
STRATEGIC TARGETING FOR COMPLIANCE AND ENFORCEMENT

DUFFY, RICHARD F.

Chief, Targeting and Evaluation Branch, Enforcement Planning, Targeting, and Data Division, Office of Compliance, Office of Enforcement and Compliance Assurance, U.S. Environmental Protection Agency, 401 M Street S.W., (MC-2222A) Washington, D.C. 20460, USA

SUMMARY

This paper reviews some of the history of the United States Environmental Protection Agency's (EPA) efforts to target its resources at sources of environmental pollution. The paper tracks the evolution of targeting efforts from the late 1970s to the present. Early targeting efforts were based almost exclusively on independent single-media approaches i.e., the clean air program and clean water program worked independently of each other, even if both programs were working with the same major industry groups or, in a few instances, the same facility or company. In the early 1990's, in recognition of the realities of one of the most basic physical principles, that of mass balance (where mass is neither created or destroyed, only its form changes), the Agency began working to implement more holistic multi-media approaches to environmental enforcement. Among recent efforts to implement holistic approaches are targeting compliance and enforcement efforts at individual industrial sectors based on their multi-media compliance histories and their overall reported releases of toxic chemicals. Holistic multi-media approaches are also being pursued for particular geographic areas and ecosystems, pollutants of concern, and corporations. Each of these major areas of activity are discussed in detail.

1 INTRODUCTION

Targeting of resources is a fundamental activity for any organization regardless of its size, nature of its work, or whether it is a public agency or private enterprise. It can be used by senior managers to inform and direct long-term macro-level strategic decisions looking one or several years into the future, and it can be used to guide short-term field-level decisions (i.e., the next few weeks or months) on how best to allocate resources to meet overall organization-wide goals. Targeting is becoming increasingly critical to the compliance and enforcement programs of EPA and the states as their regulatory programs have grown in scope and complexity at a time when budget constraints on federal and state governments are resulting in stagnant or declining resources levels. Efficient use of scarce field resources is essential if EPA and its state partners are to fulfill their many regulatory mandates. Strategic targeting based on sound analysis of information about the state of the environment and of compliance by regulated entities is essential to achieving efficiency.

Targeting plays an important role at several stages of the organizational planning process. It is essential to informing the early stages of the long-term planning process where senior managers consider ideas and concepts for organizational priorities and new areas of emphasis. Once macro-level decisions have been made, targeting analysis is critical for translating the macro-level directions into operational plans and commitments at the field office level. In many ways, the stages of the targeting process are akin to peeling an onion - one layer leads to

another until you get to the core. Targeting is an ongoing cyclic process, however, with measurement and analysis of the results of prior targeting efforts providing feedback to the organization for future planning.

2 BACKGROUND

For much of its existence, EPA has carried out its planning and targeting functions on a media-specific basis, e.g., the Clean Air program planned and targeted its program without interaction with the Clean Water program or the hazardous waste program. This approach was logical since the Agency has been organized by statutes which focus on particular environmental media, i.e., separate statutes and offices for air, water, hazardous and solid waste, and pesticides and toxic substances. Within each of these major organizational subcomponents, the planning and targeting process have started with identification of broad areas of priority, with iterative refinement of those priorities until they evolve into facility-specific action plans for field level operations in EPA or State agencies.

2.1 Early targeting of major sources of air and water pollution

Media-specific targeting has frequently been guided by deadlines or specific requirements contained in the individual statutes. In the late 1970's and early 1980's, the Clean Air and Clean Water programs targeted their efforts on specific lists of facilities and industries which had never achieved initial compliance with regulations promulgated under those statutes. Known as the Major Source Enforcement Effort (MSEE), "major" facilities were targeted by either EPA or state agencies. ("Major facility" is defined by the air program as a source with a potential to emit greater than 100 U.S. tons per year, and a "major facility" is defined by the water program as a source with discharges to navigable waters of greater than 1 million U.S. gallons per day). Facilities targeted were primarily power plants, publicly owned treatment works, petroleum refineries, steel mills, and chemical manufacturers. Collectively, EPA and the states took over 600 enforcement actions for water-related violations and over 400 actions for air-related violations. At the conclusion of the Major Source Enforcement Effort, initial compliance with the air and water statutes for many industries had been achieved, or enforceable schedules to achieve them had been established, and focus in these programs began to shift toward maintaining continuous compliance.

