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## MEASURES OF SUCCESS

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### GOALS

Workshop participants focused on the following questions:

- What is success for a compliance and enforcement program and what are the results for which we are looking? Who is the audience for measures of success? Do the different audiences require different information?
- How do we measure the results of our compliance and enforcement programs and the effects of enforcement? How can we get quantitative assessments that are meaningful and what are reasonable surrogates? How do we assess quality? (e.g. of inspections) What is the cost and reliability of obtaining information on success?
- How do we use the measures to help manage programs? How do we relate what is done to the results? How do we assess success of actions against goals and whether our priorities are correct? How can we set reasonable goals? How do we ensure compliance is the goal rather than enforcement?
- What performance measures should be used by the regulated community in implementing compliance objectives under ISO 14000?
- How can we communicate success so the public understands and appreciates accomplishments?

### 1 INTRODUCTION

Effective management of environmental compliance and enforcement programs depends on our ability to communicate program success and progress through appropriate quantitative and qualitative measures. Such measures allow managers to track resource use and the effectiveness of activities, communicate with the public and gain program support, convince the regulated community of the importance of compliance and consequences of noncompliance and relate a degree of success to particular sets of activities so adjustments can be made to ensure program effectiveness. Participants discussed challenges in coming up with meaningful measures, developing and communicating accurate information, and relating to a range of purposes and audiences for this information.

### 2 PAPERS

A paper by Richard Duffy entitled, "Measuring the Success of Compliance and Enforcement Programs" in the Proceedings describes the evolution of the use of measures to manage, evaluate, and communicate program success within the United States and current attempts to enhance the use of environmental indicators (e.g. pollutant loadings reduced, environmental quality restored or changed) in addition to traditional measures of activities (e.g. numbers of inspections, numbers of enforcement actions), compliance results (e.g. rates of compliance, return to compliance of significant violators) and enforcement results (cost of injunctive relief, value of supplemental environmental projects, timeliness and appropriateness

of enforcement response, levels of fines and length of jail terms). The “Principles of Environmental Enforcement” text chapter on accountability and evaluation proposes a list of measures and their potential use in program management, advantages and disadvantages.

### 3 DISCUSSION SUMMARY

#### 3.1 Defining “success”

Discussion first centered around the question of what “success” is for an environmental compliance and enforcement program. Participants generated a list of possible ways to define success including:

- Creating an atmosphere or culture of compliance; increase in the rate of compliance; no violations.
- Improving environmental quality - reducing water pollution, air pollution, etc.
- Depending on objectives, success could be:
  - fewer demonstrations (e.g. public satisfaction)
  - reduced government role
  - least cost to encourage compliance
- Achieving something that gives a feeling of pride and accomplishment in our work; something “to feel good about”.
- Reduction in repeat violators and/or success in attacking the hard core of noncompliance.
- Enforcement response achieves intended results.
- Inspections are of good quality, appropriately detect violations.
- All of the above, in a continuous improvement model.

The participants concluded that, “there is no one magic formula”. Each of these ways of measuring success were valid when viewed in the context of various program objectives.

#### 3.2 Why Measure Success and for whom?

In exploring the purpose for measuring success it became apparent that there are many potential reasons for measuring success, including to:

- Know what you are doing.
- Evaluate how well you are doing:
  - link activities, results, and goals
  - improve the approach to enforcement and compliance
  - assess the effectiveness of specific compliance and enforcement tools
- Justify budget/resources: to stay in business.
- Motivate:
  - the regulated community to comply
  - enforcement and compliance agency personnel

- public support
- Take credit for improvements (where other factors may also apply) for both professional and personal reasons.

The range of reasons also corresponded to a range of potential audiences for measures of success including internal management, budget and resource managers, the general public, the regulated community and officials who must support decisions on resources and authorities. During discussions and sharing of experiences, it became apparent that what may be a good measure for one purpose may not be useful for another purpose. Participants concluded that measures should be related to specific program objectives, but also to these different audiences and purposes.

Participants also agreed that a number and range of measures are needed to address a range of audiences and purposes and that no single measure will satisfy all needs even for a single audience. Programs need a range of measures and these must be suited to specific audiences and purposes. The concept of “measuring success” was also challenged in that it may place too much emphasis upon “success” rather than “progress” thereby raising expectations prematurely in early stages of program implementation which may take some time to yield results.

