particulate, and metals. In the water program, facilities monitor parameters such as total coliform, turbidity, pH, color, odor, taste, and pollutants such as phenolic compounds, pesticides, metals, fluoride, nitrate, chlorides, and sulphate. The monitoring frequency and methodology varies for each. Facilities are required to maintain records and report the information periodically to the Government.



In spite of the wealth of information being gathered and maintained by individual facilities on compliance, the Government does not use any of this information to document a violation, and initiate an enforcement action in the courts. They may, however, use the information as an indicator of compliance, and some may issue directives, or in rare instances, threaten closure to motivate a voluntary change and avoid having to take a "legal sample". The rationale for this approach lies in the interpretation of pertinent sections of the Water, (Section 21) Air, (Section 26), and EP (Section 11) Acts dealing with the taking of samples. They have been interpreted to require legal samples as evidence in any enforcement actions brought to the courts.

If the Government takes a sample for use as evidence in court under any of the major environmental statutes of India, the Government staff collecting and analyzing the data must be delegated and certified to conduct the task and follow procedures established in the laws and regulations. The sampling procedures to create a legal sample are time consuming and provide a number of opportunities for procedural error. Several SPCBs reported that the main reason the courts (especially the lower courts) have ruled against the Government is due to sampling procedure deficiencies.

### III-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

Increasingly, self-monitoring, -recordkeeping and -reporting are being recognized as providing essential data to supplement and support inspections. This approach is well-established and accepted in addressing environmental compliance and enforcement problems. Countries such as the Netherlands, Germany, the United Kingdom, and the United States make full use of this information, and others such as Thailand, Mexico, Hungary and Japan are expanding the use of this information.<sup>9</sup> The European Union (EU) has stated:<sup>10</sup>

Because of its benefits, self-monitoring is likely to develop into an important requirement of EU environmental legislation. Integrated Pollution Prevention and Control (IPPC) already provides for self-monitoring to be introduced in permits. However, Criminal Law is the responsibility of member states and is beyond the scope of EU powers. It is important, therefore, that national legal systems:

\* provide the competent authorities with appropriate powers to impose requirements for self-monitoring on the operator;

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<sup>9</sup> See the NIECE Report, "International Comparison of Source Self-Monitoring, Reporting, and Recordkeeping Requirements" 1996.

<sup>10</sup> See the IMPEL report, "Operator Self-Monitoring" February 1999.



\* allow self-monitoring data to be used for enforcement action against companies and do not consider it inadmissible on the grounds of self-incrimination.

In the United States, data gathered through self-monitoring, -recordkeeping, and -reporting are relied upon extensively to determine compliance and take enforcement actions. For example, the requirements for effluent discharges were established in the 1972 Clean Water Act (CWA) Amendments, and were implemented through a discharge permitting program, the National Pollution Discharge Elimination System (NPDES). The NPDES program forms the primary basis for monitoring compliance of both municipal and industrial effluents. Implementation of this program is generally delegated to the states. Each facility with a NPDES permit is required to monitor pollutants (frequency and required methodology are prescribed in the permit); report all monitoring results to the state environmental agencies (EPA, where not delegated) at least annually; maintain records for inspection by the Government; and report violations monthly. Virtually no supplemental sampling of effluents is conducted by the Government. Up until the early 1990s, CWA enforcement actions by both EPA and state agencies were driven by this self-monitoring and self-reporting approach, and approximately 90 per cent of all water enforcement actions, including administrative and civil judicial, were based on self-monitoring data as the prima facie evidence of a violation. Subsequent to that time and as a result of significant improvement in NPDES compliance rates, water enforcement activities have shifted to other programs where self-monitoring is not required or in some instances, not feasible.

Based upon the success in the water program, the United States amended the Clean Air Act (CAA) in 1990 to require more self-monitoring and self-reporting in air regulations and permits. The most sophisticated self-monitoring program is the acid deposition program which requires continuous emission monitors, and electronic reporting of data to the Government. Most programs however are not as sophisticated. They require facilities to monitor, maintain records, and report on facility-specific operating parameters and process conditions, pollutant emissions, and work practices. Certain upset conditions must be reported immediately, with other information required on a monthly, quarterly, semiannual, and/or annual basis. To ensure the integrity of the data, EPA requires facilities to self-certify their compliance annually and makes all of the underlying information publically available. Senior company officials are personally liable for false reporting. Falsification of data is considered one of the most serious offenses in the United States, and may be prosecuted criminally. Sanctions involving substantial penalties and imprisonment are available. This criminal authority and the actual use of it by the Agency has reinforced the importance of self-monitoring and -reporting requirements, and ensures the accuracy and reliability of the data.

As a result of the changes to the CAA, the number of cases based on self-monitoring and self-reported information has increased, and currently accounts for 10-15 percent of the enforcement actions taken.

### III-2. RECOMMENDATION

Recommendation 3: Establish the authority to use self-monitoring, self-recordkeeping, and self-reporting as direct evidence of a violation in the courts (and administratively should such a process be established); develop and distribute the necessary policies and implementing guidance; and provide training to SPCBs.

Based upon a review of India's environmental statutes and regulations, it can be argued India has the authority to implement such an approach.

- \* Each of the major environmental statutes imposes a general requirement on sources to comply with environmental standards. For example, Chapter III, Section 7 of the EP Act states: "No person carrying on any industry, operation or process shall discharge or emit or permit to be discharged or emitted any environmental pollutants in excess of such standards as may be prescribed."

- \* Each of the major statutes has provisions pertaining to the collection of legal samples by the Government or "any officer empowered by it in this behalf" and the specific steps that must be taken for the collected information to be admissible as evidence in any legal proceeding. These provisions, however, are in a dedicated section that relates only to taking and analyzing samples by the Government. They do not require that a legal sample be taken in all instances, nor do they extend to situations where information other than a legal sample (e.g., self-monitored data on temperature and pressure drop in a baghouse) is being obtained.

- \* The argument that a legal sample is not required in all circumstances is supported by provisions that allow the Government to seize all records and documents that may furnish evidence of an offense (e.g., self-monitored and self-reported information required pursuant to existing regulations and CFEs and CFOs conditions).

- \* It follows that if the Government can seize information, it can utilize the seized information to take an enforcement action and prove a violation in court. Each of the statutes authorizes the Government to take action where "it is apprehended" that pollution has occurred or is likely to occur. In its common, everyday usage, the term "apprehend" means "to take hold of mentally; perceive; understand." Hence, the Government does not need to have a legal sample before taking legal action, but can rely upon a mere understanding that a violation has occurred or may occur. This "understanding" can be acquired through analysis of self-monitored and self-reported data.

There is support for this approach of utilizing self-monitoring data to demonstrate non-compliance. An audit report on the State Government of Kerala by the Comptroller and Auditor General (CAG) of India for the year ending March 31, 2001, documents the understanding of certain governmental representatives that self-monitoring data is useful for proving an environmental offense. The CAG determined that the SPCB did not conduct a sufficient amount



of stack tests for consented units under its authority. In the absence of the monitoring data that could have been collected by such tests, the CAG noted that the Board was therefore dependent upon the self-monitoring reports that the consented units were required to submit at fixed dates. However, not all self-monitoring reports were submitted as directed. As a result, "monitoring of emissions of industries was inadequate. In the absence of proper monitoring, cases exceeding emission standards were not detected and legal provisions against the defaulting units not invoked."

Assuring the integrity of the data is critical for the success of any self-monitoring or reporting program. India has sufficient enforcement authorities to ensure data integrity. For example, the Government can shut down a source or seek criminal penalties in court for falsifying information.

Critical to the success of this recommendation is the need to address violations in a timely manner without necessarily having to involve the judiciary. Hence, India should pursue civil administrative authority using current statutory provisions, which is discussed in detail in Chapter 3, and Recommendation 7.

#### IV. STACK TESTS

Air pollutant emissions from stacks are a significant source of pollution in India. In recent years, the Government has successfully required industry to install pollution control equipment to comply with environmental requirements. However, continuous operation and maintenance of these systems is an on-going problem. In addition, emissions are adversely affected by process rates and variations in process materials. This is especially true with combustion sources where periodic, proper tuning and maintenance of the boilers can affect compliance.

The time and costs associated with a stack test do not allow for "instantaneous" determination of compliance when the Government suspects a violation or responds to a complaint. Conducting a stack test usually requires significant lead-time to gather the necessary equipment and staff, coordinate activities with the source, and ensure site preparation. For many companies, this lead-time provides them with an opportunity to correct equipment deficiencies, modify the process or fuels, and generally, prepare to present themselves in the best light. As a result, these tests often are not representative of normal operating conditions or pollutant levels, and it frequently is difficult to document a violation through a stack test. In addition, as stated previously, sampling procedures are not well-defined or understood; sampling ports may not be accessible, or if accessible, unsafe; and inspectors generally do not have the requisite training to conduct stack tests. Given these problems, few legal tests of compliance with air standards are conducted.



Opacity (visible emission) standards could address some of the inherent shortfalls of stack tests. Opacity is the measurement of the amount of light that is obscured by the presence of pollutants in the plume. It is not a pollutant per se, but a characteristic of air pollution, in the same way that pH or turbidity is not a water pollutant, but a characteristic of water pollution found in discharges and streams. It therefore measures the presence of other regulated pollutants.

Opacity standards have the following advantages:

- \* Opacity monitoring is far less costly and time consuming than stack testing, so more compliance monitoring can be conducted.
- \* Opacity monitoring requires no special equipment. Hence, an inspector can react immediately to a suspected violation. The level of effort is similar to an inspector in India carrying a plastic water sampling bottle so that, if desired, he/she can quickly collect a grab sample from a discharge pipe.
- \* Training is necessary, but requires less technical proficiency than stack testing, and can be provided to facility representatives, concerned citizens, or Non-governmental Organizations (NGOs) in the community who can assist SPCBs in monitoring compliance.
- \* It provides a record of observed "normal" operations versus the operations during the more extensive stack tests.
- \* Opacity levels can be tailored to meet the desired conditions of most types of operations.

