ACHIEVING ENVIRONMENTAL COMPLIANCE

Volume 1: Measuring Environmental Compliance

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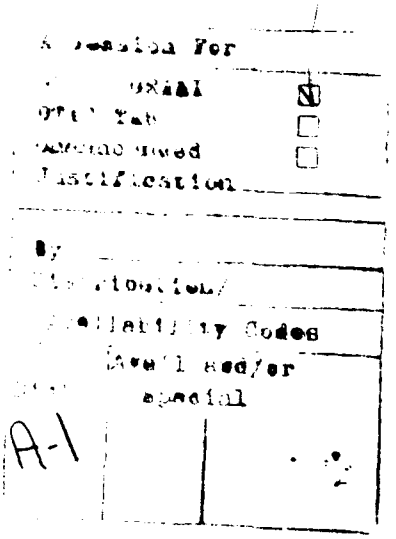
PREFACE

This report is Volume 1 of two volumes that examine the problem of achieving environmental compliance in DoD. In this first volume, we examine DoD's general problem with annually increasing notices of violations, discuss different ways to measure compliance, and recommend a violation-tracking system. In Volume 2, we will examine DoD's FY90 violations in detail to determine the specific causes of these violations with a view to recommending ways of reducing them. Data for the second volume were gathered manually; the conclusions drawn from that data illustrate the usefulness of an automatic violation-tracking system.



Executive Summary

ACHIEVING ENVIRONMENTAL COMPLIANCE

Volume 1: Measuring Environmental Compliance

The Department of Defense, like all Federal agencies, must comply with Federal, state, and local environmental laws and regulations. However, achieving environmental compliance has proved an elusive goal for DoD. The number of notices of violation of the four major environmental laws issued to the DoD by Federal, state, and local environmental regulators increased from about 140 in FY83, to 626 in FY89, the last year for which violations have yet been counted. All of those violations were the result of current environmental practices, not citations for cleanups from past practices.

While the recent number of notices of violation – approximately 1.5 notices per major U.S. installation – is roughly comparable to private industry performance, the *increase* in the number of notices of violation is unacceptable. It not only runs counter to the Secretary of Defense's commitment to make DoD the leader among Federal agencies in environmental compliance but also increases the exposure of DoD personnel to potential legal liabilities and lowers the Department's standing in the eyes of the public. In addition, this trend will prompt Congress to intensify its environmental monitoring of DoD, further removing the initiative from Defense environmental managers.

The lack of progress to date is tied to the broad scope and complexity of environmental regulations, together with the large number of regulatory authorities, spread among 10 U.S. Environmental Protection Agency regions, 50 states, and numerous localities.

Future progress requires that DoD managers be able to see past the general problem of increasing violations in order to identify the specific types of problems causing violations and to prevent these violations. In short, managers need information with which to determine how resources can be apportioned among

competing solutions, such as increased equipment maintenance, major construction, training, or improved administrative procedures.

To make progress toward environmental compliance, we recommend that DoD follow the environmental lead of the private sector by (1) establishing top-level compliance goals, (2) creating a more efficient information system for measuring violations, and (3) increasing the number of self-audits to catch violations before regulators do.

The DoD recognizes the scope of its compliance problem and has already taken steps in the directions we recommend here. The Deputy Assistant Secretary of Defense (Environment) is proposing a goal of total compliance within 2 years. The Army and the Navy have developed automated environmental information systems, and OSD and the Air Force are currently developing theirs. OSD's system – the Defense Environmental Management Information System – will ultimately tie together information from all three Service systems (plus Defense Agency data). In particular, the Air Force is developing a near-real-time violation reporting system. All three Services are developing comprehensive internal audit programs, and the Inspector General is also conducting environmental audits.

Specifically, we recommend that OSD and the Services implement a system to track notices of violation from receipt to resolution. That system, which could stand alone or be combined with an existing system, would allow DoD to determine more accurately what it must do to avoid violations, what it must do to resolve them once received, and how long it takes to resolve them. The system would also allow the Services to determine where the problems are concentrated.

The combination of a clear commitment from top levels to reduce and eventually eliminate violations, a lean and focused information system, and a comprehensive audit system will enable DoD to turn the corner on its poor record of violations. Once DoD has established a record of progress toward compliance, it can then plan how to become a Federal environmental leader.

