PERFORMANCE INDICATORS FOR ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT PROGRAMS: THE U.S. EPA EXPERIENCE

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Note to Readers: This paper expands and updates a previous paper presented at the 6th conference of the International Network for Environmental Compliance and Enforcement (INECE) in Costa Rica on April 15, 2002. This revised version includes new information about how EPA is using performance indicators to improve the effectiveness of its national enforcement and compliance program. It also addresses issues and needs identified at two recent indicator workshops: the INECE-OECD Workshop on Environmental Compliance and Enforcement Indicators on November 3 and 4, 2003 in Paris; and the Workshop de Indicadores Ambientais on December 8 and 9, 2003 in Brasilia.

1 INTRODUCTION

The purpose of this paper is to describe the efforts of the United States Environmental Protection Agency (EPA) to develop and use results-based indicators in its national enforcement and compliance assurance program. The paper provides background about EPA and its compliance and enforcement program and discusses the need for better indicators. It then describes a three-phase process – identification of better indicators, implementation of better indicators, and use of indicators as a management tool -- which can help other environmental compliance and enforcement programs seeking to manage in a more results-based manner.

2 BACKGROUND ON EPA'S ENFORCEMENT AND COMPLIANCE ASSURANCE PROGRAM

In the face of growing public concern over environmental issues the Environmental Protection Agency (EPA) was formed in 1970 with the mission of protecting human health and the environment. The Agency brought together existing federal environmental programs and became the focal point for federal environmental activity, with broad authority to deal with environmental problems that affect the air, land, and water. For example, the Clean Air Act regulates the emission of pollutants to the air from stationary and mobile sources, the Clean Water Act regulates emissions to water, the Safe Drinking Water Act sets standards for drinking water, and the Resource Conservation and Recovery Act established a cradle-to-grave system for handling hazardous waste. There are numerous other environmental laws implemented by EPA dealing with particular pollutants or hazardous substances such as lead, asbestos, and oil; with environmental clean-ups; endangered species protection; and food safety.

EPA develops regulations and sets national standards for environmental laws. Implementation and enforcement of these environmental programs is done in cooperation with states and Indian tribes. States have the primary authority for implementing most environmental programs through delegated authority from the EPA. The EPA's federal role in ensuring compliance is to implement and enforce programs that cannot be delegated to states and Indian tribes, to handle more complex cases involving multiple states or corporations with multiple facilities, to deal with issues that require expertise or resources which only EPA can provide, and to enforce when states are unable or unwilling to.

EPA's Office of Enforcement and Compliance Assurance (OECA) is responsible for

ensuring compliance with the nation's environmental laws. OECA employs an integrated approach to increase compliance, using compliance monitoring, compliance assistance, incentives to encourage self-audits by facilities, and enforcement. OECA identifies environmental problems by analyzing risks and patterns of noncompliance and developing strategies to address those problems by using assistance, monitoring, inspections, and enforcement in combinations appropriate to the problem.

EPA's fiscal year 2004 budget is approximately seven billion dollars. The Agency employs approximately 18,000 people at the Agency's headquarters, ten regional offices, and several laboratories and research facilities. OECA has approximately 3,100 employees who provide assistance, conduct inspections and investigations, develop and execute enforcement cases, and manage national compliance data systems.

3 THE NEED FOR BETTER INDICATORS

EPA was set up to achieve its mission of protecting human health and the environment through a command-and-control regulatory compliance system. The system has traditionally relied upon compliance monitoring (e.g. inspections and investigations) and enforcement actions (e.g. administrative, civil, or criminal cases) as the primary tools to ensure compliance with environmental regulations. Likewise, indicators of program performance have been organized around those same tools.

3.1 Limitations of Output Indicators

Traditional indicators of program performance consist of activity counts, "outputs," such as the number of inspections conducted, enforcement cases initiated, and penalties assessed. Though these indicators give some sense of enforcement presence, they do not provide all the types of feedback needed to effectively manage program performance, and they have several limitations.

The first limitation is that these indicators fail to include many of the new assistance and incentive approaches being used by EPA and other environmental agencies. Compliance assistance programs provide information on regulatory requirements for specific sectors and regulated populations, pollution prevention ideas, and techniques that can help an organization come into compliance. The goal of compliance assistance programs is to increase compliance by helping organizations better understand regulations, thus preventing non-compliance, and by helping those out of compliance come back into compliance. EPA's incentive policies encourage organizations to identify, disclose, and correct violations through voluntary self-audits in exchange for reduced or waived penalties. The activity counts employed as traditional indicators do not capture the results of new assistance and incentive approaches (e.g., they do not measure the changes in behavior as a result of compliance assistance).

