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

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## SUMMARY

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.

## 1 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 2002 budget is over 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 3,400 employees who provide assistance, conduct inspections and investigations, develop and execute enforcement cases, and manage national compliance data systems.

## **2 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.

### **2.1 Limitations of Output Indicators**

Traditional indicators of program performance consist of activity counts, "outputs" such as the number of inspections conducted, enforcement cases initiated, 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.

## 2.2 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 non-compliance 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 have 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.

## 3 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. As part of this effort 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 effort was extremely beneficial to EPA's strategy for identifying better performance indicators.

### 3.1 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.

#### 3.1.1 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.

#### 3.1.2 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 multifaceted. Therefore, a variety of performance measures are needed to ensure accountability, improve management, and increase program effectiveness.

#### 3.1.3 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.

#### 3.1.4 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 to individual functions of an agency or program. Prevention or deterrence of undesired outcomes is difficult to measure. Outcome measures are most concrete and useful when they are specific to a particular problem, and therefore may not lend themselves to broad aggregation.

#### 3.1.5 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.

### 3.1.6 Performance Measures Should Be Used Principally to Evaluate Effectiveness and Manage More Strategically, Rather Than Simply Reporting 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-designed and wisely utilized set of performance measures can put strategy and vision, goals and objectives at the center of management attention.

### 3.2 Criteria for Evaluating Potential Indicators

The discussions with stakeholders provided also many suggestions about potential indicators that OECA could use to measure the performance of its programs. Those same discussions also produced a set of criteria that OECA used to examine the value of each potential indicator and decide which to implement. 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.
- as comprehensive as possible with respect to the important operational aspects of program performance.

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,
- percentage of enforcement cases requiring improvements in facility environmental management.
- dollar value of injunctive relief and supplemental environmental projects.
- number of audits and self-corrections by companies/facilities using EPA policies.
- number of entities seeking compliance assistance from EPA assistance centers.
- rate of recidivism among significant violators and average time to return to compliance.
- 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 the ultimate outcomes of environmental protection such as improved quality of air or water, but 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.
- number of training course and other capacity building efforts provided to state, tribal, or local programs.

#### **4 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 deemphasized 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:

- **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.

- **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.
- **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.
- **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.

#### **5 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.

### 5.1 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 FY 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.

### 5.2 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 analyze and improve program performance. OECA is now beginning to use the indicators for this purpose.

OECA has developed 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 Measurement Data as a

Management Tool.” The process described in the guidebook is organized around a framework of five questions that provide a structure 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 attempt to answer the question or at least address the question in the best manner 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 will be tested first to analyze EPA’s compliance and enforcement program under the Clean Water Act. OECA senior management will review the results of that analysis, and then a different program component (e.g., the Clean Air Act compliance and enforcement program) will be analyzed. Ultimately, the framework will be used to analyze the entire national program after the close of FY 2002.

## 6 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, which 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.