2.2 Significant noncompliance as a targeting mechanism

In the mid-1980's, the Agency began implementing the concept of "significant noncompliance" (SNC) into its management processes for use in long-term goal setting, annual planning, and measuring success. Each of the major regulatory enforcement programs established national criteria and definitions for high priority violations that constitute significant noncompliance. Significant noncomplier lists are not industry-specific nor geographically oriented, rather, the lists are generated by applying the media-specific criteria to the full universe of facilities regulated under each statute. If the facility meets the violation criteria, it is placed on the significant noncomplier list. Optimal timeframes for responding to facilities on the significant noncomplier list are established, with initial response to occur within at least 150 - 180 days after the violation is detected. Progress in responding to violations is closely monitored by each program, and the success of both EPA regional programs and state programs are judged, in part, based on performance vis-à-vis significant noncompliers. Significant noncompliance is a dynamic process which is well suited to the realities of pollution control where regulated entities can come in and out of compliance due to equipment failures, poor operations and maintenance practices, or

new regulatory requirements. The significant noncomplier concept continues to be a key management tool for identifying and addressing violators, and the definitions of significant noncompliance continue to be set on a media-specific basis.

2.3 Multi-media targeting

In the early 1990's, policymakers at EPA saw that many environmental issues transcend the boundaries of the media-specific programs, and work began on bringing a more holistic, multi-media perspective to compliance and enforcement goal setting, planning, and program implementation. The agency instituted both single- and multi-media inspection targeting and case screening to identify violations which involve significant health and environmental risks. The agency also formulated multi-media initiatives directed at specific industries. Initially, these changes met significant organizational inertia, and both the Administrator and Deputy Administrator, the top two ranking officials at EPA, put a significant amount of personal energy into making sure that the organizational culture at EPA began to take a broader view of the world. These first efforts to implement a holistic, multi-media perspective were generally successful, however, many managers in the media-specific programs were concerned about the high transaction costs associated with coordination among the programs, and about detracting from their basic responsibilities under each statute. Implementation of multi-media approaches continued to require significant commitment from the Agency's most senior officials.

Beginning in 1994, EPA undertook a major reorganization at its headquarters office intended in large part to institutionalize holistic, multi-media approaches to environmental protection. The reorganization consolidated five major media-specific headquarters offices into a single organizational entity with the responsibility for the compliance and enforcement requirements for all the environmental statutes. Similar, but not necessarily identical, consolidations have been implemented in EPA's ten regional offices. Key components of the new headquarters organization include an office dedicated to developing multi-media enforcement cases, offices with expertise in all matters pertaining to specific industries or sectors, and offices that consolidate information management, program planning, and targeting from all of the programs that conveyed to the new organization. This latter office is charged with integrating the media-specific facility data from each of the major computer data systems and conducting broad scale analysis of compliance trends and potential impacts on human health and ecosystems.

3 TARGETING FOR RESULTS

3.1 Early multi-media enforcement initiatives

The multi-media compliance and enforcement targeting efforts that took place in the early 1990's prior to the reorganization were focused on industries such as the pulp and paper and iron and steel industries. These efforts were coordinated by a senior level agency-wide enforcement steering committee which was known as the Enforcement Management Council (EMC). It consisted of representatives from each media office and from all ten regional offices. It served as a "board of directors for enforcement," and it oversaw and sanctioned the development of the enforcement initiatives targeted at major industry groups. It also sanctioned the analytical framework that was used for selecting these industries which consisted largely of an analysis of industry-wide multi-media noncompliance rates, analysis of data reported by facilities to the Agency's Toxic Release Inventory (TRI) (it contains data self-reported by facilities on releases and transfers of over 300 toxic chemicals), and perceived opportunity.