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CHAPTER 1

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

FINDINGS

Like all Federal agencies, DoD must comply with Federal, state, and local environmental laws and regulations. However, the Department has a long way to go to reach environmental compliance. The number of notices of violation (NOVs) of environmental law issued to DoD by U.S. Environmental Protection Agency (EPA), state, and local environmental regulators has increased steadily from about 140 in FY83, to 626 comparable NOVs (over 700 in total) in FY89. OSD does not yet have a count of FY90 NOVs.

Department environmental managers have attempted to defend that record to Congress with limited success. Since the Secretary of Defense has committed DoD to becoming the leader among Federal agencies in environmental compliance, it is no longer adequate for OSD managers merely to explain away NOVs, they must find ways to reduce them.

Top management of private-sector firms insist that NOVs be kept to an absolute minimum. Information reported to upper management is kept relatively lean, although spot reports are made on all NOVs received. Private firms generally use self-auditing to uncover problems before they become NOVs. Information systems, however, are used extensively at operational levels for auditing, hazardous waste record keeping, and employee right-to-know information.

In the past, OSD environmental managers had relied on the *Defense Environmental Status Report (DESR)* management information. Those managers recognize the DESR had serious shortcomings and needed to be replaced. The manual DESR system made data gathering slow and analysis difficult. Moreover, we now find that DESR data are unreliable.

The General Accounting Office and Congress also discovered those shortcomings. As a result, Congress, in the 1990 Defense Authorization Act, required DoD to develop and maintain a data base on all environmental NOVs, fines,

and compliance agreements. OSD is currently going beyond that required data base to build an automated management information system – the Defense Environmental Management Information System (DEMIS) – that will collect information to monitor compliance progress as well as violations. The Army and the Navy have already developed automated environmental information systems, and the Air Force is developing one.

CONCLUSIONS

The Services need to reduce the number of violations of all types. They should aim to uncover and correct violations *before* the regulators find and cite them with NOVs. Thus, self-auditing is an essential first step. OSD should not collect self-audit data from the Services; to do so could undermine the confidentiality and usefulness of those audits. Rather, OSD should concentrate on obtaining an accurate count of NOVs and, in addition, information to put those NOVs in context. While the number of NOVs per inspection is an important quantity, more important are NOVs per installation, per air emissions source, per water discharge source, and per quantity of hazardous waste generated or disposed of.

Going beyond a meaningful and accurate measurement of the problem, DoD also needs positive data that can be used to ensure efficient allocation of resources to prevent problems from occurring in the first place. For every NOV received, either OSD or each Service needs to collect summary data on the actions required to correct the violation and prevent recurrences. Since the Services are primarily responsible for allocating compliance (as opposed to restoration) resources, the logical place for such data gathering is within the Services. OSD should have access to summaries of that data.

While 700 is an unacceptably large number of NOVs, it is a relatively small population for an information system (automated or otherwise) to handle, particularly if each Service maintains its own. Moreover, the data collecting burden is slight. Data are required only from those installations that receive NOVs and the data are essentially the same as that required by most environmental agencies. Since agencies generally require a response to an NOV within 30 days, a simultaneous input to an information system would add very little work. Installations that receive fewer NOVs would have a correspondingly reduced

reporting burden. The appendix shows how such a violation-tracking system could work.

RECOMMENDATIONS

In order to measure compliance, we recommend that OSD and the Services collect the following compliance information in their automated information systems:[1]

- Summary data on each NOV, fine, and compliance agreement that include the law that has been violated, the date the NOV was issued, the date it was resolved, and the action required to resolve it. The Services should collect that data as NOVs are received and should submit a quarterly summary to OSD. That data should fulfill the Defense Authorization Act requirement.
- A minimal amount of annual or quarterly compliance data to allow comparison of balance of the violation data among the Services and agencies. That data should include the number of inspections by environmental regulators; the number of installations reporting; the volume of hazardous waste generated; the number of air emission sources; the number of water discharge sources; and the number of hazardous waste treatment, storage, and disposal facilities.

In addition, we recommend that the Services provide OSD with data totaled by state, rather than aggregate Service totals, so that OSD can analyze regulatory differences by state and by EPA region. Some of those recommendations have already been incorporated in the new DEMIS specification; others have not.