Activity counts as indicators of program performance have several other limitations as well. They fail to measure the environmental results achieved by program activities. Where traditional indicators tell us the number of cases initiated, or penalty dollars collected, they do not tell us the pounds of pollutants reduced as a result of injunctive relief associated with a case, or the improvements in company or facility environmental management practices resulting from assistance, or the return to compliance achieved by a company using one of EPA's self-audit incentive policies.

Activity counts reveal very little about the state of compliance; they don't tell us what percentage of the regulated universe as a whole is in compliance with the applicable regulations nor what the level of compliance is in key segments or populations of that universe. And, finally, activity counts say little about progress towards achieving environmental goals or

addressing particular environmental problems. Knowing the number of inspections or investigations does not indicate whether the Agency's mission is being achieved, or whether a strategy to address a particular environmental problem has been successful.

3.2 Challenges, Needs, Opportunities

EPA and other agencies have relied on activity counts for so long because measuring results of enforcement and compliance activities -- like many government activities -- is very difficult. Unlike the private sector, government agencies have no clear indicator of performance such as revenue, profits, market share, or customer satisfaction. Enforcement programs do not deliver a product or service, instead they impose obligations on their "customers" on behalf of society. In most cases the person or entity that the regulator encounters is an involuntary recipient of these obligations, and so cannot be expected to be an objective source of feedback on the performance of the regulatory program.

The primary and most visible output of EPA's regulatory compliance system – enforcement actions – are indicative of regulated entities failure to comply with regulations and laws. Is an increase in enforcement outputs good news (i.e., the Agency was able to identify and correct a higher percentage of noncompliance problems), or bad news (i.e., the level of noncompliance is increasing)? The ambiguity in interpretation means these activities are not a reliable indicator of whether the enforcement and compliance program is achieving its mission of increasing compliance, or whether the Agency is achieving its goal of protecting human health and the environment.

The limitations of solely using output measures as indicators of program performance, and the move to a more diverse mix of tools to carry out the Agency's mission, argue for development of better enforcement and compliance indicators. Most importantly, better indicators are needed to create as clear a link as possible between enforcement and compliance activities and strategies, and the results achieved. Better indicators must also document the level of compliance in the regulated community.

The Government Performance and Results Act (GPRA) of 1993 also provided motivation and a conceptual framework for the development of performance indicators and measures. GPRA shifts the focus of government decision-making and accountability from activities conducted to the results of those activities. GPRA requires federal agencies to develop strategic plans, and annual performance plans with goals and performance measures associated with them. More recently, President Bush's Management Agenda has emphasized performance reviews, performance-based budgets, and the development of high quality outcome measures to monitor program performance.

Better indicators will enable EPA to conduct performance analyses, evaluating the effectiveness of tools and strategies in terms of achieving desired goals. This type of performance analysis will enable EPA to more effectively employ its resources, investing in activities that achieve results and modifying or disinvesting from those areas that are not producing results.

4 PHASE 1 -- IDENTIFYING BETTER INDICATORS

In 1997, EPA's Office of Enforcement and Compliance Assurance (OECA) initiated the National Performance Measures Strategy (NPMS) to develop and implement an enhanced set of performance measures. OECA conducted over twenty public meetings with a wide array of stakeholders, consulted with experts and practitioners, and reviewed dozens of studies and articles. This outreach and research effort was extremely beneficial to EPA's efforts to identify better performance indicators. (Appendix A. provides a set of questions used to guide the

discussions with stakeholders). The discussions produced a set of principles to guide OECA's effort to develop indicators, a set of criteria for evaluating potential indicators, and many suggestions about specific indicators that OECA should consider.

4.1 Guiding Principles

Based on the ideas and suggestions offered by the stakeholders, and the concepts identified through the research conducted, OECA developed the following set of principles to guide the effort to develop better indicators.

4.1.1 There are diverse and multiple audiences for enforcement and compliance assurance performance measures

Information about the performance of EPA's enforcement and compliance assurance program is used by many parties in a wide variety of ways. The most important audience is the public. Other significant audiences include EPA managers and staff, Congressional members and staff, oversight agencies, state environmental agencies, state attorneys general, environmental organizations, communities, regulated entities, and the media. All of them want and would use results-oriented performance measures presented in clear and understandable ways.

4.1.2 A combination of measures - outputs and outcomes, quantitative and qualitative, statistical and narrative, aggregated and disaggregated, national and local – is necessary to measure performance, inform management, and serve the full range of audience and purposes.