Opacity standards also could reduce mass emissions and respirable particulate significantly. Based on EPA observations, many facilities are not meeting the standards for particulate matter on a continuous basis, and have significant visible emissions even when meeting the standards. For example, during the EPA visit to the Chandrapur Super Thermal Power Station, EPA found that mass particulate matter emissions (as measured and recorded by the in-stack monitor) fluctuated around the standard of 150 mg/NM<sup>3</sup>. Although a formal VEO was not conducted, a trained EPA smoke reader observed that the opacity from associated stacks was 80-100 percent opacity. Based on the US experience, it is reasonable to assume that if this plant were required to meet a 20 percent opacity standard, the mass emissions would have been significantly lower than 150 mg/NM<sup>3</sup>. In addition, the smaller more harmful respirable particulate emissions would have also been significantly lower.

Some state governments have regulated visible emissions from stacks. For example, the Maharashtra SPCB utilized local authority to regulate emissions from "furnaces". Based on discussions with former staff responsible for the program, the Maharashtra program was structured, implemented, and enforced similar to the United States approach and recommendation discussed below. It however applied to a smaller universe.

#### IV-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

Opacity standards are a regulatory and compliance tool used extensively in the United States to determine whether emission controls and processes are operating at or near the design for controlling designated pollutants, such as particulate matter. Under this approach, opacity standards are established in individual regulations, and are distinct from emission standards. They are separately enforceable. Specific test methods are promulgated and referenced in individual standards to ensure the proper collection and accuracy of the data. Under the test methods, inspectors are trained and certified to use their "calibrated eye" to observe and measure the opacity of smoke emitted from a stack at defined intervals over a specified period of time. The observations are recorded on an official form, which is used to document and determine compliance. This form, in conjunction with the inspector's testimony, may be used as the sole evidence of a violation in a court proceeding. Since EPA first adopted this approach in 1971, it has been challenged in the courts and upheld.

A number of countries besides the United States have established opacity standards for air pollution. This regulatory concept began over one hundred years ago in England where the burning of coal in large cities was a serious health problem. The first requirements related only to black smoke and measured the density of smoke as compared to a five scale chart where "0" was considered completely clear and "5" was totally black. Since that time, the reading of smoke has been greatly refined. Today a trained observer can read the opacity, or the amount of light obscured, in five percent increments from "0" percent to "100" percent.<sup>11</sup>

#### IV-2. RECOMMENDATION

Recommendation 4: Establish opacity standards and test methods for emissions from stacks; develop implementing policies and guidance; and establish the necessary training infrastructure.

To successfully develop and implement opacity standards in India, the following activities are critical for either CPCB or individual SPCBs:

- \* Conduct a legal analysis of existing authorities (national and/or local) and establish a legal basis for opacity standards.
- \* Define the scope and level of control. For example, does the Government want to address all regulated industries emitting particulate matter, or focus initially on a subset of regulated industries based on factors such as size classification or whether it is a

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<sup>11</sup> For black plumes, 100 percent of the sets of observations were read with a positive error of 7.5 percent opacity, and 99 percent of the sets were read with a positive error of 5 percent opacity. EPA document, "Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources" October 25, 1990, EMTIC TM-009.



priority industry? In addition, the Government needs to determine the appropriate level of control. For example, in the US, opacity standards are generally 20% opacity or less.

\* Establish methods for determining compliance with the standards. Compliance with opacity standards can be determined easily and directly either through the use of Continuous Opacity Monitors (COMS) or by means of Visible Emissions Observations (VEO). COMS provide information of compliance on a continuous basis, regardless of time of day or weather conditions. As noted during the EPA visit to Chandrapur, many large power plants currently have particulate matter continuous monitors. Although they are referred to as "opacity" monitors in India, they do not actually measure opacity, but mass particulate matter. They however could be used to evaluate compliance with an opacity limit, and EPA could assist the Government in developing a protocol on how the data would be used to determine compliance and serve as direct evidence of a violation.

VEO are particularly useful in two situations: (1) to verify and increase the confidence in the self-monitored and reported data obtained through COMS; and (2) to determine compliance at medium and small facilities which often can not afford to install COMS. EPA could work with the Government to develop a test method for VEO to ensure the proper collection and accuracy of the data. Under the EPA test method (EPA Method 9), individuals are trained, certified, and periodically re-certified to use their "calibrated eye" to make VEO to measure the opacity of smoke emitted from a stack at defined intervals over a specified period of time. These VEO are recorded on an official form, which is used to document and determine compliance, and may be used as the sole evidence of a violation of the opacity standard in an administrative or judicial proceeding. A similar approach could be used in India.

If deemed necessary under the Air Act, the legal government sampling process could be structured in the following manner:

- \* A certified laboratory trains, tests, and certifies the inspector to conduct this type of sampling.
- \* The inspector goes to a source and presents a sampling notice.
- \* The sampling (i.e., requisite observations) is conducted using the test protocol established by CPCB. The protocol would include requirements to: record all data on a multi-copy standardized form; obtain signatures of both the inspector and the source; provide the source with one copy of the form; seal the other copies of the form in an envelope and transmit it to the certified laboratory. A third copy of the form would satisfy "third party" needs.
- \* The laboratory reviews the form for adherence to the required test protocol; checks its records to ensure that the inspector is currently certified to conduct opacity tests; and calculates the opacity observed against the standard.

\* The laboratory then certifies the test and sends a report to the CPCB and/or SPCB.

\* Establish a smoke school. To ensure that VEO are accurate, reliable, and defensible, the Board would have to establish a smoke school to train, certify and re-certify smoke readers. This would require the Government to purchase a smoke generator; receive training on how to operate and maintain the smoke generator; and receive training on how to conduct VEO.

Critical to the success of this recommendation is the need to address violations in a timely manner without necessarily having to involve the judiciary. Hence, India should pursue civil administrative authority using current statutory provisions, which is discussed in detail in Chapter 3, and Recommendation 7.

### Rationale

Opacity standards would enable the Indian government to more effectively monitor air emissions on a continuous basis and respond in a more timely manner to citizen complaints. They could significantly reduce pollutant loadings, especially the more hazardous respirable particulate matter. They are cost-effective, and could be structured so that the Government can leverage community as well as facility resources to assist them in monitoring compliance.

## V. CITIZEN COMPLAINTS

Citizen complaints are a good source of information on violations that take place in remote locations, and illegal activities within an organization. As discussed above in the description of the inspection process, India receives and responds to many complaints provided by citizens. There was no data on how many of these complaints resulted in a violation being detected and an enforcement action taken.

As discussed above, citizens and NGOs could be trained to conduct VEO to supplement the government's efforts if Recommendation 4 was adopted.

## VI. AREA MONITORING

Ambient monitoring includes any monitoring to detect pollutants in the ambient air, ground, or surface waters near a facility. India has an established ambient monitoring network to monitor compliance with national standards. However, most of the monitors are not situated such that they provide facility-specific information. Facility-specific information can be provided only when the facility is the only significant polluter in an area, or the facility has emission characteristics that serve as a fingerprint for the facility. In response to citizen



complaints of strong odors or visible plumes, some of the larger SPCBs have mobile monitoring equipment to monitor the problem, and attempt to identify the pollutant and concentration levels. Due to the large number of sources, the time to reach a site once a complaint has been received, and the difficulty in tracing the pollution back to a particular source, this type of monitoring generally is not useful for compliance purposes. It is useful in providing the public with information on potential pollutant exposures. No instances of remote sensing were identified.

## VII. INSPECTOR TRAINING AND DEVELOPMENT

Knowledgeable, well-trained inspectors are critical to the success of any compliance and enforcement program. To effectively carry out their responsibilities, they need training in a wide range of skills: legal, technical, administrative, and communication. They need to be knowledgeable of environmental statutes and regulations; PCB policies; industry operations and processes, environmental controls, and monitoring equipment. They need to be proficient in obtaining facts, and collecting and preserving evidence. They need to be skilled in managing projects and data, analyzing information, and working on a team. They also need to be able to effectively communicate with a variety of individuals from entry-level staff to company management on complex issues. In addition, they need to understand the legal process and be able to serve as a government witness in judicial actions.

Inspectors in India are uniformly well-educated. However, their educational background does not cover the procedural and technical knowledge that is specific to their responsibilities as inspectors. Formal compliance and enforcement training is virtually non-existent, but some related training was identified:

- \* New engineers from the SPCB zonal offices and SPCBs attend a 5-day general training session which addresses some compliance and enforcement issues.
- \* The Maharashtra SPCB conducted a one week training program for new inspectors in 1997. It covered issues such as field work and procedures associated with environmental requirements.
- \* New employees at the West Bengal SPCB attend a basic course on compliance and enforcement.
- \* The Karnataka SPCB provided training 2001-2002 for 73 staff members at the Environmental Management and Policy Research Institute. The training included a course on environmental auditing.
- \* The Karnataka CPCB provided 24 employees with a 90 hour course on basic computer proficiency when they first developed their compliance and enforcement data base.

In the absence of formal training, SPCBs rely upon informal on-the-job training (OJT) to provide inspectors with the necessary knowledge, skills, and abilities to implement their job. While OJT is a useful training mechanism, it is highly dependent on the skill and experience of the senior inspector, and can vary as information is passed from one individual to another. OJT is an important supplement, not substitute, to formal training.

Several SPCBs identified inspector training as a critical need to improve the quality of inspections. The following points were noted during the institutional evaluation with regard to formal training:<sup>12</sup>

- \* No national minimum training or field experience requirements exist. Individual CPCB zonal offices and states have the ability to establish their own requirements.
- \* Few states have established their own minimum requirements. Those that have done so, have required only limited training and field experience. There is no consistency from one state to another.
- \* The number of courses designed specifically for compliance and enforcement issues is extremely limited. While all SPCBs expressed a concern with regard to the lack of compliance and enforcement training materials and availability of training, the SPCBs in West Bengal, Karnataka, and Gujarat were particularly concerned with this issue. They recommended that: (1) more industry specific inspection manuals be developed; (2) the manuals be developed by those SPCBs that were most knowledgeable of a given industry; (3) the manuals be widely distributed for use by all Boards; and (4) training be delivered either by the Boards themselves, or by the state institutes.
- \* Information on available training is not easily obtained. There are no centralized directories or web sites that list upcoming training throughout India in this area.
- \* Much of the training that has been developed was done initially in response to specific requests and is not routinely offered as part of any particular training program.
- \* Even if training were readily available, many inspectors would not be able to travel to the training. Training resources are scarce; travel logistics are difficult since many inspectors are not able to travel except by train which can be very time-consuming; and many inspectors do not have the time to participate in training at distant locations because they can not afford to take the time away from their inspection schedule. In addition, many SPCBs have established their own centers of training, and have policies that strongly encourage staff to support these locally funded institutions, even if they do not offer the needed training.