Finally, we recommend that OSD develop a set of practical and measurable compliance goals against which to measure DoD's progress. Without such goals, OSD and the Services can only measure the direction of progress; with goals, they can measure relative progress.

[1]The information we recommend does not preclude collection of additional information for purposes other than compliance. OSD also needs data pertaining to environmental restoration and may need additional data to go "beyond compliance."

CHAPTER 2

ENVIRONMENTAL COMPLIANCE: THE PROBLEM

THE PROBLEM

The number of NOVs issued to DoD by EPA, state, and local regulators increased from about 140 in FY83[1] to over 700 in FY89. Put on a consistent basis – i.e., excluding Toxic Substances Control Act (TSCA) violations, which are not in the historical record – NOVs climbed to 626 in FY89. Although DoD had appeared to turn the corner in FY88 by reducing NOVs 16 percent, the number of violations reported in FY89 climbed sharply. The change from FY88 to FY89 alone – 341 to 626 – constitutes an annual increase of approximately 84 percent. Table 2-1 displays the number of NOVs per year by source of violation. The pattern is shown in a graph in Figure 2-1.

TABLE 2-1

NOTICES OF VIOLATION ISSUED TO DoD: FY83 THROUGH FY89

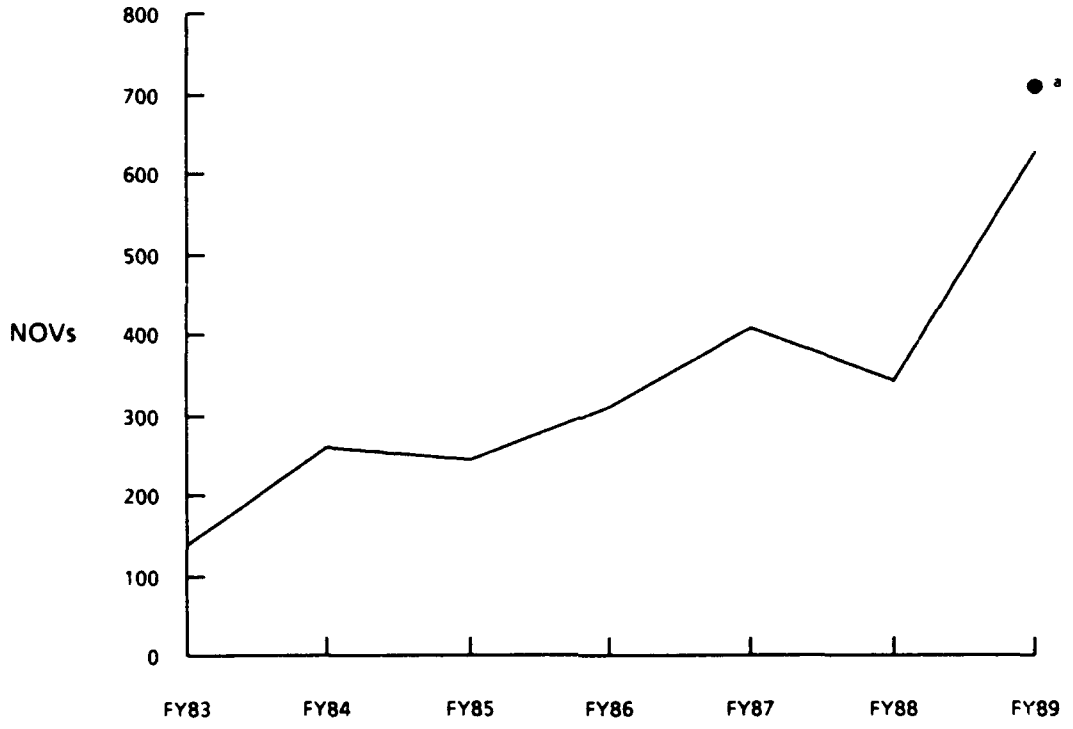
Violation type	FY83	FY84	FY85	FY86	FY87	FY88	FY89
Clean Air Act	38	106	94	93	112	136	118
Clean Water Act	38	21	29	69	70	70	169
RCRA	58	118	104	134	215	125	311
SDWA	5	14	16	12	10	10	28
Subtotal	139	259	243	308	407	341	626
Percent increase per year	-	88	- 6	27	32	- 16	84
TSCA[a]	N/A	N/A	N/A	N/A	N/A	N/A	82
Total	N/A	N/A	N/A	N/A	N/A	N/A	708

Source: FY83 through FY88 data from *Defense Environmental Status Report*; numbers should be treated as estimates only. FY89 data from special data call.