No single number, fact, or category of measure (e.g., output or outcome) can convey all the information necessary to comprehensively measure performance. The mission of EPA's enforcement and compliance assurance program is complex. Its responsibilities are multiple and the tools used to achieve them are multi-faceted. Therefore, a variety of performance measures is needed to ensure accountability, improve management, and increase program effectiveness.

4.1.3 Performance measures are most effective when they reflect management priorities and are linked to a limited number of program goals and objectives.

Successful performance measures demonstrate the degree to which organizations or programs are achieving their goals and desired results. The number of measures should be limited to key performance elements essential for producing data that aids program evaluation and decision-making. Performance measures should reflect those operational aspects (e.g., quality, fairness, timeliness, cost, etc.) considered to be management priorities.

4.1.4 Increased use of outcome measures presents many challenges, because agencies or programs may influence – but not necessarily control – outcomes.

Outcomes cannot generally be attributed or causally linked solely to the activities of an agency or program since most outcomes are influenced by many factors external to the agency. For example, compliance rates might be influenced by economic conditions that are conducive to investment in environmental management by companies or facilities. Agencies need to be careful not to take too much credit for successful achievement of outcomes; nor should they probably take too much blame when outcomes are not achieved.

4.1.5 Problem-specific, tailor-made performance measures are effective for evaluating

performance in solving specific environmental and noncompliance problems.

When agencies or programs identify and target high-risk, high-priority environmental or noncompliance problems, their performance in mitigating or solving such problems can best be evaluated using tailor-made measures, indicators, or metrics which specifically relate to each problem. Generally, a performance record that is specific to each problem needs to be developed, since problem-specific measures often cannot generally be aggregated in a useful way.

4.1.6 Performance measures should be used principally to effectiveness and manage more strategically, rather than simply to report accomplishments to the public in a more interesting way.

If developed and used correctly, performance measures should permit more sophisticated analysis of results and activities that produced them, allow comparisons of the relative effectiveness of specific tools and strategies, and lead to informed resource allocation that is more likely to achieve the desired results. A well-designated and wisely-utilized set of performance measures can put strategy and vision, goals and objectives at the center of management attention.

4.2 Criteria for Evaluating Potential Indicators

The discussions with stakeholders also provided a set of criteria that OECA used to examine the value of each potential indicator, and decide which to implement. Based on the discussion with stakeholders, indicators should be:

- relevant to goals, objectives, and priorities of the agency and to the needs of external stakeholders;
- transparent so they promote understanding and enlighten users about program performance;
- credible and based on data that is complete and accurate;
- functional in that they encourage programs and personnel to engage in effective and constructive behavior and activities;
- feasible, that is, the cost of implementing and maintaining a measure should not outweigh its value to the program; and
- as comprehensive as possible with respect to the important operational aspects of program performance.

Each of the potential indicators suggested by stakeholders and by EPA staff and managers were evaluated using these criteria. During this evaluation process, EPA often compared the relevance and importance of the information produced by a potential indicator against the feasibility or cost of implementing that measure. For example, industry representatives suggested that EPA should count the instances when companies or facilities voluntarily implement Environmental Management Systems, and that this could be an indicator of industry commitment to environmental compliance. Though EPA felt this information could be valuable, the discussions about implementation of the indicator quickly identified that there would be difficult and costly reporting and data quality problems. The indicator was then dropped from further consideration. This tension between the value of an indicator versus its cost of implementation came up often in EPA's evaluation of potential indicators.

4.3 Definitions of Indicator Categories

OECA's goal in conducting the NPMS was to develop a system of indicators that found an appropriate balance between measuring results and activities. Distinguishing between

output and *outcome* through clear definitions of these terms was a very important first step toward organizing the effort to define and implement better indicators.

Because EPA as a whole was also working to develop outcome indicators for many of its programs, OECA adopted definitions that were consistent with those being used by the Agency for all of its other programs.

The importance of having a clear set of definitions at the beginning of any effort to develop indicators cannot be overstated. The definitions OECA used to guide its efforts were:

4.3.1 Outputs

Activities or services performed by a government program during a specific time period. Examples of output indicators for enforcement and compliance programs include the number of inspections performed, the number of enforcement cases issued, and the number of compliance assistance workshops provided.

4.1.2 Intermediate Outcomes

Changes in behavior or other results that contribute to the end outcome. Examples of intermediate outcome indicators for enforcement and compliance programs include number of facilities making changes in management practices as a result of compliance assistance, pounds of pollution reduced as a result of enforcement actions, rates of compliance with environmental requirements.