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<sup>12</sup> For more detailed information on available compliance and enforcement training and related training institutes, see the EPA document entitled, "Environmental Compliance and Enforcement Training Institutions in India and Training Recommendations" 2005.



\* Inspectors evaluate a wide variety of industries in a very decentralized office structure. Inspectors generally do not specialize in an industry, but focus on geographic areas and all of the sources in their assigned area. Therefore, in-depth, industry-specific courses would not be as advantageous to the inspection workforce as a whole, unless a priority industry affecting a significant number of inspectors is identified.

\* Some of the larger SPCBs have assisted efforts to establish educational institutes that provide instructional opportunities and technical services for their staff, as well as training for industry, NGOs, and other groups. Most of these institutes were initially established with foreign aid, but are now becoming self-sustaining. They offer a wide-range of training relating to the technical aspects of environmental management, but only offer a very limited number of courses pertaining to compliance monitoring and enforcement. Furthermore, the training that has been developed and offered is generally not well-known outside the specific organization or state. There is very little coordination among the institutes, which work independently in securing work and developing training materials.

\* Limited training resources are often focused on providing training opportunities for senior management versus the technical/scientific staff. For example, the Maharashtra SPCB Officers received 37 training experiences during 2002-2003. The Karnataka SPCB reported that its Board attended 22 training experiences in India and seven abroad in 2001-2002. Also, as members of the Indian Administrative Staff, the Chairmen and the Member Secretaries attend additional training provided by organizations such as the Administrative Staff College of India.

## VII-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

### United States

The EPA has an Inspector Training Order, Order 3500.1, that defines the minimum training required to lead an inspection. Pursuant to this Order, all inspectors are required to complete annual training on health and safety issues. Beyond that, the requirements vary depending upon the media (e.g., air, water, hazardous waste, pesticides); the complexity of the regulated industry and thus the inspections of that industry; and the specialization of the inspector. For example, in the air program, an inspector specializing in petroleum refining is required to receive training beyond that which is expected of someone specializing in a less complex area such as stone crushers. The air program requirements are organized around the knowledge, skills, and abilities necessary to conduct an inspection, and identify required specific course work, recommended reading, and OJT requirements. The formal training requirements may be satisfied through independent study, or structured classes. To minimize travel costs and ensure that individuals can obtain the training on an as-needed basis that is convenient to their work schedule, much of the training is available in a variety of formats—hard copy manuals, CDs, DVDS, and web-based training. Increased emphasis is being placed on web-based training.

As in India, the United States regulates and inspects a diverse universe of industry sectors. To facilitate inspections in some of the more complex industry sectors, EPA develops its own specialized inspection materials that provide information on issues such as industry processes, regulatory requirements, common violations, and opportunities for pollution prevention. Again, these materials are available in a variety of formats.

The EPA training materials are available to state agencies, but some states have their own training systems. One of the major systems is the California Air Resources Board (CARB) Institute located in California and is available to anyone, including other states and EPA. This institute is a “virtual” institute without permanent classrooms. Courses are requested by individual states or state organizations; the logistics are managed by the training institute in conjunction with the requesting state or organization; and are usually taught in a classroom located in the requesting state. The CARB Institute has a small cadre of instructors, but relies heavily on contracted experts. Costs for the training are borne by the individual states or state organization requesting the training, and supported in part through federal grants.

## Europe

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) conducted an evaluation and prepared a report on the training and qualification requirements for environmental inspectors in their member states, and developed guidance on best practices.<sup>13</sup> This report summarized the current requirements of each member state, and provided a framework that addresses initial, continued, and specialized training. The report does not provide specific courses for each level of training in the framework; however, it does suggest what factors should be considered as each country develops its training plan.

## VII-2. RECOMMENDATION

Recommendation 5: Develop national guidance on minimum inspector training requirements; develop and fund a compliance and enforcement training program to implement the requirements; and ensure that all SPCBs are aware of the program and the schedule of courses.

As a first priority, it is critical for the CPCB in conjunction with the states to develop national guidance on the minimum training requirements for inspectors. At a minimum, all inspectors should be required to complete health and safety training. Annual refresher courses should be required thereafter. The Government should provide the necessary funds to implement this requirement. Beyond that, CPCB should:

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<sup>13</sup> See IMPEL report, “Best Practices Concerning Training and Qualification for Environmental Inspectors”. It is available on their website at <http://europa.eu.int/comm/environment/impel>



- \* Develop a comprehensive inventory of all available environmental compliance and enforcement-related training, and provide basic information on the delivery dates/frequency, content, cost, delivery formats and mechanisms, and contact person for each course included in the inventory.

- \* Compare the minimum training requirements against the list of available courses to identify training needs, assign priorities, and select the appropriate institutions to develop and deliver those courses.

- \* Develop training materials to address the training needs identified beyond that currently available. These materials could be developed and delivered by CPCB, as well as some of the larger, more experienced and diverse SPCBs that have considerable industry-specific knowledge and experience.

The training program should be designed to meet the needs of both CPCB and SPCBs. In developing a compliance and enforcement training program for inspectors, India should build upon the extensive network of existing national and state institutes to develop and deliver materials. The existing network has already invested in developing and maintaining the infrastructure necessary to develop and deliver technical training in the environmental arena. They could utilize this existing structure and expand upon it as appropriate to incorporate compliance and enforcement courses, and include individuals with specific experience and expertise in compliance and enforcement issues in a cost-effective manner. They are distributed across India and provide access for all SPCBs. They already have mechanisms for advertising their current training programs, which could be expanded to include the additional courses. The institutes could be electronically linked so course so that advertisements are comprehensive and up-to-date.

### Rationale

Having well-qualified, trained inspectors with the requisite knowledge, skills, and abilities to identify violations and determine compliance with environmental requirements is critical for a successful, well-managed environmental program. Inspectors have a vital role in protecting the environment and safeguarding the public from pollution, and provide the foundation for resource-intensive, time-consuming, costly legal actions that may be brought by the Government.

Minimum training requirements would provide greater uniformity across India in the inspector workforce; enhance their ability to identify violations; and improve their ability to provide the technical support in enforcement actions. It also would reduce the number of legal challenges and subsequent case dismissals based on procedural errors caused by the lack of training.

The proposed approach maximizes existing investments at the state level. It also addresses problems associated with resource and travel constraints; the decentralized organizational structure of SPCBs; and the diversity of requirements and regulated communities.



## CHAPTER 3: RESPONSE TO VIOLATIONS

### I. ENFORCEMENT PROCESS

As previously stated, the Water and Air Acts initially established the SPCBs as the primary enforcement authorities in India. Under these two Acts, CPCB is only authorized to enforce against violators in Union Territories and in a state where the SPCB has been declared by MoEF to have defaulted on its responsibilities<sup>14</sup>. However, under the EP Act, enforcement authority was vested in the Central Government. Nevertheless, section 23 of that Act allows enforcement against violators to be delegated “to any officer, State Government, or other authority.”

The India environmental enforcement process has developed into a multi-level approach with SPCBs having primary enforcement responsibility, and the CPCB having back-up enforcement responsibilities and the authority to conduct special enforcement initiatives. The SPCBs have further delegated certain enforcement authorities down to their regional and sub-regional offices for smaller facilities.

The following discussion provides a summary of the enforcement process at both the national and state levels. Generally, every effort is made to resolve violations without involving the courts. Any actions brought by the Government are defined as criminal violations and thus must be heard in courts with criminal jurisdiction. If the court finds that a violation occurred, it can assess penalties and/or imprison responsible parties. It is believed that the Government has no independent penalty authority. However, current statutory authority could be utilized to develop a civil judicial administrative penalty authority.

#### The CPCB Enforcement Process

The CPCB process is typically initiated in the CPCB zonal office. However, the CPCB central office provides overall management and oversight, and has sole responsibility for conducting any formal enforcement actions. Inspections and investigations are scheduled by the zonal offices according to the commitments in the Annual Action Plans; or as a result of a significant complaint, request from a State Board, unplanned requests from CPCB, political inquiry, or a new court directive. The facility is usually known or suspected to be in violation

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<sup>14</sup> Section 18(2) of both the Water and Air Acts states that “Where the Central Government is of the opinion that any State Board has defaulted in complying with any directions given by the Central Board under sub-section (1).... it may, by order, direct the Central Board to perform any of the functions of the State Board in relation to such area for such period and for such purposes, as may be specified in the order.”

when the facility is targeted. Random compliance inspections are not done by CPCB. The CPCB process is carried out according to the following steps:

- \* The zonal office inspects the facility, takes samples, and gathers other information to determine the extent of possible violations.
- \* Legal samples are analyzed by a certified laboratory.
- \* The zonal office inspector writes the report on the inspection, identifies any potential violations, and makes recommendations.
- \* The head of zonal office reviews the recommendations and signs the report. The report is referred to the central office of CPCB.
- \* The referral is usually forwarded to the appropriate sector-based Pollution Control Division for review and concurrence. The report with recommendations are sent to the Member Secretary and/or the Chairman of CPCB.
- \* The Member Secretary or the Chairman provides the final decision in resolving the matter and may choose among several alternatives. He or she can direct CPCB to proceed with the recommended action; refer the case to the SPCB for action; send the case back to the zonal office for further investigation or additional supporting information; or take no action.
- \* Referring the matter to the appropriate SPCB can be done either informally or with a directive under Section 5 of the EP Act or Section 18 of either the Water or Air Acts. Typically, formal referral to the SPCB is done under the EP Act. However, if the SPCB is not complying with Section 5 of the EP Act, Section 18 of the Water or Air Acts will be used. If CPCB does refer the matter to the SPCB, the CPCB zonal office will monitor the progress of the SPCB.

Table 3-1 and Table 3-2 indicate the number of directives that were referred to SPCBs and Pollution Control Commissions (PCC) of the Union Territories under Section 18(1)(b) of the Air (for 1991-1993 and 2001) and Water (for 1991-1993, 1997-1998, and 2000-2003) Acts in the Western Zonal Area.