Note: RCRA = Resource Conservation and Recovery Act; SDWA = Safe Drinking Water Act; N/A = not available.

[a] Historic data not available

[1]We present the approximate number because, as explained in Chapter 5, historical data from the DESR are unreliable.



[a] Includes TSCA violations, not recorded FY83 through FY88.

FIG. 2-1. NOTICES OF VIOLATION ISSUED TO DoD: FY83 THROUGH FY89

The absolute number of NOVs in FY89 averages about 1.5 violations per major Defense installation in the United States, which is not all that bad compared to the performance of private industry. The real problem with DoD is that there has been an *increase* in the level of noncompliance, rather than an improvement. To take a leadership position, DoD must reduce its cited violations.

ENVIRONMENTAL COMPLIANCE

Basically, environmental compliance means complying with all environmental laws and regulations. In this report, however, we use a narrower interpretation generally held by DoD environmental professionals: compliance refers to laws that regulate *current* activities that create, or have the potential to create pollution, as distinct from restoration which deals with the cleanup of *past* environmental problems, or plans and actions intended to avoid *future* problems. The NOVs shown in Table 2-1 were issued for violations related to current operations, not for violations of the laws regulating environmental cleanup caused by previous operations.

The principal Federal laws that regulate environmental compliance are the Clean Air Act (CAA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA), and the Toxic Substances Control Act (TSCA). The primary purposes of the CAA, CWA, and SDWA are self-evident from their titles; RCRA deals mainly with industrial waste materials, including wastes that are specifically classified as "hazardous." RCRA also regulates underground storage tanks. For the most part, those laws either place limits on pollutant emissions and discharges or prescribe methods of accounting for and storing, disposing, and treating wastes. TSCA regulates the production of hazardous substances; it also regulates the treatment and disposal of asbestos and polychlorinated biphenyls (PCBs).

Congress enacted such environmental laws to minimize current pollution of the air, surface water, ground water, and soil.[2] Responsibility for administering them is split between EPA and the states. In addition, most states and many localities have promulgated their own laws and regulations some of which are designed to implement the Federal laws, while others add more stringent requirements. Like all other Federal agencies, DoD must comply not only with the Federal laws, but the state and local laws as well. Compliance differs, therefore, from installation to installation depending on jurisdiction. Congress has waived, for the most part, the Federal Government's sovereign immunity as a defense against the enforcement of environmental law.

EXPLAINING DoD'S COMPLIANCE RECORD

Environmental managers in OSD have attempted to defend their NOV record with two explanations. First, DoD's data show that the majority of NOVs are "administrative" in nature, with the implication that they are less damaging than nonadministrative NOVs. Second, many DoD managers maintain that compliance has not really decreased, but environmental regulators have just become more aggressive in citing violations.

Congress has not accepted the first defense largely because the administrative NOV is a DoD category that does not correspond to EPA's classifications. As an example, a former Deputy Assistant Secretary of Defense (Environment) [DASD(E)]

[2]RCRA contains some provisions requiring cleanup of past hazardous waste sites but, for the most part, it concentrates on current handling practices for hazardous and other wastes.

offered the following testimony before the House Subcommittee on Transportation and Hazardous Materials on 12 April 1989:

> It's important to recognize that for DoD most of the violations that currently exist are administrative in nature and do not pose imminent risk to the health of the public. Regardless, any violation is unacceptable and DoD is working hard to resolve those violations that do exist.

While that statement is perfectly correct, it seemed on the surface to be inconsistent with EPA's testimony on the same day that 62 percent of DoD hazardous waste treatment, storage, and disposal facilities constituted Class I violations. According to EPA testimony at that same hearing, such Class I violations presented "a potential for exposure or release of hazardous waste as a result of the violation, not necessarily actual and not necessarily imminent." Some EPA Class I violations, therefore, may not pose an imminent danger and can fit within DoD's "administrative" classification. Nevertheless, they sound more serious (and to be fair, have at least the potential to lead to serious problems) than DoD's characterization of them.