4.1.3 End Outcomes

Ultimate results or conditions to be achieved by the program or agency. Examples of end outcome indicators include emissions levels of key air or water pollutants, number of people living in areas in which pollutant standards were exceeded.

As ideas for potential indicators were suggested by stakeholders, these definitions were used repeatedly to categorize individual indicators and determine whether the whole set of indicators suggested were focused appropriately on outcomes and results rather than solely outputs and activities.

4.2 Indicators Selected

As a result of the discussions with stakeholders, consultations with experts, and meetings with internal staff, OECA selected a set of new indicators to develop and implement in stages over a period of three years. The new indicators are:

- pounds of pollutants reduced through enforcement actions;
- pounds of soil removed, gallons of groundwater treated through enforcement actions;
- dollar value of pollution control projects required by enforcement actions;
- number of audits and self-corrections by companies/facilities using EPA policies;
- number of entities seeking compliance assistance form EPA assistance centers;
- actions taken as a result of assistance from EPA centers;
- rate of recidivism among significant violators and average time to return to compliance; and
- statistically valid compliance rates for key regulated populations.

These indicators focus on the outcomes of program activities – i.e., improvements in environmental conditions or behavior of the regulated universe – rather than on the number of activities. The indicators also do not measure ultimate outcomes of environmental protection such as improved quality of air or water, but most focus instead on intermediate outcomes such as behavior changes and other actions that contribute to the ultimate outcomes.

Also as a result of the stakeholder discussions, OECA identified several key output indicators – some new and some used for many years – which would be used in combination with the new outcome measures. The key output indicators are:

- number of inspections and investigations conducted;
- number of civil and criminal enforcement actions;
- number of facilities/entities reached through compliance assistance efforts; anid
- number of training course and other capacity building efforts provided to state, tribal , or local programs.

OECA chose to use output indicators along with its new outcome indicators. Outputs were retained for two reasons. First, many stakeholders, particularly the environmental organizations, were clear that they found indicators about activity levels very useful in holding the Agency accountable each year for producing a certain level of effort to improve compliance. Second, OECA determined that it would be very useful to know what amounts and combinations of activities produced the results it would now measure. As more experience was gained using both output and outcome indicators, it was felt that patterns would emerge regarding what types of outputs produced the most effective outcomes, and OECA could then adjust its strategies accordingly.

5 PHASE 2 -- DESIGNING AND IMPLEMENTING BETTER INDICATORS

After identifying the new indicators, EPA began a multi-year process of designing and implementing the indicators. This design and implementation phase is a necessary step for developing accurate and reliable performance indicators, but it is a step which can be overlooked or de-emphasized in the rush to begin using better indicators sooner rather than later.

EPA used several strategies to organize and complete the design and implementation of the new indicators:

5.1 Internal Work Teams

For each of the new indicators, a team of EPA staff and managers was assembled to develop plans to implement each measure. These groups defined the indicators in more precise detail, reviewed relevant data in existing EPA systems, developed new information collection and reporting processes as needed, and established a schedule for testing and implementing the indicators. These work groups were very useful in identifying and overcoming barriers to effective implementation and they had the added benefit of involving staff and increasing their sense of ownership of the new indicators.

5.2 Pilot Projects

Some of the indicators were implemented as pilot projects so that a testing phase could be used to solve implementation problems. For example, there were unanticipated difficulties in the collection and reporting of new information, and the pilot phase was used to correct the problems and evaluate the continued use of specific indicators.

5.3 Consultants

Expertise from outside EPA was used to address difficult technical issues. In developing statistically valid noncompliance rates, a consultant helped design a sampling methodology that resulted in a rigorous plan for conducting inspections at randomly selected facilities. These inspections were used to produce a representative sample to measure noncompliance in specific industry sectors.

5.4 Phased Implementation

The new indicators were implemented gradually over a three-year period. Some of the indicators were implemented and available for use in Fiscal Year (FY) 1998, while others were not completed until FY 2001. Although this meant that the full set of indicators was not available for use for three years, the time spent developing them produced more accurate information and spread the implementation burden over a more manageable period.

6 PHASE 3 -- USING BETTER PERFORMANCE INDICATORS

Now that EPA has implemented a better set of indicators for its enforcement and compliance assurance program, the indicators are being used for two purposes. First, the indicators are being used to report to the public, the U.S. Congress, and the U.S. Office of Management and Budget (OMB) about the results being achieved by the national enforcement and compliance assurance program. Second, the indicators will be used to analyze and improve the performance of the program.