Table 3-1 Directives issued by CPCB in Western Zonal Area under Section 18(1)(b) of the Air Act 1981 (as of 3-31-2003)		
YEAR	Directives issued to	No. of Directives issued
1991	All SPCBs/PCCs	31
1992	All SPCBs/PCCs	93
1993	All SPCBs/PCCs	31
2001	All SPCBs/PCCs	31
Total		186

Table 3-2 Directives issued by CPCB in Western Zonal Area under Section 18(1)(b) of the Water Act 1974 (as of 3-31-2003)		
YEAR	Directives issued to	No. of Directives issued
1991	All SPCBs/PCCs	31
1992	All SPCBs/PCCs	93
1993	All SPCBs/PCCs	31
1997	All SPCBs/PCCs	62
1998	All SPCBs/PCCs	31
2000	Gujarat and Maharashtra	5
2001	Maharashtra	1
2002	All SPCBs/PCCs	61
2003	Gujarat	1
Total		316

\* If CPCB decides to proceed with the matter instead of referring to an SPCB, CPCB sends a formal notice of violation to the facility, and the alleged violator is provided an opportunity for a hearing with CPCB.

If the alleged violator can prove that it has returned to compliance or that the violation did not occur, the CPCB action ends.

After the hearing, if CPCB believes that the violations are continuing, a directive signed by the Member Secretary or the Chairman is issued to the violating entity.

Directives are usually issued under the authority of Section 5 of the EP Act. However, for water violations, directives can be issued under 33A of the Water Act in Union Territories or under Section 18(1)(b) if the SPCB has been formally declared to have defaulted.

Table 3-3 indicates the number of directives issued to non-complying facilities in the Western Zonal Area under Section 5 of the EP Act. The large number of directives issued in the 1996/1997 period was driven in large part by public pressure through Public Interest Litigation.

Table 3-3 Directives issued by CPCB in the Western Zonal Area under section 5 of Environment Act 1986 (as of 4-25-2003)		
YEAR	Maharashtra	Gujarat
1996	20	8
1997	22	11
1998	0	0
1999	0	0
2000	5	6
2001	0	1
2002	1	2
2003	1	3
Total	49	31

- \* The zonal office tracks the activities of the violator to ensure compliance with the directive.
- \* If the violator complies with the directive, the matter is closed.
- \* If the violator does not comply with the directive, the Member Secretary or the Chairman may refer the matter to the court. However, a time extension may be granted in order to comply with the original directive before the matter is referred.
- \* Once a decision is made to refer the matter, the complaint is prepared by a contracted outside attorney with technical support provided by CPCB.



\* Under the EP Act, the complaint is referred to the High Court of the state in which the violator is located. The contracted attorney presents the case to the court with CPCB personnel appearing before the court as witnesses.

\* If the court decides in favor of the Government, it will issue a directive to the violating company and assess penalties and/or imprison the responsible individuals.

### The SPCB Enforcement Process

While there are slight variations, the typical enforcement process among the individual SPCBs is similar. Using the Karnataka SPCB as a model, the process is as follows:

- \* The SPCB inspects the facility, takes samples, and gathers other information to determine facility compliance.
- \* Legal samples are analyzed by a certified laboratory.
- \* The inspector writes the report on the inspection, identifies potential violations, and makes recommendations.
- \* Upon discovery of the alleged violation, the SPCB issues a “show cause” notice based upon the field observations, legal sample, or other evidence of violations. In Karnataka, the “show cause” notice has been delegated to all regional offices for all source categories.
- \* The alleged violating facility is provided an opportunity to respond to the show cause notice and present evidence in its defense.
- \* The relevant SPCB regional office verifies the information provided by the alleged violating facility, and determines if a violation exists.
- \* If they believe that the violation is continuing, the SPCB regional office would take a legal sample, and have it analyzed by a certified laboratory.
- \* The SPCB issues a legal notice of violation based upon the legal sample and any other evidence. To issue a legal notice of violation, the Karnataka SPCB asserts that a legal sample<sup>15</sup> proving a violation is necessary for a formal notice of violation to be issued. The legal sample must be collected in accordance with the underlying Act (Section 21 of the Water Act, Section 26 of the Air Act, and Section 11 of the EP Act). The notice is

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<sup>15</sup> Section 11(2) of the EP Act states: “The results of any analysis of a sample of any taken under sub-section (1) shall not be admissible in evidence in any legal proceeding unless the provisions of the sub-sections (3) and (4)[pertaining to sampling procedures] are complied with.” The Water and Air Acts have similar provisions.

generally issued by the central office of the SPCB and is only delegated to the regional offices for a limited number of facilities.

- \* The violating facility is given an opportunity for a hearing with the Chairman of the SPCB. At this hearing, the facility can present evidence to demonstrate compliance, or other information that may affect the issuance of a directive.
- \* Any material submitted by the violating facility is reviewed by the SPCB central office with the regional or sub-regional office.
- \* The SPCB Chairman issues a notice of proposed directive. This notice may include a proposal for facility closure and/or a control program.
- \* The violating facility has 15 days from the date of the notice to file an objection with the SPCB Chairman.
- \* After review of any objection submitted by the violator, a final directive is issued by the SPCB Chairman.
- \* The violating facility can appeal the final directive to the Appellate Court.
- \* Once the appeal process is exhausted, the regional or sub-regional office monitors the violator's activities under the directive.
- \* If the facility does not comply with the directive, prosecution for violating the directive may commence.
- \* Before initiating a court action, the directive may be modified to extend the final compliance date. In Karnataka, the decision to file an action with the court to commence prosecution is often delegated to the regional office.
- \* A contracted outside attorney prepares and presents the complaint before the court. Complaints are usually filed with a lower court,<sup>16</sup> and brought under the Water Act for water violations and under the Air Act for air violations.
- \* Some states have a court known as a "Green Bench" to address alleged violations of the environmental laws.

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<sup>16</sup> Section 33(1) of the Water Act and section 22A(1) of the Air Act state "...the Board may make an application to a court, not inferior to that of a Metropolitan Magistrate or Judicial Magistrate of the first class...."



\* If the court rules in favor of the Government, the court can issue a directive and penalize the violator with a monetary penalty and/or imprisonment of responsible company representatives.

\* The regional or sub-regional office will track any court directive that is issued to the violator, while the central office will implement any court directives addressed to the SPCB.

Table 3-4 summarizes the court actions in Karnataka under the Water and Air Acts since their inception. Table 3-5 provides information on the court actions associated with Closure Orders issued by the Karnataka SPCB.

Table 3-4 Total Court Actions in State of Karnataka since issuance of the Water and Air Acts		
Total Cases filed by the State Pollution Control Board (227)		
Total (227)	Water Act (154)	Air Act (73)
Pending Cases	74	45
Criminal Cases	56	30
Criminal Misc.	18	15
Total Disposed Cases (80)		
Disposed Cases in favor of Government	43	13
Criminal Cases	9	8
Criminal Misc.	34	5
Disposed Cases against the Government	37	15
Criminal Cases	19	7
Criminal Misc.	18	8

Table 3-5 Total Court Actions as a Result of Closure Orders issued in State of Karnataka		
Total No. of Closure Orders 246	Water Act 112	Air Act 134
Writ Petitions Filed Against Closure Orders 80	Water Act 40	Air Act 40
Pending Cases against Closure Orders 9	Water Act 4	Air Act 5

Some SPCBs have developed variations or supplemental components to the typical enforcement process. For example, the West Bengal SPCB has initiated a process to address public complaints against facilities (of any size) whose act(s) are allegedly causing an environmental violation. Every Saturday, a grievance hearing is held in Kolkata, and chaired by a senior legal officer. The citizen complainant and individuals from the company that is allegedly causing the public nuisance appear before the senior legal officer. Normally, the parties agree to a resolution. However, if they can not reach an agreement, the legal officer will make a recommendation to the Member Secretary who will issue a final decision. The company can appeal this decision to an appellate authority constituted by the State Government under the EP Act. The appellate authority is comprised of a retired judge and two technical individuals.

## II. ENFORCEMENT AUTHORITIES

The Government has a wide range of enforcement authorities available for enforcing environmental statutes and regulations. They can take remedial actions, require additional information, and/or impose sanctions. For example, they can:

- \* Impose a schedule of compliance
- \* Temporarily or permanently shut down a facility, or some portion thereof
- \* Deny or revoke a CFO
- \* Require a facility to clean up the environment
- \* Utilize emergency powers to enter and correct immediate dangers
- \* Seek compensation for damage caused by the violation
- \* Require specified testing and reporting
- \* Require self-monitoring, -recordkeeping and -reporting
- \* Require information on industrial processes
- \* Require specialized training of industry staff
- \* Require facilities to conduct self-audits
- \* Seek penalties or imprisonment from the courts



- \* Seek reimbursement for government costs
- \* Direct the facility to provide a service or community work to benefit the community.

CPCB has not developed a national enforcement policy describing how their various authorities should be used to respond to the many different types of violations and violation situations. No state policies were identified either.

### III. BANK GUARANTEES

In addition to the authorities listed above, several states have initiated bank guarantee programs as a means of ensuring compliance with directives issued by SPCBs. State Boards are authorized to issue directives that place a violating source on a schedule to comply with statutory and regulatory requirements by a date certain. Many of these directives are issued after a hearing where the source has had an opportunity to present pertinent information on the feasibility, availability and costs of controls; economic conditions of the facility; the amount of time necessary to install or upgrade controls; and any other constraints the facility may face in achieving compliance. These factors are taken into consideration by the Boards and usually are reflected in the final directives. Typically, the directives incorporate compliance schedules as opposed to requiring the source to shut down because of the potential impact of such a closure on local economies. However, sources often do not meet their compliance schedules and the directives are subsequently revised to extend the compliance deadlines. Some Boards even allow multiple extensions on a routine basis. Court action for non-compliance with directives is pursued only after sources continue to miss the deadlines and violate the directives.

Industry is cognizant of this situation and often stretches the compliance schedule beyond what is necessary to achieve compliance; thus, wasting staff time in addressing recalcitrant sources and unnecessarily extending the environmental insult. The use of bank guarantees can provide a tangible incentive to abide with compliance schedules in directives.