These early initiatives were intended to test new ways of better focusing the attention of the enforcement program at problems that significantly impact human health and the environment, and make better use of scarce Federal and state enforcement resources. To the maximum extent practicable, environmental problems were to be addressed in a holistic, multi-media fashion. Resource efficiencies were expected through focusing inspections, enforcement actions, and settlements on industrial sectors of concern, pollutants of concern, and geographic areas where populations and/or ecosystems are at risk.

The bureaucratic obstacles to implementing these new approaches were significant. Managers and staff at all levels of EPA's enforcement programs were initially resistant to the notion of multi-media enforcement because of the additional new workload associated with establishing and maintaining a multitude of new channels of communication and coordination among the media offices. Many were also concerned that the resource and timing issues associated with developing and initiating multi-media actions would cause programs to fail to meet their media-specific commitments for conducting inspections and taking enforcement action within established guidelines for timely and appropriate response.

The EMC initially set as an operating assumption that the multi-media enforcement initiatives would be conducted from inspection to developing enforcement actions within a single year. With experience, it became clear that one year was simply not enough time to conduct an effective initiative if a significant number of new inspections are to be targeted, as opposed to relying primarily on "opportunistic" cases. At least one year is needed to simply plan and conduct inspections; there should be at least one more year for case development. Most initiatives are better implemented through a multi-year strategy which allows affected offices the lead time to strategically allocate inspection resources to the targeted areas. This is particularly true if the goals of an initiative are very complex or ambitious. A short time horizon also creates tension between regional and state program goals, particularly with respect to implementing the base program.

3.2 Targeting in the new compliance and enforcement organization

As mentioned above, the reorganization of headquarters compliance and enforcement functions consolidated many compliance and enforcement functions which for the prior ten years had been scattered throughout five major offices in headquarters. The reorganization emphasized five key objectives: (1) maintain an imposing enforcement presence to deter noncompliance; (2) use compliance assistance and other innovative tools in addition to formal enforcement actions to bring about compliance; (3) organize compliance strategies, and often formal enforcement activities, around sectors of the economy and ecosystems; (4) utilize multi-media, whole facility approaches to reach comprehensive solutions that fix problems and do not simply move a problem from one medium to another; and (5) measure success by improvements in compliance rates and environmental quality, not just by the number of cases brought or the amount of penalties collected.

Strategic targeting plays a central role in achieving all of these objectives. Targeting analysis plays a role from the very earliest stages of the program planning process where ideas and concepts for future organizational priorities are considered. The analytical process follows through the process of measuring the success of the program, where the targeting data serves as the baseline set of conditions against which results are being measured. Analysis of data may suggest or indicate trends within the regulated community that cause concern about the state of compliance, or it may suggest potential opportunities for achieving greater public health and environmental protection through use of innovative settlements or pollution prevention.

It is very important that the analysis be based on sound and objective analytical techniques and methodologies that can withstand challenges by those facilities or areas that have been targeted. And while it is also important that there be consistency in analytical approaches, especially if targeting work is being conducted by different groups in the agency (e.g., conducted both at headquarters and in the regional offices), a balance needs to be struck in this area because strict adherence to uniform ways of doing analysis will also stifle creativity. It is also useful to expect that the analytical process will be iterative, with refinements either narrowing or broadening the scope of work. Useful byproducts of the iterative process include refinements which strengthen the overall analytical process and an increased understanding by senior managers and staff alike of the meaning and limitations of the data and the analysis.

3.3 Targeting analyses in EPA are generally focused on the following areas: industrial sectors, geographic areas/demographic analysis, corporate analysis, and risk-based analysis

3.3.1 Industrial sectors

Analysis of industrial sectors is conducted using the United States' Standard Industrial Classification (SIC) codes. These codes are 4 digit numbers used to categorize industrial and commercial processes. The first two digits place the facility in a macro-level category (e.g., Category 28 includes Chemicals and Allied Products), and the following two digits provide greater definition and precision (e.g., Category 281 is the subcategory for Industrial Inorganic Chemicals, which is further subcategorized to 2812 for Alkalies and Chlorine, 2813 for Industrial Gases, etc.).