### 3.3 Measures in use

Participants listed many different measures potentially and currently used by environmental compliance and enforcement programs, including:

- Number of inspections.
- Number of violations.
- Rate of compliance.
- Types and targets of noncompliance.
- Amount of fines.
- Industry composite indicators.
- Stopping pollution sources.
- Extent to which industry is committed to environmental goals.
- Correction of noncompliance.
- Number and type of enforcement responses.
- Stopping environmentally damaging projects.
- Reduction in pollutant loadings.
- Amount and cost of pollution control equipment.
- Public awareness and participation: increases in number of visits to library, hearings requested, demonstrations.
- Increase in agency budget.
- Degree of public and/or parliamentary attention and support.
- Number and time to respond to complaints.

### 3.4 Measuring success: current experiences

Participants shared individual experiences with successful program accomplishments and measures used to describe them and manage for them. The result of these discussions were a set of principles which cut across all the experiences.

#### 3.4.1 Number of inspections performed by local governments: getting local government to fulfill commitments to inspect sources in the Netherlands

In the Netherlands local governments have not undertaken environmental inspection activities to the extent they were responsible under national law. Indeed many have not undertaken any inspections. The national government provided funds and established agreements with local communities to undertake these inspections. The number of inspections compared against the plan was used as a measure of success. This measure also provided an accounting of whether funds were properly spent. Participants in the workshop discussions recognized that over time the number of inspections alone would not be a good measure of success since there would be further expectations in regard to what was done with the inspector findings of noncompliance in order to demonstrate that the program of inspection and enforcement response was resulting in compliance and environmental improvement.

#### 3.4.2 Communicating with the public on non-compliance when success looks like failure: number of violations/types and targets of noncompliance (Norway example)

In Norway, the Norwegian Pollution Control Authority for years has reported the number of controls and the number of violations on an annual basis. Since one of the targets of the agency's controls is companies with the highest possibility of having violations, the reports through the years show little or no decrease in the number of violations. This has caused confusion since many regard the report as a status of the environmental behavior of industry. This news also was received by the public as a failure rather than as a success since there were no other measures of performance such as increasing rates of compliance. The Authority now stresses heavily that the controlled companies are in no way a representative sample of Norwegian industry.

Participants discussed the difficulty of finding measures of program success which adequately communicated with the public. Discussion focused on the problem of interpreting quantitative results without qualitative information about the status of the program and what the trends mean. For example, an increasing number of violations is a success in a program seeking to improve detection and a failure in a program trying to reduce the rate of noncompliance.

#### 3.4.3 Increasing public support and involvement in industrial compliance (Thailand and Malaysia experiences)

In programs such as those of Thailand and Malaysia increased numbers of public demonstrations are measures used to evidence an increase in desired public involvement. Other workshop participants were at first very surprised at this measure of success since this activity is considered a negative indicator in countries with a tradition of public involvement. Following discussion it became apparent that because of the importance of political support for industrial compliance, such activity is an indicator of an informed and supportive citizenry and was therefore a very good measure of program success given this objective.

#### 3.4.4 Sending the deterrence message to the regulated community - problem of keeping up the trends: supplementing information on amount of fines and jail terms with environmental results measures (United States example)

In the United States, a range of measures of activity (numbers of inspection, numbers and types of enforcement response, timeliness of enforcement response), and results (compliance rates, return to compliance by significant violators, fines, jail terms and investments in compliance, prevention, and correction of damages undertaken through enforcement actions) are used on a routine basis. Recent efforts to better communicate with the public and manage with more consideration of environmental risk is resulting in new measures being added to address pollutant loading reduced for each enforcement action, and cumulative environmental results wherever possible to do so. The U.S. is trying to ensure environmental measures accompany every enforcement action. In addition, measures have recently included expenditures on compliance that result from enforcement actions rather than a focus just on penalties and fines, a surrogate for benefits to the environment and indicator of strength of deterrence.

#### 3.4.5 Potential for government officials to use emerging industry indicators of performance

The industry representative at the workshop and Conference offered the perspective and efforts of industry to find good measures of performance to support internal programs and external communications and ISO 14000 commitment to continual improvement in management systems. One example is that used by Merck and Company, a pharmaceuticals company, to develop a Composite Compliance Progress Indicator:

- Score of zero on facility index (private sector self-audit program). Index is based on several factors, among them:
  - number of incidents multiplied by relative impacts
  - publicity (amount and exposure of news coverage)
  - severity and number of violations per audit
  - amount of time to remedy
- Score is normalized for complexity of facility.