As a result, several SPCBs have developed bank guarantee programs. For example, when the West Bengal SPCB discovers a violation, it will invite the violating company to negotiate a control program and compliance schedule. The SPCB will then require the company to post a bank guarantee to ensure that the company installs the pollution controls in accordance with the compliance schedule. Normally, 10% of the final compliance cost is required for the bank guarantee. An inspection, with legal samples, is mandated to determine whether the violator has met the compliance schedule and implemented the control program.

If the violating company fails to meet the compliance schedule, a portion of the bank guarantee is forfeited and given to the SPCB for its discretionary use. The amount of the forfeiture is decided by the Chairman and the Member Secretary, as there is no set procedure for determining the specific amount. The West Bengal SPCB provided two examples of forfeiture for failure to meet the compliance schedule. A refinery forfeited 5 lakh of a 10 lakh bank guarantee that had been posted, and a steel mill forfeited 5 lakh of its 20 lakh bank guarantee.

The forfeiture places a financial penalty on the non-complying company, and also causes embarrassment which is a significant deterrent to future non-compliance.

In 2003, CPCB, after consultation with industry representatives and SPCBs, expanded the use of state bank guarantee programs such as that in West Bengal SPCB. CPCB adopted the Charter on Corporate Responsibility for Environmental Protection (CREP). While the CREP focuses environmental improvement beyond compliance, it recognized that some of the “17 category” sources had not complied with existing requirements, and provided new industry sector-specific compliance dates. To receive compliance extensions for existing requirements, non-complying sources were required to submit bank guarantees with their individual action plans.

Although CPCB has endorsed the concept of bank guarantees in the CREP, there is no national guidance addressing issues such as the circumstances under which guarantees are appropriate; how the guarantee should be calculated; the optimum level of guarantee to ensure that negotiated compliance schedules are met; what percentage of the monies should be held as collateral; what is acceptable collateral; how forfeitures should be calculated; and the procedures for collecting forfeitures and utilizing the monies. Reportedly, some bank guarantees have been structured such that the guarantees were not sufficient to provide a deterrence, and the facilities defaulted. In some instances, forfeitures were not collected upon default, nor was additional collateral required when compliance schedules were extended. Also, in some cases, the collateral posted was against bank accounts with no funds.

### III-1. RECOMMENDATION:

Recommendation 6: Develop a policy and provide implementing guidance that requires regulated industries to provide bank guarantees for negotiated compliance schedules incorporated in directives issued by the Boards.

#### Rationale

Directives with compliance schedules provide a formal, but temporary variance to the underlying regulatory requirements, and offer a legal defense from further enforcement action for the life of the compliance schedule. For this substantial benefit that industry receives, the Government should have tangible assurances that the negotiated actions and associated schedules will be achieved in the required time frame. The amount of the bank guarantee should be sufficiently high to ensure compliance with the source-specific schedules. It also should serve as a deterrent so that other sources with negotiated compliance schedules understand the ramifications of not complying and do not default on their agreements.



#### IV. CIVIL ADMINISTRATIVE AUTHORITY

As indicated above, the Government has a wide range of enforcement authorities to address environmental violations, and one of these authorities is the authority to seek penalties through the criminal judicial system for violations of environmental laws. As discussed previously, the Government addresses few violations through the criminal judicial process. Only 7,357 cases had been filed by the government as of 3-31-2003.<sup>17</sup>

Seeking redress in the courts is time-consuming and resource-intensive, and further strains scarce government resources. In addition, the cases are often unsuccessful, with 977 of 7,357 cases being dismissed by the courts or ultimately withdrawn by the Government. Although courts have ruled in favor of the Government in a slim majority of cases (approximately 56 per cent, or 2,319 of 4,170 cases decided), this varies considerably from state-to-state. For example, the courts have ruled in favor of the Gujarat SPCB only 19 per cent of the time, while they have ruled in favor of the Andhra Pradesh SPCB 100 per cent of the time. This reportedly has led to sources making siting decisions on the basis of where they can obtain favorable court decisions.

Also, courts have been unwilling to impose penalties or imprisonment in most cases where they find in favor of the Government. Of the total 2,319 cases decided in favor of the Government, only 293 included fines, and only 248 included imprisonment. This is 13 per cent and 11 per cent, respectively.

In addition, due to crowded court dockets, it takes an extremely long period time to resolve cases brought by the Government. In many states, the percent of cases pending versus all cases filed under the Air and Water Acts is greater than 50 per cent.

Sources realize that it is unlikely that they will be taken to court for violations. These statistics reinforce the perception that it is cheaper to violate the law than comply, and enables industry to delay the cost of compliance. As a result, justice is delayed, and the pollution and attendant environmental harm is allowed to continue. The resulting message to many is that it pays to pollute.

Similarly, threats to close a facility or cut off supplies are reserved for only the most egregious violations given the attendant impact on local economies; and bank guarantees are effective only in those instances where a substantial capital investment is involved. Directives in CFOs and direct technical assistance are of limited value and generally are not effective when dealing with less cooperative, recalcitrant sources that are not environmentally conscience.

India does not have an effective enforcement tool to compel facilities to continuously comply with environmental requirements, especially those requirements that do not have an

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<sup>17</sup> All statistics are based on the report, "CPCB, Status of Court Cases As On 31.03.2003".

immediate, direct impact on the environment, but may actually involve significant emission reductions. For example, failure to report or late reporting may conceal facility operations that resulted in an emissions violations. Threats to close the facility for failure to report are not realistic, nor are bank guarantees. Directives to report have no impact since the source was already required to report pursuant to a regulation or directive, and failed to comply. There is no formal tool to compel the facility to change its behavior in the situation described above or similar scenarios.

#### IV-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

##### United States

The EPA utilizes both criminal and civil judicial enforcement authorities to implement environmental laws. The vast majority of actions are civil versus criminal.

Criminal actions are the most serious and include penalties and imprisonment. Thus, they create the most significant deterrence since it personally affects the lives of those who are prosecuted and carries with it a significant social stigma. They also bear the greatest burden of proof of wrongdoing, and thus require resource-intensive, time-consuming investigation and case development. In FY 2005, 195 cases were charged, and 170 cases sentenced. Please note that the cases sentenced in all likelihood were charged prior to FY 2005. For the cases sentenced, the fines and restitution totaled approximately \$100,000,000; incarceration totaled approximately 190 years; and probation totaled approximately 550 years.

Civil actions may be either administrative (i.e., directly imposed by the enforcement program), or judicial (i.e., imposed by a court or other judicial authority).

Civil judicial actions are formal lawsuits brought before the courts. Although not as resource-intensive and expensive as criminal actions, they can be costly, require considerable staff time, and may take several years to complete. Civil judicial enforcement is perceived to have greater significance than administrative actions. As a result, civil judicial actions have more power to deter potential violations, and set legal precedents. Also, the courts are uniquely empowered to require action to reduce immediate threats to human health and the environment. Thus, it is most useful in situations dealing with the more serious or recalcitrant violators; where precedents are needed; or where prompt action is important to shut down an operation or stop an activity. In FY 2005, 259 civil cases were initiated, and 157 cases were concluded. \$127,205,897 in penalties were assessed.

Civil administrative orders can be issued by EPA to resolve a case administratively without resorting to the courts. Civil administrative orders are legal, independently enforceable orders issued directly by enforcement program officials within EPA that define the violation, provide evidence of the violation, and require the recipient to take corrective action within a specified time period. Penalties may be assessed, but the total penalty assessed in any case is



governed by statute. Supplementary Environmental Projects (SEPs) can be established in administrative orders.

The administrative process is similar to the judicial process; however, it has several advantages. It does not require coordination with a separate judicial system, and the administrative law judges handling the cases are more knowledgeable of environmental issues because they are dedicated to addressing environmental problems. Most appeals are handled through the same Agency process, with very few brought to the courts. Thus, administrative actions can be resolved more quickly, and require less time and expense than judicial actions. This is beneficial to the regulated community, as well as to the Government. Administrative orders are not self-enforcing. If the order is not complied with, further enforcement action through the judicial system is necessary.

Where available, administrative enforcement is generally preferred as a first response, with some exceptions as described above. Generally, this authority is best suited to situations that are of short duration, and do not require injunctive relief, or significant time or resources to resolve the violation. It works best, for example, for violations of procedural requirements, and record-keeping and reporting requirements. Years of implementation have proven the success of this approach. In FY 2005, 1,916 administrative compliance orders were filed, 2,229 administrative penalty complaints were filed, and 2,273 administrative penalty orders were settled. \$26,731,150 in penalties were assessed.

The Agency has developed media-specific enforcement policies to describe how their various authorities will be used to respond to the many different types of violations and violation situations. Such policies are important to ensure fairness, which is particularly important when assessing monetary penalties. The perception and fact of fairness is critical to the credibility of an enforcement program, and assists staff in making decisions that reflect the government's resolve to enforce environmental requirements. The policies address issues such as:

- \* when a criminal, civil judicial, or administrative response should be used
- \* when a sanction should be imposed
- \* what type of sanctions should be used
- \* how sanctions should be applied to government-owned or operated facilities.

The Agency also has developed media-specific penalty policies that provide guidance on what factors should be taken into consideration when calculating penalties to ensure consistency, fairness and predictability. For example, factors under the air program include:

- \* the size of the business
- \* the economic impact of the penalty on business
- \* the violator's full compliance history and good faith efforts to comply
- \* the duration of the violation as established by any credible evidence (including evidence other than the applicable test method)
- \* payment by the violator of penalties previously assessed for the same violation

- \* economic benefit of noncompliance
- \* the seriousness of the violation.

In the United States, all federally-collected penalties must go to the United States Treasury, and are not available to specifically address environmental issues. However, many state-collected administrative penalties can be directed into the environmental agency's operating budget, or used to fund special environmental studies, public awareness programs, or compliance assistance activities.

#### IV-2. RECOMMENDATION

Recommendation 7: Utilize current statutory provisions to establish civil administrative authority; establish the infrastructure for managing administrative cases; develop the necessary enforcement response and penalty policies; and provide training for the states.

##### Rationale

Civil administrative authority would allow the Government to address violations in a more timely, cost-effective manner, and enable the Government to ensure facilities are in continuing compliance with environmental requirements. Such authority would reduce the environmental workload of the courts; thereby, enabling them to focus on the most egregious violations and repeat violators.