Although both the DoD and EPA testimonies were accurate, DoD's evidence was less convincing because its classification of NOVs into administrative and other types is an internal DoD classification. Unfortunately for DoD, the regulator's system of classification is more credible.

In addition, DoD's historic NOV data are unreliable, further compromising its credibility with Congress, EPA, and the public. Although, to be fair, EPA's data are not infallible either. But since EPA is considered the official enforcement data source, the burden is placed on DoD to prove EPA incorrect. Even if it were wise to refute EPA, it has not yet been possible because of DoD's lack of data. Neither DoD nor EPA have real-time systems that record NOVs.

We discuss DoD's information system in Chapter 5. EPA's information system depends on the diligence of 10 highly decentralized regions, each of which is supposed to submit its NOV data periodically to EPA headquarters. However, those data are not always submitted on schedule and, therefore, are not always complete or up-to-date. Furthermore, each EPA region is divided into offices that regulate air, water, and other "media." Each of those offices records violations that concern its particular medium. When a single NOV affects two or more media, however, it can be counted as two or more NOVs. Despite the fact that EPA's data are not always timely or

accurate, EPA is generally viewed as the impartial scorekeeper by both Congress and the public.

The second common explanation for DoD's poor compliance record, as stated above, is that the number of real environmental problems has not increased; rather, regulators have merely discovered and cited more of them due to the increasing number and severity of inspections. Like state troopers setting up more radar traps, environmental regulators have become more vigilant and have caught more offenders.

While this second explanation is entirely plausible, DoD does not have past data to support it. Furthermore, the explanation, even if accurate, is essentially a tacit admission that DoD's environmental problems are more widespread than the regulators had previously discovered (or have yet to discover). It also implies a perverse solution to the problem of proliferating NOVs: reduce the number of regulatory inspections. The real solution, obviously, is to reduce the number of actual violations and thus the number of NOVs per inspection.

Another explanation of the number of NOVs that we have heard within both DoD and the private sector is that violations are unavoidable. Certainly, there appears to be a relatively broad consensus that, while zero violations is a commendable goal, it is also unrealistic in practice. The number of regulations is so great and regulations vary so much by geographic area, runs this argument, that any reasonably diligent regulator can probably find at least one violation per inspection.

While there is some validity to this argument, it is, nevertheless, possible to reduce the number of NOVs by concerted action. We visited one DoD installation where a combination of diligent compliance work, together with an accompanying effort to establish good working relationships with regulators, has paid off in reduced (but not zero) violations. Some private firms have also managed to reduce NOVs sharply through their own actions. In general, however, a culture gap often exists between the DoD community and regulators that can create an adversarial relationship.

For these reasons, it does DoD little good to try to explain away the increasing number of violations. It needs to reduce them. As an essential first step, OSD needs better information for its own internal use. It needs not only more accurate information, but also more useful information. As an example of its current

shortcomings, DoD can currently count NOVs only by Service and agency, not by state or by EPA region and certainly not by installation. OSD managers cannot, therefore, determine which EPA regions or which states, if any, tend to issue the most NOVs. Nor do OSD managers have the ability to analyze the distribution of those NOVs. Are NOVs spread relatively evenly among DoD's many installations, or are they concentrated among a few or certain types of installations?