6.1 Reporting to External Audiences

Under GPRA, EPA and all Federal agencies are required to produce an Annual Performance Report (APR) that describes the results and outcomes achieved through the activities of major programs. This requirement has been in place since Fiscal Year 1999, and each year the APR for OECA has focused increasingly on results and outcomes while de-emphasizing the more traditional counting of inspections and enforcement activities. In addition, budget requests presented to OMB officials and Congressional appropriations committees have been greatly aided by the new indicators. OECA can now describe its enforcement and compliance program accomplishments in terms that resonate with its multiple audiences – pounds of pollutants reduced through enforcement, improved management practices at facilities from compliance assistance, violations corrected and disclosed through EPA audit policies.

Appendix B. provides the most recent set of indicators reported to the public at the end of Fiscal Year 2003.

6.2 Monitoring, Analyzing, and Improving Performance

The real value of having better performance indicators -- even more important than the ability to report meaningful results to external audiences – is to use the indicators to monitor, analyze, and improve program performance.

OECA is using its improved indicators to produce three reports that are used as management tools by managers and staff in EPA's headquarters and regional offices. These tools are: a Monthly Management Report; Regional Data Profiles; the Watch List for Significant Noncompliance; and Program Element Studies.

6.2.1 Monthly Management Reports

At the beginning of each month, OECA distributes via email a set of reports to the senior managers of its headquarters and regional offices. These reports provide a current account of the performance of each regional office and the national program as a whole in producing key outputs and outcomes. In addition to data about performance indicators for the current year, the report also provides data about performance in the previously completed fiscal year to provide a benchmark. For example, regional managers can compare the number of cases issued up to the present in the current fiscal year against the number issued in the previous fiscal year.

6.2.2 Regional Data Profiles

The Assistant Administrator for OECA visits each of EPA's ten regional offices twice each year to conduct management reviews. Prior to each trip, a Regional Data Profile is developed to provide detailed information about the performance of the individual regional office. The Profiles contain data about performance in the current fiscal year, three-year trends on key outputs and outcomes, comparisons to performance of other regional offices, and they also identify specific program management and performance issues that need to be discussed with managers of the regional office. These profiles allow senior managers to analyze the activities performed and the results achieved, and adjust program strategies as necessary.

6.2.3 Watch List for Significant Noncompliance

Beginning in early 2004, OECA will distribute a report to regional offices that lists all facilities where significant noncompliance has been identified but has not been addressed after a prolonged period. Under EPA policies, more serious categories of violations are designated as significant noncompliance and those policies require timely and appropriate responses such as enforcement actions to resolve violations. The Watch List will allow regional offices to work cooperatively with those states having delegated authority to address facilities in significant noncompliance, and ensure that these facilities are returned to compliance as soon as possible.

6.2.4 Program Element Studies

OECA has also implemented a process for analyzing the performance of the various elements of the national enforcement and compliance assurance program. This process is described in a guidebook developed by OECA entitled, *Using Performance Data as a Management Tool*. The process described in the guidebook is organized around five performance-based questions that provide a framework for the analysis. The five questions are:

- Are we contributing to the goal of protecting human health and the environment through our actions and strategies?
- Are we changing the behavior of the regulated community in ways that lead to improved environmental performance?
- Are we achieving appropriate levels of compliance in key populations?
- Are we achieving the appropriate levels of enforcement activity in the regulated community?
- Are we providing appropriate assistance to our state and tribal partners to support them in contributing to improving environmental performance?

Under each question, the relevant performance indicators are arrayed to address the question as thoroughly as possible. The framework allows data about results and the activities that produced them to be analyzed. These data can be examined for patterns and more can be learned about the combinations, types, and amounts of activities that produce the most desirable results.

The framework was first used in FY 2003 to analyze EPA's compliance and enforcement program under the Clean Water Act. The results of that analysis was reviewed by OECA senior management and recommendations for program improvements are now being implemented. Two studies will be conducted each year beginning in FY 2004.

7 SUMMARY AND CONCLUSIONS

Government programs of all types are under growing pressure to produce results, measure outcomes, and continuously assess and improve program performance. Developing better indicators of performance is an indispensable step that enables programs to move into

the era of results-based management. Environmental compliance and enforcement programs face special circumstance and obstacles that make development and use of better indicators a very formidable challenge.