Based upon a review of India's environmental statutes and regulations, it can be argued that India has the statutory authority to develop a civil penalty program through regulations utilizing current authorities such as Chapter II, section 3(1) of the EP Act. It provides:

Subject to the provisions of this Act, the Central Government, shall have the power to take all such measures as it deems necessary or expedient for the purpose protecting and improving the quality of the environment and preventing controlling and abating environmental pollution.

Chapter II, section 3(1)(xiv) provides:

such other matters as the Central Government deems necessary or expedient for the purpose of securing the effective implementation of the provisions of this Act.

The Air and Water Acts provide similar authorities. For example, Chapter III, section 17(1)(a) and (j) of the Air Act authorizes the State Boards:

to plan a comprehensive programme for the prevention, control or abatement of air pollution and to secure the execution thereof-



to do such other things and to perform such other acts as it may think necessary for the proper discharge of its functions and generally for the purpose of carrying into effect the purposes of this Act.

Chapter IV, section 16(h) of the Water Act authorizes the Central Board to:

plan and cause to be executed a nation-wide programme for the prevention, control or abatement of water pollution...

Chapter IV, section 17(a) of the Water Act authorizes the State Board:

to plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof...

The CPCB and SPCBs may want to explore the possibility of utilizing any administrative penalties collected as an additional source of income. Currently, the regulated community bears some of the costs of program implementation such as: CESS fees for water usage; consent fees for new and existing facilities; and laboratory analysis of samples. Legal enforcement could be recognized as an agency cost that should be borne by the regulated community. Concerns raised by the CPCB and SPCBs with the potential for bribery would need to be addressed, but India has the necessary criminal enforcement authorities to address this issue.

## CHAPTER 4: COMPLIANCE PROMOTION

Most effective compliance and enforcement programs utilize a variety of tools to promote compliance within the regulated community. Enforcement alone is not as effective as enforcement combined with compliance promotion. Compliance promotion is any activity that encourages voluntary compliance with environmental requirements, and is effective only when it is used in combination with a strong, active enforcement program. Under this scenario, it is particularly effective where the size of the regulated community exceeds enforcement resources, and there are numerous small regulated sources. Two examples of compliance promotion are providing compliance assistance and establishing voluntary incentive programs.

### I. COMPLIANCE ASSISTANCE

As discussed in previous chapters, the CPCB provides technical assistance to the regulated community by developing and distributing industry-specific technical documents for major industries. These documents provide information such as industry descriptions, best practices, and opportunities for pollution prevention and waste minimization. These documents are well-received by industry. However, most are too technically oriented to be of significant value to the public. The CPCB also provides some facility-specific technical assistance to a limited number of facilities each year. They assist non-complying facilities in identifying the reasons for non-compliance and work with them to develop solutions. Some of the large SPCBs provide similar assistance to individual facilities, but generally, SPCBs do not provide this type of technical assistance. They do not have the necessary resources.

None of the technical documents specifically focus on providing the regulated community with summary information on regulatory requirements, compliance provisions, or compliance deadlines. None of the documents are designed to provide the regulated community with protocols for conducting self-audits to determine whether they are in compliance with regulatory requirements.

#### I-1. RECOMMENDATION

Recommendation 8: Develop educational materials and compliance assistance tools for the regulated community, especially small businesses, and distribute the materials to all regulated sources.

##### Rationale

Combined, the CPCB and SPCBs do not have the resources necessary to inspect all regulated facilities, especially small regulated facilities. There is a significant number of small regulated facilities in India. The likelihood that they will be inspected is minimal, and if they are inspected and a violation identified, there are no real enforcement consequences for their non-compliance. Hence the traditional enforcement program does not provide any real deterrence.



However, a subset of these facilities may be willing to comply with the regulatory requirements, but are either unaware of them, or do not understand them. Compliance assistance for this group of regulated facilities would be beneficial in promoting compliance and reducing pollution. Basic information on the following would be useful:

- \* The regulated universe.
- \* The requirements and compliance deadlines.
- \* Why the requirements are important.
- \* What changes (e.g., technical, work practice) must be made to comply with the requirements.
- \* Any assistance (e.g., financial or technical) that may be available to assist facilities in making the changes.
- \* The consequences of not complying.

Based on the United States experience, wide distribution of this information to the regulated universe, followed by targeted inspections, and publicized enforcement actions for violations has a significant deterrent effect on those facilities that continued to ignore the regulatory requirements.

## II. VOLUNTARY PROGRAMS

The CPCB has worked with SPCBs and the regulated community to develop voluntary programs with incentives to comply with regulatory requirements, and in some instances go beyond compliance. One such program is the CREP, which was discussed previously.

## CHAPTER 5: MEASURES OF SUCCESS AND COMPLIANCE/ENFORCEMENT DATA

CPCB is legally mandated under the laws to coordinate the actions of SPCBs, and plan and execute nation-wide programs for the prevention, control and abatement of environmental pollution. Transparency and public access to information is essential in developing such programs, and having the public and regulated community accept their validity. It is also important that the Government provide all interested parties with information on the progress being made by the Government in achieving compliance with environmental laws.

To successfully meet these goals of implementing environmental programs to reduce pollution, and providing transparency and public access to information, the Government must collect and maintain data on compliance and enforcement activities at both the national and state levels. The data must be consistently reported, accurate, reliable, and timely. The need for such data has been explicitly recognized in environmental statutes such as the Air Act which states:

The Central Board shall, in relation to its functions under this Act, furnish to the Central Government, and a State Board shall, in relation to its functions under the Act, furnish to the State Government and to the Central Board such reports, statistics, accounts, and other information as that Government or, as in the case may be, the Central Board may, from time to time, require. Section 45.

The Act also requires SPCBs to maintain a publicly available register of all consents issued, the standards established in each consent, and "such other particulars as may be prescribed."

### I. MEASURING SUCCESS

Many parameters can be used to evaluate program effectiveness. For example, some parameters measure results such as an improvement in environmental quality and rates of compliance, and a reduction in pollutant releases. These parameters are the ultimate goal of any compliance and enforcement program, but are often difficult to establish and calculate. There can be a significant lag time between the compliance or enforcement activity and the resulting environmental improvement. It is hard to link changes in the environmental quality to specific sources or specific compliance actions. Other factors such as economic conditions can affect environmental quality and therefore the accuracy of the measure. Finally, compliance with some requirements do not result in measurable improvements to the environment.

Compliance rates rely on the thoroughness and frequency of inspections, and if the data is lacking in this area, the rates will not be reliable. Low compliance rates may mean that the program is doing a good job of detecting violations. High rates could mean that the program is not doing a good job of detecting violations, or that industry is complying with the requirements. Defining compliance is often difficult. For example, does compliance mean compliance with all



regulatory requirements, or just the most significant ones? Does it mean all the time, or a significant period of time? How should facilities with unknown compliance be treated?

Some parameters measure activity levels such as the number of inspections conducted and enforcement actions taken. The number of inspections conducted is easy to track and measure, and does provide some measure of program accountability, but it does not provide information on whether environmental goals are being met. The number of enforcement actions also is easy to track and measure, and is a good measure of program accountability, and the public can easily understand the measure. However, it does not provide information on whether facilities are being returned to compliance in a timely manner, and thus whether environmental goals are being met.

Other parameters provide qualitative assessments of program performance such as progress in returning significant violators to compliance and the timeliness of enforcement responses. These measures are good measures of a program's efficiency, and provide some indication as to whether environmental goals are being met.

There is no consensus within CBCP or among the SPCBs on how to establish accountability and measure success in the compliance and enforcement program. Some CPCB reports included information on activity levels, but most attempted to measure program progress against a few critical environmental indicators such as ambient air quality, water quality, etc. However, there was no underlying data to support the causal link between the compliance and enforcement activities and the improvements in the environment.

#### I-1. RECOMMENDATION:

Recommendation 9: Develop measures of success for the compliance and enforcement program utilizing a variety of parameters, and communicate these measures and the rationale for why they are needed to SPCBs, the regulated community, and the public.

##### Rationale

Well-defined measures utilizing a mix of activity (output) and results (outcome) indicators will enable the Government to document its performance and provide program accountability; conduct performance analyses to evaluate the effectiveness of tools and strategies in achieving desired environmental goals; and take corrective actions as appropriate to more effectively utilize its resources.

## II. DATA REQUIREMENTS AND REPORTING

### Date Requirements

Consistent with the lack of consensus on how to establish accountability and measure progress, the CPCB has not established national minimum data requirements for the information that the zonal offices and states must collect and provide upon request to CPCB.

As part of the institutional analysis, EPA requested national baseline information on program parameters such as: the total number of regulated facilities; the number of facilities within given priority industry sectors; the number and types of facilities by classification categories (e.g., Large Red); the number of inspections conducted; the number and types of violations identified; the number of sources deemed out of compliance; the number and types of enforcement actions taken; the types and amounts of pollutants reduced; and the penalties assessed. EPA also asked the CPCB to provide a breakdown of this information by state.

Much of this data was not considered essential by CPCB to evaluate the level of effort and progress being made in the compliance and enforcement program as they were more interested in measuring progress against environmental indicators such as air and water quality. As a result, all of the statistical information on the compliance and enforcement program that was available for review during the institutional evaluation was:

- \* Limited in scope.
- \* Inconsistent in the time periods covered and included dated information (e.g., a chart on the status of court cases across India as of 3-31-2003 presented data that was received at very different times, which ranged from 4-7-1997 to 4-22-2003).
- \* Incomplete with some states and Union Territories not included in national reports.

These deficiencies adversely affect the ability of the Government and other interested parties to evaluate the effectiveness of program strategies; hold program personnel accountable for the implementation and effectiveness of programs; or initiate corrections as needed. The Government also loses the benefit of the deterrent effect periodic reporting has when it increases awareness within the regulated community that there is a good chance violations will be identified and enforcement taken.

### Reporting

The CPCB zonal offices provide monthly reports to CPCB Headquarters on the CPCB Annual Action Plan, and other priority programs such as the CREP, and the 17 Categories of Polluting Industries. The zonal offices also serve as an informal conduit of information from SPCBs to CPCB Headquarters as they communicate with them regularly. However, these



informal communications are generally focused on specific state investigations, not the compliance and enforcement program as a whole.