Objective rankings of industrial sectors are used for priority setting among many sectors. The ranking analysis typically includes the historical multi-media noncompliance patterns for all the facilities within the individual industrial groups (EPA's mainframe computer databases allow for analysis of trends over a two-year timeframe), historical information on enforcement actions taken against facilities within the sector, reported releases of toxic chemicals (both the amount of total releases and releases of known or suspected carcinogens), and the frequency of inspections. Relative rankings among the sectors are organized using the noncompliance rate as the primary ranking factor; the secondary ranking factors are total reported releases of toxic chemicals and total reported releases of known or suspected carcinogens. Rankings are developed at the national level to assist in selection of national priorities. Similar rankings are developed for each of EPA's ten regions to reflect the unique mix of industries that exist within each region. The national rankings and the region-specific rankings are then used during the annual planning process to inform discussions between headquarters and regional managers about region-specific priorities and how they relate to, or deviate from, the national priority industrial sectors. These data also form the baseline against which success is measured over time.

For FY 1996, the process described above was used to inform the selection of both national and region-specific priorities. At the national level, this process identified the following major industrial groups as priorities: petroleum refining, primary non-ferrous metals, industrial organic chemicals, plastic materials and synthetics, iron and basic steel products, and pulp mills. On a region-specific basis, some regions have many facilities within these industries and others may have none. Some industries with relatively high noncompliance rates and large releases of toxics may be located mostly in one region. By analyzing the data at both the national and regional levels, it is possible to inform the selection of macro-level national priorities while at the same time informing region-specific decisions about priorities.

3.3.2 Geographic areas/demographic analysis

Geographic analysis can be conducted using one of two starting points. The first starts with an objective set of criteria or characteristics and then attempts to find areas that match those criteria. A second starting point is with a geographic area that is selected based on general knowledge or information from within the agency or the community which indicates that environmental and/or compliance problems may exist. With a known area, the analysis focuses on gathering and sorting through all of the available information for the area for facilities, ecosystems, and populations.

In designing geographic analysis it is important to plan up front for how the data will be displayed. It is usually best to display the objective data in the form of maps created using Geographical Information System (GIS) or other types of graphical depictions (proving the old adage that "a picture is worth a thousand words"). In the Geographical Information System format, "layers" of information can be placed on the map to depict sources, their compliance status (either the rate over time or the current status), the relative volume and nature of their reported releases, important ecological characteristics such as receiving water bodies, critical habitats such as wetlands, watersheds, and recreational areas, and the density and demographics of surrounding populations (e.g., U.S. Census data on minority populations, income level, relative proportion of children and elderly, etc.). Tables containing the underlying data can also be presented, but the most effective way to convey such large volumes of information is proving to be through use of GIS maps.

3.3.3 Corporate analysis

Several models for objectively evaluating corporate compliance patterns have been considered by EPA. Starting points for analysis can be corporation size, number of facilities reported as being in significant noncompliance, corporation-wide noncompliance rate over time, and the total amount of reported releases of toxic chemicals by facilities owned by the corporation.

In corporate targeting analysis, patterns may emerge where corporations and their subsidiaries may be operating facilities improperly in many locations across the country. Corporations and their subsidiaries may operate under many different names, and it may initially be difficult to determine ownership. EPA has found, however, that this complex analysis can uncover persistent patterns of noncompliance across a corporation. In the absence of a unified enforcement response, the corporation may be able to greatly minimize its pollution control expenses. If a pattern can be identified, and a corporate-wide enforcement response developed, the impact on the corporation and its practices, and the resulting benefits to the environment, can be many times greater.