The EPA indicators described in this article are not offered as a universal set that will suit all environmental compliance and enforcement programs. Rather, the three-phase process used by EPA is suggested as an approach that other programs can use to develop and use better indicators. Programs and agencies willing to invest the time and resources to: (1) identify potential indicators through broad stakeholder involvement; (2) design and implement indicators in a careful and deliberate manner; and (3) use indicators to analyze and improve programs, will enhance their accountability to the public, improve their effectiveness, and increase their contribution to protecting the environment.

APPENDIX A: DISCUSSION QUESTIONS FOR STAKEHOLDER MEETINGS ON ENVIRONMENTAL ENFORCEMENT AND COMPLIANCE INDICATORS

The questions listed below were used to guide discussions between EPA and state environmental agencies, industry associations, environmental and other non-governmental organizations, budget oversight agencies, other federal regulatory agencies, Congressional staff and academic experts.

1 QUESTIONS USED FOR ALL MEETINGS WITH STAKEHOLDERS

- What criteria should be used to identify appropriate performance indicators?
- What makes a "good' performance indicator – relevance, transparency, feasibility?
- Are there particular indicators that seem most promising?
- Are there indicators that are most urgent for EPA to adopt?
- What are the strengths and weaknesses of the three categories of performance indicators – outputs, intermediate outcomes, and end outcomes?

2 QUESTIONS FOR STATE ENVIRONMENTAL AGENCIES

- Are states currently measuring outcomes of enforcement actions?
- Are states currently measuring compliance assistance outputs and their impact?
- Are states able to use end outcome indicators to measure the performance of their enforcement and compliance assurance program?

3 QUESTIONS FOR INDUSTRY ASSOCIATION REPRESENTATIVE

- How can information be collected to develop compliance rates that are based on representative samples of industry sectors?
- What information would be needed to measure positive change or achievements in environmental management by regulated entities? How would such information be collected?
- How could EPA structure categories of violations or enforcement actions to differentiate levels of harm or gravity?
- How can information be collected about the number of facilities or companies that have implemented environmental management systems?

4 QUESTIONS FOR ENVIRONMENTAL AND OTHER NGOS

- How can EPA more effectively measure the deterrent effect of its enforcement actions?
- What changes should be made to current EPA enforcement output indicators? Are there current indicators that should be reduced or eliminated to make room for outcome indicators?

5 QUESTIONS FOR OTHER FEDERAL REGULATORY AGENCIES

- Are other federal agencies measuring the outcomes or results of enforcement actions?
- Are other federal agencies measuring the outputs or outcomes associated with compliance assistance or other non-enforcement approaches to compliance?
- Are other federal agencies using compliance rates to measure performance? Are any of these agencies using sampling techniques to make compliance rates statistically valid?

6 QUESTIONS FOR MEETINGS WITH BUDGET OVERSIGHT AGENCIES

- What indicators are currently used by such agencies to evaluate the performance of EPA's enforcement and compliance assurance program?
- Are there other indicators such agencies would prefer as supplements or replacements for current indicators?

APPENDIX B: PERFORMANCE INDICATORS FOR EPA'S ENFORCEMENT AND COMPLIANCE ASSURANCE PROGRAM: EXAMPLES FROM FISCAL YEAR 2003

1 INTERMEDIATE AND END OUTCOMES

Estimated Pounds of Pollution Reduced	~ 600,000,000
Pounds of Contaminated Soil and Sediment	7,479,000,000
Gallons of Wastewater/Groundwater Treated	6,500,000,000
Acres of Wetlands Protected	1,050
People Served by Drinking Water Systems Brought into Compliance	2,000,000
Investments in Pollution Control	$2,879,000,000
Investments in Other Environmentally Beneficial Projects	$65,000,000
Facilities Voluntarily Disclosing Violations	614
Companies Voluntarily Disclosing Violations	379
Number of Regulated Entities Seeking Compliance Assistance from EPA Centers	800,000
As a result of assistance from EPA Centers ...	
Percent of Entities Reporting Improved Understanding of Regulations	87%
Percent of Entities Taking Actions to Improve Environmental Mgmt.	75%
Percent of Entities Reporting Pollutant Reductions	81%

2 KEY OUTPUTS

Number of Administrative Compliance Orders	1,582
Number of Administrative Penalty Complaints	1,888
Number of Administrative Penalty Order Settlements	1,707
Dollar Amount of Administrative Penalties	$24,000,000
Number of Judicial Cases Referred for Prosecution	268
Number of Judicial Cases Settled	195
Dollar Amount of Judicial Penalties	$72,000,000
Number of Inspections Conducted	18,880
Number of Investigations Conducted	344
Regulated Entities Reached by EPA Compliance Assistance	721,000

Notes About the Outcomes and Outputs:

- The pollutants reduced, soil and groundwater removed or treated, wetlands protected, people in complying drinking water systems, and investments in pollution control and beneficial projects all were the direct outcomes of civil and administrative enforcement actions that were completed in Fiscal Year 2003.
- Facilities and companies voluntarily disclosing violations resulted from the use of EPA's incentive policy to encourage companies to detect, disclose and correct violations through self-audits.