Currently, CPCB relies upon SPCBs to submit most environmental data directly to CPCB Headquarters through quarterly and annual reports. However, CPCB does not receive information from all SPCBs, nor is the information submitted in a consistent format and address all data requests. Many SPCBs fail to provide the data within the requested time frame, and CPCB spends a considerable amount of time trying to convince the Boards to submit the information. In instances where these efforts also fail, CPCB has frequently opted to spend scarce CPCB resources to generate the data, or it has chosen to exclude a SPCB from the national report.

Analysis of the submitted compliance and enforcement data by CPCB is minimal. For example, they do not analyze the information to determine whether states are meeting inspection frequencies; conducting quality inspections; identifying and addressing violations in a timely manner; or focusing their limited resources on the most environmentally significant activities and facilities. The CPCB provides only limited feedback to the zonal offices or individual SPCBs on the quality and content of reports. Criticism by the CPCB of the inconsistency and lack of completeness of data is muted because they have not developed any national guidance to standardize the content and format of periodic reports, nor do they have plans to do so. The CPCB has no ability to take action against a SPCB if it fails to provide requested information. Thus, those SPCBs that do comply with the requests for information question the overall value of the effort and whether it is necessary for them to continue providing information if not all States are held to the same standards and requirements.

Beyond the needs of the national government, a few individual SPCBs collect, analyze, and present data on compliance and enforcement activities for their own purposes. Although they have the raw data to analyze the data and present a more complete and accurate picture of compliance, the individual state analyses vary considerably in scope and quality. One reason for the wide variations is that many SPCBs have revised key national definitions to suit their own state needs. For example, many have changed the list of industry categories that are classified as RED. Thus, they are each tracking and evaluating universes of sources that are not directly comparable. Also, as independent bodies, they each have a different perception of what information is critical to collect and report, and on what frequency the information should be made available.

However, many SPCBs, especially the smaller ones, do not have the expertise or resources to even attempt to collect and present the data. Very few SPCBs have computerized data systems to store the information; thus, many have to rely on paper files and resource intensive efforts to cull through those files for pertinent information. Individual files generally do not have any uniformity in structure and content, and often are physically located in different places due to the large number of regulated facilities. Even where some of the information is computerized, not all staff have computers, and those that do, utilize them for individual projects and word processing. Also, very few of the computers are linked together in a network so that data can be shared.

Furthermore, because reporting is periodic, most states have not established routines for data collection and analysis.

India is at a critical juncture in the computerization of compliance and enforcement data. Some states are moving towards computerization of facility data, including compliance and enforcement information. For example, the Andhra Pradesh SPCB has developed a sophisticated computerized system which includes facility-specific, as well as ambient data. It is oracle-based and includes GIS linkages. During the EPA visit to the State Board, they provided a demonstration of their computerized tracking system. The system: links facility information with sampling analysis, inspections, and enforcement actions; tracks upcoming consent and direction requirements for facilities; tracks fee payments; automatically flags facilities with unpaid fees, delinquent actions, or on-going violations; and links complete inspection reports, consents, enforcement actions, and laboratory reports to the facility data. In late 2003, the Andhra Pradesh SPCB had shifted away from paper files and was inputting all new data directly into the computer system, and was working to eliminate the backlog of older data. A few SPCBs have reportedly approached the Andhra Pradesh SPCB to discuss its computerized system, but none have committed to using the Andhra Pradesh system, or developing a similar one.

The Gujarat SPCB is developing a Microsoft access program for storing facility related information, including inspections, and is developing the ability to receive consent applications electronically on-line. The Karnataka SPCB is developing an on-line facility database system that will link its regional offices with the central office.

As additional SPCBs develop their own systems, there is a strong likelihood that the systems will not be compatible with one another. One such example of incompatibility that already exists involves the new hospital waste tracking system established by CPCB. The system is not oracle-based; thus, the Andhra Pradesh SPCB is forced to enter data twice—once in its system and again in the CPCB system. Duplicate entry of information is a waste of valuable resources that could be utilized to address other environmental issues.

## II-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

### United States

The EPA experience in defining national data requirements and developing national data systems for compliance and enforcement programs is pertinent to India, even though India's environmental programs are not structured by media (e.g., air, water, hazardous waste) as is the case in the United States.

EPA developed separate data requirements for each media program, and designed separate, media-specific data systems consistent with the different data requirements. Thus, each system uses unique terms and definitions based on the underlying statutes, which makes multi-media comparisons and integration difficult.



At the same time that EPA was developing its own data systems, the states were developing their own parallel media-specific systems. They each designed their own unique system to reflect their state-specific needs. They used different computer platforms, defined terms differently, focused on a different subset of information, identified sources in different ways, and developed different reporting frequencies.

As EPA matured, it recognized the need to aggregate the state information into a cohesive national system for each media program. This proved to be an extremely difficult task because of the large number of systems that had been developed by each individual state and local agency. Each state had invested heavily in its own system and refused to change. Although some systems could be linked electronically to a media-specific national system, most were incompatible with each other and the national system. To address this problem, EPA was forced to expend considerable resources to design new national systems that could better accommodate data entered and maintained in independent state systems. This required extensive negotiations with states on issues such as common definitions, reporting time frames, and frequency. All of the media-specific problems were compounded further when the Agency attempted to integrate systems across the different media. The problem of incomparability remains, and EPA continues to struggle with integrating information and ensuring consistent, timely reporting.

## II-2. RECOMMENDATION

Recommendation 10: Develop a uniform computerized system for collecting, maintaining and utilizing compliance and enforcement data at the national as well as the state level; develop the necessary implementing policies and guidance; and ensure that the SPCBs are aware of them.

Specifically, as part of this effort, CPCB needs to:

- \* Develop policies and implementing guidance to define the national minimum data requirements; provide definitions for critical terms; define timely reporting; and provide standardized formats.
- \* Develop national data requirements that provide sufficient data to enable the Government to utilize a variety of output and outcome performance measures to ensure accountability, improve management, and increase program effectiveness.
- \* Survey SPCBs to develop an understanding of how information is collected, stored, and used to manage programs; what progress to date has been achieved in computerization of compliance and enforcement data; and what additional information may be needed.
- \* Evaluate current data systems such as the Andhra Pradesh SPCB system to assist in the design of a national framework that also can accommodate state-specific needs and are compatible with existing states systems.

- \* Evaluate whether the CPCB system currently under development to monitor and track environmental quality should be expanded to include compliance and enforcement information.
- \* Evaluate how information collected and maintained within the national system can be made publicly available.

### Rationale

Standardized performance measures and an integrated data system to collect and maintain nationally important data will:

- \* Reduce the cost of inputting, retrieving, and analyzing data.
- \* Provide the Government with the ability to more effectively argue for resources and needed authorizations.
- \* Enable the Government to better analyze and improve program performance and compare state programs.
- \* Improve transparency in Government actions by enabling the public access to the information.
- \* Improve data quality.
- \* Reduce the opportunities for corruption since facility data will be more visible and readily available.
- \* Avoid future costs associated with the re-design of systems developed by SPCBs prior to the development of national requirements.



## CHAPTER 6: COMMUNICATION NETWORK

### I. COMMUNICATION

During the institutional evaluation, the majority of state officials voiced a desire to better understand and learn how other SPCBs were addressing common environmental issues. Knowledge of programs, activities and tools developed by other SPCBs was minimal.<sup>18</sup> During the evaluation, several examples highlighted this problem:

- \* Most SPCBs were not familiar with the training Centre in other states and related compliance and enforcement training courses that had been developed. As a result, states are investing in research institutions and training that is potentially duplicative and an unnecessary expenditure given resource constraints.
- \* Most SPCBs were unfamiliar with court decisions made in other areas of the country and the potential implications for their own compliance and enforcement programs.
- \* Several SPCBs indicated that they were the only state agency using bank guarantees as a means of ensuring compliance with directives. They were not aware that other Boards were using this tool.
- \* Several SPCBs indicated that they were developing computerized data systems to manage their compliance and enforcement programs and were more advanced than other SPCBs. In this instance, they had some knowledge of the efforts being undertaken in other nearby states. However, most had no real working knowledge of the other systems and their design capabilities. The resulting systems most likely will not be compatible with each other and consistent in the information collected; thus, it will continue to be difficult for the CPCB to collect data nationally.

#### I-1. COMPARATIVE INFORMATION FROM OTHER COUNTRIES

##### United States

Because the United States and Indian environmental programs are similar in structure, the relationship between federal and state programs also is similar. Both EPA and the CPCB develop national strategies; monitor state activities associated with priority sources; provide guidance to the states on implementation issues; interact with states during the development of priority

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<sup>18</sup> For more detailed information, see the EPA document, "Report on India's Environmental Compliance and Enforcement Training Institutions and Training Recommendations". It provides more information on a recommendation to establish a communication organization in India.

programs; and meet periodically with the states on issues of common concern. The success of the national program is largely defined by the success of state organizations that have primary responsibility for implementation. Both EPA and the CPCB must assume responsibility should the states default.

There also are several differences in how we interact with states. The EPA tends to interact with states on a daily basis, on media-specific issues, and at multiple organizational levels. The interactions are conducted in both formal and informal meetings. These interactions supplement the more structured communications that occur during national meetings, which are primarily driven by the EPA national agenda.

Another difference is that numerous outside state organizations have been established to foster communications between EPA and the states, and represent state interests in interactions with EPA. These organizations stem from the fact that routine communications between EPA and the states alone do not meet all of the needs of States for coordination and program development. These organizations vary significantly in:

- \* Their mission (e.g., develop a uniform, cohesive state or regional position on an EPA issue, or merely provide a forum for all states to provide comment).
- \* The breadth of their responsibilities (e.g., national versus regional).
- \* The scope of their responsibilities (e.g., air versus water, Superfund requirements, or all environmental matters).
- \* The specific issues of concern (e.g., data quality, ambient monitoring, compliance and enforcement, or all environmental management issues).
- \* Their structure (e.g., project oriented, geographical representation).
- \* Level of interaction (e.g., political directors versus senior agency managers).
- \* Size.

These factors affect how such organizations interact with EPA. The interactions range from EPA being a formal voting member of the organization and attending all meetings and sharing responsibility for developing agendas to being an invited guest only.