Participants observed the potential for such industry developed measures to be adopted by regulator agencies as well to establish trends over time.

#### 3.4.6 Stopping pollution sources

Mexico recently communicated its resolve to respond vigorously to violations by presenting statistics on the number of pollution sources closed down. The case study from Israel in the Proceedings related to closing and shutting down illegal hazardous and non-environmentally sound landfills was also noted in the discussion. Participants felt that such measures can be powerful in communicating a deterrence message, but in the long term may not alone serve as the measure of program success unless tied to broader program objectives and measures. In the general context of industrial operations, shutdowns are in one sense success but in another a failure and with greater compliance, the number will presumably fall and success will be difficult to distinguish from a lack of government will if there are fewer plant shutdowns. In the case of the Israeli case study, the primary objective was to ensure proper waste disposal and the effect of shutting down illegal or legal operations with their integrated strategy of providing sound

alternatives depends upon the availability and use of alternative facilities. The discussion again pointed to the importance of changing measures over time to correspond to the maturity of the program and its objectives and to putting such numbers in context.

#### 3.4.7 Getting to environmental results: protection of shellfish beds through enforcement; use of staged measures (British Columbia, Canada example)

Participants discussed the lessons learned from this experience including a) the importance of environmental indicators of success where possible to communicate with both the public and ultimate program strategic priorities; b) the delay in getting environmental results data in implementing programs; and c) the life cycle of a program and need for a range of measures to be used in a program context.

In British Columbia, Canada, where shell fish beds needed protection enforcement was identified as an essential means of achieving this goal. Measures evolved over time from numbers of enforcement actions initiated and inspections undertaken in the early states to penalties and clean up imposed through enforcement to eventually measure shellfish bed improvements.

## **4 CONCLUSIONS**

There are many ways to define success for an environmental compliance and enforcement program. Participants in this workshop developed a potential list of measures with dozens of activity and result measures, but agreed upon several principles.

- A mix of quantitative measures and qualitative assessments is needed. No single statistic can be made useful particularly in the absence of qualitative information. They should also reflect the full range of responses from encouraging compliance and providing incentives to enforcement response.
- There must be a linkage between program objectives and measures appropriate to those objectives: Purposes may range from seeking to support requests for program resources, to assessing performance, to seeing if actions resulted in desired results, to assessing overall strategy and accomplishments. Measures of success identified by participating countries ranged from counting inspections to measuring concentrations of toxic pollutants in shellfish. They included reductions in government roles, reductions in repeat violators, and increases in compliance rates. Within a specific context, what is success to one country may not be success to another, depending upon program development, life cycle, and other factors.
- We must also keep in mind that enforcement is only one part of the program, and cannot be separated.
- The ideal measure of compliance and enforcement success is improvement in environmental quality, however: 1) it is very difficult since many other factors affect environmental quality; 2) indicators of enforcement or compliance activities such as numbers of inspections or numbers of penalties are necessary to know what we are doing; and 3) indicators of environmental improvement often require elapsed time before they are either available or reflect the benefits of enforcement activity.
- There appears to be a natural life cycle to a program and what are appropriate measures of success at different stages of the program. For example, inspections will precede enforcement response will precede enforcement results such as fines,

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compliance and investments in pollution control and all of these will precede environmental quality improvements. In addition, from a management standpoint we can:

- Initially measure enforcement organization activity: number of inspections, violations, fines.
- Then, measure follow up to noncompliance: amount and size of fines.
- As performance and compliance improves, measure changes/improvements in technologies.
- Once demonstrated, measure and report on environmental improvements.
- Multiple audiences for measures must be addressed and new sources of creative ideas developed for evaluating progress - potentially a preferred concept to that of measuring success. Measures used for internal management may be either insufficient or unconvincing for our external audiences.
- Enforcement has a multiplier effect which must be taken into account in interpreting and using measures of success. It was noted that achieving reductions in substantive violations could lead to increased attention to other types of violations, such as reporting, record keeping, monitoring, etc., which cannot be measured in environmental result terms.

We should work on the development of environmental indicators. Those are difficult to relate to enforcement activities since so many other factors affect environmental quality. Several leading industries have developed composite measures of their own compliance and environmental performance that might be useful including several shared with the group which weighted number of incidents, their severity and the complexity of the facility's operations.

In brief, there is no one magic formula.