- The 800,000 entities seeking assistance used one or more of EPA's 13 Web-based compliance assistance centers. Each center provides information about compliance that is tailored to specific industry sectors. The percentages reporting various results were based on surveys of users of the assistance centers.
- All of the above information on outcomes and outputs can be organized by statute, by regional office, by period of time, thus allowing analysis of trends that can greatly aid management of the national program.

APPENDIX C: OBSERVATIONS AND SUGGESTIONS FOR INDICATORS PROJECTS IN DEVELOPING/TRANSITIONING NATIONS

The circumstances under which the U.S. EPA has identified, implemented, and used performance indicators for its national enforcement and compliance assurance program are very different than the circumstances facing developing or transitioning nations. Based on presentations from a variety of nations at indicator workshops over the last two years, there are at least five challenges confronting developing and transitioning countries as they attempt to develop environmental and compliance indicators.

1 COMPLIANCE CULTURE IN FORMATIVE STAGES

In many countries, the obligation to comply with environmental (and other) requirements is not yet ingrained deeply. In some countries, the rule of law is not yet embraced deeply by citizens, businesses, and institutions of government.

2 ENVIRONMENTAL LAWS NOT IMPLEMENTED FULLY

Environmental laws may be relatively new, they may have undergone significant changes, there may not be much experience with the implementation of these laws or sections of the laws, and there may be impediments to implementation of specific sections of the laws.

3 ENVIRONMENTAL AGENCIES NOT MATURE

The operation of environmental agencies may not be very sophisticated, they may possess limited capabilities, they may have severe resource shortages, and may even be struggling for viability.

4 JURISDICTIONAL ISSUES

National, regional, state/provincial, or local/municipal levels of government may not have clear roles and responsibilities, or such responsibilities may be clear but one level of government is not implementing them or doing so in a dysfunctional way.

5 SYSTEMATIC DATA COLLECTION LACKING

Some countries lack data systems or may be only beginning to develop them. In the absence of organized efforts to report and collect data, even basic output indicators are difficult to establish.

These challenges are inter-related. For example, developing a compliance culture may be impeded in countries where environmental laws or agencies are not fully functional, and the lack of data reporting and collection systems may slow the effectiveness of environmental agencies. Finally, the fundamental tension between economic development and environmental protection is often exacerbated in developing and transitioning countries. The emphasis on economic improvement or expansion can often cause environmental protection to be a low priority for government attention.

In spite of these challenges, many developing and transitioning nations are implementing viable environmental compliance and enforcement programs and are moving to identify, develop and use performance indicators to measure the effectiveness of these programs. Here are some suggestions for beginning an effort to develop and implement indicators for environmental enforcement and compliance programs. These suggestions are the “lessons learned” drawn from reports and presentations from several nations at indicators workshops during the last two years, as well as the experience of the U.S. EPA’s enforcement

and compliance indicators effort during the last five years. These suggestions can serve as a set of steps that should be especially helpful for developing and transitioning countries that want to make progress in developing enforcement and compliance indicators.

5.1 Determine the scope of the indicators

A fundamental issue that needs to be resolved at the beginning of any effort to develop indicators is the scope of the effort. Two questions need to be answered to determine the scope: Will the indicators be comprehensive (i.e., covering all laws and programs for which the agency is responsible) or focused (i.e., covering only a specific law or requirement, industry sector, geographic area, or noncompliance pattern)? Will the indicators be national (i.e., covering the national compliance and enforcement program) or sub-national (i.e., covering a program at the regional/district, state, or local/municipal level)?

5.1.1 Comprehensive National Indicators

When it becomes necessary to assess the overall effectiveness and improve management of the national environmental agency's program to ensure compliance with environmental requirements in all federal statutes and regulations, indicators will need to be comprehensive and national.

This was the scope of EPA's effort described in this paper. Appendix B. provides examples of the types of indicators EPA developed to measure the effectiveness of its national program. Developing a set of comprehensive national indicators is a very complex effort since it will involve many persons, multiple agencies, collection of data from many sources, and may require implementation of a national system.