Attachment 2 is a list of some of the state organizations with which EPA regularly communicates, along with their web sites for a detailed discussion of their mission, structure, responsibilities, and contacts. They represent a variety of approaches, but generally share the following similarities:

- \* They are governed by an elected board of state officials.



- \* They have an executive director who carries out the directions of the Board.
- \* They have committees or workgroups that are comprised of state staff that develop and work issues determined by the Board.
- \* The states are free to join the organization.

EPA strives to be responsive to state concerns and support their activities, but the Agency often finds it difficult because EPA cannot fully understand their unique perspective which can only be acquired by managing a state agency. The types of state organizations discussed above have assisted in this area.

These organizations also assist in the development and delivery of training; sharing of state management practices and data for reducing costs or increasing revenue; sharing of technical expertise; and acting as a clearinghouse for state related environmental information.

## I-2. RECOMMENDATION

Recommendation 11: Establish a support organization to facilitate communication among SPCBs on important environmental compliance and enforcement issues, and between CPCB and the Boards.

### Rationale:

The establishment of a support organization to facilitate this desired communication would enhance the overall effectiveness of India's environmental compliance and enforcement program; improve consistency; and provide greater certainty to the regulated community. It also would enable CPCB to better implement its coordination responsibilities without requiring additional staff.

Such an organization would, for example, allow the Boards to learn from each other by sharing their successes and failures; maximize limited resources by combining them to address common priority issues; avoid duplication of effort by sharing and utilizing compliance monitoring tools, technical expertise, specialized instrumentation, unique laboratory capabilities, and computerized data systems; develop consensus on national issues; and distribute information of national significance.

Funding for the network could be shared among all of the Boards so that no one organization had to bear the cost.

## ATTACHMENT 1

### INSPECTION #1: MICO

#### EPA observations of the inspection:

- \* During the visit to the industrial effluent system, the inspector obtained self-monitoring information to review during his inspection. He initialed the self-monitoring book before returning it.
- \* The inspector asked the plant environmental manager questions concerning a unit of effluent control equipment that was not in operation. He also asked questions of the effluent plant operators.
- \* The inspector looked at all of the different pieces of industrial effluent control equipment and recorded readings from various control gauges in his inspection notebook.
- \* The inspector brought the office file of the facility with him and periodically reviewed it during the inspection. He asked questions based on the file to ensure that the operations of pollution control equipment had not changed. He did not make any observations of any of the process sources of the pollution. The only air pollution source visited during this inspection was a waste incinerator.
- \* The inspector informed the plant environmental manager that the State would be collecting a legal sample of the industrial effluent. The sample was collected by his assistant from the effluent outfall; checked for proper level in the plastic sampling container; and a label was affixed. The label information included a sample number, plant name, where the sample was taken, and date and time the sample was taken.
- \* The inspector also had a sample taken of the municipal wastewater.
- \* During the exit interview, the inspector discussed his observations with the environmental manager and reviewed the paperwork. The sampling forms were prepared in the presence of the environmental manager. Both the intent to sample form and the sample forms were signed by both the State and the facility personnel. All paperwork was signed by a witness for the company and the inspector's assistant. Before the sample was sealed, the inspector and the environmental manager checked the odor of the sample. The sample was sealed by the assistant and the signed paperwork was sealed in a pouch that was attached to the sample. The last step in the process was for the assistant to affix and stamp a wax seal to the samples.



\* At the hazardous waste storage facility, the inspector checked the material for storage conditions, and asked that labeling be displayed on the storage cells. He indicated that this part of the operation will be inspected every 3-6 months.

\* The inspector observed the operation of a waste material incinerator to see if it was still being operated and checked the general condition of the operation. He asked questions about the installation of a new incinerator. He indicated that the company was under a directive to shut down this particular incinerator which was considered to be in violation, and replace it with a new one.

After the inspection, the inspector informed EPA that:

\* If he has a doubt or question about anything that he is told during the inspection, he will look at the pollution control equipment.

\* If he is taking samples at a facility that is not cooperative or he feels may challenge the inspection results, he will have the facility representative sign the sampling form indicating that a legal sample was collected.

\* Occasionally, an outside complainant representing the public will accompany him on an inspection. In these situations, the inspector will ask both the company representative and the complainant questions; record their answers along with his own observations; and have them both sign the document.

\* He had recently been transferred to Bangalore from a more rural section of the state. In rural areas, transportation to and from an inspection can be especially time-consuming and can affect the number of inspections that can be conducted in a given day. Because of the pressure to complete a certain number of inspections within a given time period, some inspections may not be as comprehensive as they should be.

\* It takes approximately one-half day for an experienced inspector to conduct an inspection at a large facility, and that in one day, he can conduct approximately 10 inspections of medium facilities, or 20-30 inspections of small facilities.

\* Sometimes, his assistant will go out alone to take samples at small facilities.

The inspection report was prepared the next day. In the report, the inspector recorded his observations and also indicated that results of a wastewater sample collected on previous inspections had indicated a violation of the standards. The inspector recommended that a notice be issued for this violation.

## INSPECTION #2: CIPLA

### EPA observations of the inspection:

- \* The inspector noted that work was being conducted on an effluent pollution control tank and asked if the facility had notified the Karnataka CPCB that the tank would be out of service for repair work. The facility representative produced a letter sent to the Karnataka CPCB.
- \* The inspector reviewed the log book of the operation of the effluent treatment plant, asked questions of various facility personnel, and recorded their responses.
- \* The inspector checked the incinerator for the solids from the effluent plant and noted that the construction of the stack testing platform and ladder was not completed. He asked for information on when it would be installed.
- \* The inspector asked for copies of internal analysis reports that related to the pollution control equipment.
- \* The inspector was given a copy of a report on the fish tissue analysis of fish from the adjoining lake. He asked if there were any discharges that had occurred from the effluent plant to the lake and made observations of the lake bank.
- \* The inspector made on-the-spot suggestions to the facility representative to cover a waste storage area in the effluent plant; asked for a time commitment for completing the work; and asked that the company send a letter confirming the action.
- \* The inspector used an inspection notebook to record his notes during the inspection.
- \* The effluent from the treatment plant was discharged into a cement holding pond, which was reportedly used as irrigation water on the plant property. A legal sample was taken of the discharge to the pond by the assistant.
- \* After noticing that water was being used on a grassy area of the plant, the inspector had the assistant take a sample of this water to confirm that it was representative of the effluent to the holding pond.
- \* The inspector was told by the company representative that rainwater also was collected and stored for use on the plant property. The inspector asked about storage capacity and what happens if storage capacity was exceeded.



- \* The inspector reviewed the hazardous waste storage area. When he noticed old abandoned equipment battery, he informed the company representative about new requirements for disposal of batteries.
- \* The inspector conducted an exit interview with company representatives. He reviewed the fish tissue report against what was potentially coming from the plant. He asked about the status of the scrubber for the T-2 area and the ladder/platform for the stack testing equipment. He asked for commitments and time frames.
- \* The inspector asked questions related to pollution changes in one area of the plant based on his review of the official file he had with him.
- \* The inspector gave the facility feedback on his observations and requested information on any new plans the company had for reducing pollution at the facility.
- \* The inspector asked about community outreach activities and reviewed pictures of a project that the facility had conducted. He suggested additional outreach for the facility to consider.
- \* The inspector asked about training of facility personnel and attendance at upcoming EMPRI training courses.
- \* The inspector asked about any planned production changes.
- \* At the end of the exit interview, the inspector gave a summary of the company commitments made in response to the inspection.

After the inspection, the inspector informed EPA that:

- \* He conducts 60-70 inspections per month, including up to seven large and medium inspections per day. He had been to the Cipla facility 12-15 times.
- \* Inspections are generally not announced and can be done on off-hours such as evenings and weekends. As an example, the inspector noted an inspection of Cipla that was conducted on a Sunday at 10:30pm. At that time, the inspector noticed that water was being discharged to a neighboring field, and the team took a sample and pictures. The next morning, the team came back and took a legal sample. This discharge was not part of the facility's Consent to Operate. After the inspector identified the problem to the facility management, the company fired the supervisor that authorized the illegal discharge, and the Karnataka CPCB required additional training of employees.

\* While there were multiple Karnataka CPCB personnel on this inspection, the number of people on the inspection team depends on the complexity of the inspection. Sometimes, only the senior inspector and a driver form the team.

\* The inspection report is generally completed within seven days of the inspection, but the sampling analysis may take longer.

\* While there is no standard format for the inspection report, he indicated that he knows what information must be included in the report.

\* During his first inspection to a facility, he will spend more time going through the complete process to develop an understanding of the operation, and this type of review may take a full day.

\* Field assistants can only accompany an inspector and can not conduct inspections on their own. They, however, can collect samples at smaller facilities on their own according to the inspector at MICO.

\* Every year, each employee does a self-evaluation including training needs and goes over this evaluation with the senior engineer in the office.

\* Inspectors can be transferred from one district of the state to another every 3-5 years to prevent them from becoming too close to the industry that they monitor.

The day after the inspection, the inspector prepared a written report and a letter to the company summarizing his observations; detailing the directions that were provided during the inspection; and requesting a written response to the directions.



ATTACHMENT 2  
LIST OF REPRESENTATIVE STATE ORGANIZATIONS

- \* Environmental Council of the States  
<http://www.sso.org/ecos>
- \* State and Territorial Air Pollution Program Administrator & Association of Local Air Pollution Control Officials  
<http://www.4cleanair.org>
- \* Association of State and Interstate Water Pollution Control Administrators  
<http://www.asiwpca.org>
- \* Association of State and Territorial Solid Waste Management Officials  
<http://www.astswmo.org>
- \* Association of State Drinking Water Administrators  
<http://www.asdwa.org>
- \* Association of American Pesticide Control Officials  
<http://aapco.ceris.purdue.edu>
- \* American Water Works Association  
<http://www.awwa.org>
- \* Form on State and Tribal Toxic Action  
no direct website, but information is available on the EPA website at <http://www.epa.gov>
- \* State FIFRA (Pesticides) Issue Research and Evaluation Group  
<http://aapco.ceris.purdue.edu>
- \* Mid-Atlantic Regional Air Management Association  
<http://www.marama.org>
- \* Metro-4/Southeastern States Air Resource Managers  
<http://www.metro4-sesarm.org>