Corporate approaches can be resource intensive due to cross-program coordination and coordination among many or all headquarters and regional offices. Coordination becomes even more complex if EPA's state partners choose to participate in the action. A notable example of the benefits of the corporate approach was an action taken against Louisiana Pacific Corporation where a pattern of widespread noncompliance was uncovered. The government uncovered evidence through its databases and other sources of information that Louisiana Pacific had failed to apply for required Clean Air Act permits and provided incomplete or low estimates on air emissions at 11 of its oriented strand board and medium density fiberboard facilities located in nine states. As a result of the company's failure to report all its air emissions of volatile organic compounds, particulate matter, or carbon monoxide comprehensively, neither the federal nor state governments would or could accurately know the level of air quality deterioration in the vicinity of the plants. In addition, the company avoided installing pollution control equipment that would have been required to prevent the significant deterioration of air quality in areas which

were attaining ambient air quality standards. In settling the case, the company paid an \$11 million penalty, the largest Clean Air Act penalty in EPA's history, and the company is implementing an extensive Clean Air Act compliance program including obtaining all necessary air permits and complying with all necessary requirements and regulations.

3.3.4 Risk-based analysis

Developing risk-based targeting techniques has tested the limits of the data that EPA collects on regulated facilities and ambient environmental conditions. It has also brought into play evolving sciences related to the toxicity and fate of chemicals, pollution pathways, the synergistic effects of chemicals, etc. As EPA has worked to develop a risk-based targeting capability, it has struggled to reconcile conflicting approaches coming out of the scientific community. EPA has convened a workgroup to consider how risk assessment models might be used effectively and confidently and incorporated into the operating strategy of EPA's enforcement and compliance assurance program. The workgroup assembled a compendium of over 160 models, and through repeated applications of ranking and screening criteria arrived at a set of 6 models that are being subjected to more thorough and detailed investigations. The evaluation criteria included amount and type of required data and whether the model provides consideration of multi-media risk and human exposure. For the models which pass the continued evaluation, both independent (of EPA) peer review and the production of guidance to prospective model users will be undertaken. If no models pass these tests, consideration will be given to developing a new model designed specifically for the compliance and enforcement program.

Risk-based approaches are expected to have applications in the conduct of industrial sector analyses, pollutant-specific targeting analyses, corporate analyses, and geographic/demographic and ecosystem analyses. One approach that will be explored will be the development of relative risk rankings of facilities where the amounts of reported releases for individual toxic chemicals are weighted by the toxicity factors for each chemical. An analysis that uses only the total number of pounds released may overstate, in a relative sense, the potential impact of one facility over another. For example, in industrial sector or geographic/demographic targeting, weighting releases by the respective toxicity factors of the individual chemicals may reorder the list of facilities within the sector or area from rankings based on the total amount of all chemicals released. From a program planning perspective, all facilities may still receive an inspection and/or enforcement action, but the order in which the inspections or actions are scheduled may be adjusted to first get to the facilities of greater concern or potential impact to surrounding populations.

Risk-based targeting analysis can be conducted where identified environmental conditions exist (e.g., aquatic systems with known contaminated sediments, river segments where fishing is forbidden, contaminated fish tissue), and then the agency can identify through its data facilities which may be contributing the contaminants of concern. The analysis can assist in developing and implementing strategies (either enforcement or facility permit improvement strategies) for reducing loadings of problem contaminants, directly reducing known risks to human health and aquatic systems.

4 CONCLUSIONS

In conclusion, the following thoughts may be useful in guiding and implementing strategic targeting approaches:

1. Define objective and defensible analytical criteria to ensure that the agency is on solid footing in the selection of enforcement priorities and targets; industries and facilities may take exception to having been targeted as a noncomplier or a potential health risk.
2. Synchronize the analytical process with the agency's annual planning processes to maximize results and to better inform the identification and selection of priorities. Establish baseline compliance and enforcement trend data and use this data to monitor and measure success, results and effectiveness.
3. Make the targeting process inclusive (there isn't a monopoly on good ideas), iterative (macro-level for budget and national guidance, region-specific for local priorities and specific inspection plans), and supple to accommodate emerging priorities, new ideas, or unexpected occurrences (e.g., newly-identified health threats, accidents, spills).
4. Take maximum advantage of the investment that the government has made in the collection (and automation) of compliance and enforcement data. If the agency is not going to use data, perhaps it should not spend resources to collect it.

REFERENCES

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