5.1.2 Comprehensive Sub-National Indicators

When it becomes necessary to assess the overall effectiveness and improve the management of the compliance and enforcement program of a regional or district office of the national environmental agency, a state or provincial agency, or a local or municipal agency, indicators will need to be comprehensive and sub-national.

This type of indicators effort has the advantage of being a more manageable size than a comprehensive national effort. Developing a comprehensive set of indicators at a regional, state, or local level can often provide a means of testing a system of indicators which can later be applied to the national program.

5.1.3 Focused National Indicators

This type of effort is necessary when a national environmental agency wants to assess the effectiveness and improve management of a focused national initiative to address a specific noncompliance pattern or environmental risk.

Focused national indicators might be developed for an inspection and enforcement initiative to improve compliance among the petroleum refining industry, a targeted enforcement initiative to improve compliance with all air pollution requirements, or a strategy that integrates incentive and enforcement to reduce emissions of a specific pollutant into water bodies.

This type of effort is also a more manageable size than the comprehensive national effort because it focuses on a specific component or piece of the national program. For a focused national effort it is often advisable to develop indicators that are short-term and specifically tailored for the initiative being measured, rather than develop permanent long-term indicators that would be necessary for a comprehensive national set of indicators.

5.1.4 Focused Sub-National Indicators

This type of effort is necessary when a regional, provincial/state, or local/municipal agency wants to assess the effectiveness and improve management of a focused initiative to address a specific noncompliance pattern or environmental risk.

Focused sub-national indicators might be developed for a regional or state effort to use inspections and enforcement to control deforestation, or a municipal initiative to combine assistance followed by enforcement actions to limit illegal dumping of waste on the land. Focused sub-national indicators are generally short-term and specifically tailored for the initiative, and developing and using such indicators can provide a very useful learning experience for developing comprehensive national indicators at a later time.

5.2 Establish definitions of necessary terms

As mentioned in Section II on Identifying Indicators, it was extremely important in EPA's indicators effort to have an agreed-upon set of definitions for key terms that were used by agency personnel and in the discussions with stakeholders. EPA provided definitions of outputs, intermediate outcomes, and end outcomes, and providing similar definitions would also aid indicator discussions the developing nations might have with their respective stakeholders. The definitions provide a framework for organizing ideas, and allow agency program managers and external stakeholders to see how potential indicators might be used to improve management of the program. At some point, any effort to develop indicators will include a discussion about whether specific indicators under consideration are outputs, intermediate outcomes, or end outcomes.

5.3 Inventory existing data sources

A key step for developing nations interested in implementing environmental compliance and enforcement indicators is to assess the existing data available to support indicators. Is data currently being collected that can be the basis for useful indicators? For example, if data is being collected about enforcement actions issued by regional or district offices and by the national program, such data provide basic output indicators that can be valuable in monitoring operations. Data collection might also be expanded to begin gathering information about results from enforcement actions (e.g., pollution reductions), thereby providing intermediate outcome indicators.

5.4 Emphasize intermediate outcomes

As developing nations work to implement environmental compliance and enforcement indicators, it should be recognized that intermediate outcomes can be a source of very valuable indicators. In fact, intermediate outcomes should be emphasized when developing and implementing indicators. The advantage of intermediate outcomes is that they are often directly caused by the activities and outputs of the program – there is no ambiguity about the causal link between the enforcement actions and the resulting pollutant reduction, for example. Unfortunately, many efforts to develop indicators falter when they focus only on outputs and end outcomes. This is because there is often at best only a very weak link between the government activity and an improvement in an environmental condition. Also, measuring changes in end outcomes can be very expensive, the end outcomes may take years to appear, and improvements in end outcomes such as air or water quality can be influenced by many factors beyond the scope of government activity. For all these reasons, intermediate outcomes should

receive appropriate consideration in any effort to develop indicators.

5.5 Conduct pilot projects

The use of pilot projects to develop and implement environmental compliance and enforcement indicators is highly recommended. Pilot projects provide a period of time for indicators to be developed and tested before being implemented fully. During this period, data can be analyzed, indicators can be refined or adjusted, and mistakes can be corrected. Pilot projects can be designed to test indicators on a small scale (e.g., a focused sub-national project as described in #1 above), and can then be expanded and applied on a larger scale (e.g., a comprehensive national project). Pilot projects are most helpful when there is a concerted effort to identify the lessons learned from the project at its conclusion. These lessons are vital for moving from a small scope pilot to a larger scope effort.