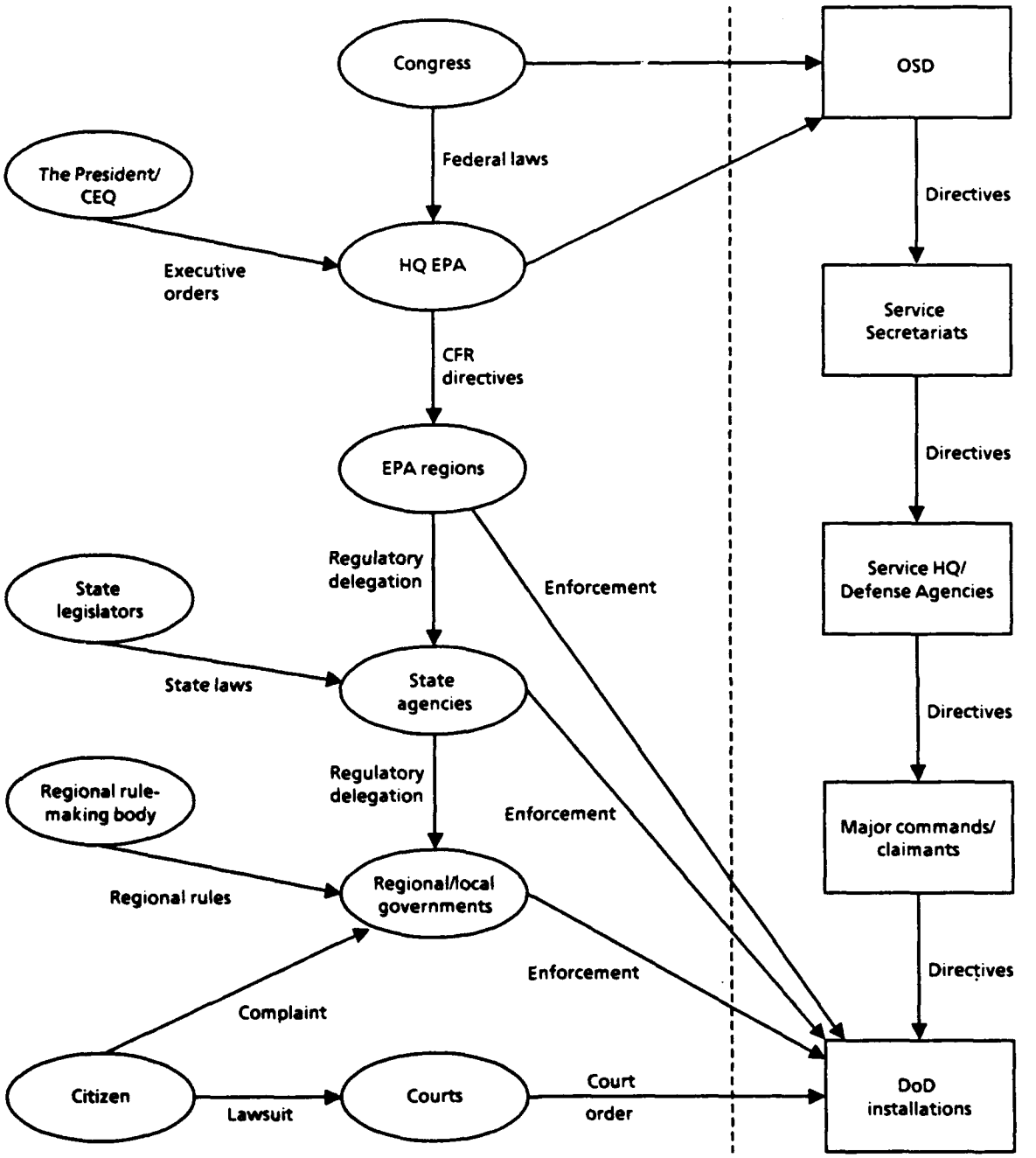
While OSD managers can distinguish NOVs by the law that was violated, they cannot determine, for example, if most RCRA violations occur at maintenance depots. Moreover, apart from differentiating NOVs between administrative and other types, their data give them no idea whether DoD should increase training, undertake an environmental construction program, improve maintenance, or simply encourage administrative changes such as better hazardous waste record-keeping systems.

THE ENVIRONMENTAL ROLE

As a matter of general policy, DoD practices decentralized management and decision making. The Office of the Deputy Assistant Secretary of Defense (Environment) [ODASD(E)] has no direct responsibility for allocating resources to deal with current compliance problems. In any case, such compliance resources are generally split among the operations and maintenance account (OMA) and major military construction (MILCON) funds. Among the Services, only the Navy has instituted a nominal compliance account within its general OMA.

Individual installations carry out the everyday work of environmental compliance, as illustrated in Figure 2-2. Even when a regulator issues an NOV, it is the installation that generally responds and corrects the problem with relatively little involvement at even the major command or major claimant level. All environmental requirements, embodied in various environmental regulations, are addressed directly by the installations. Those requirements are addressed only indirectly, through the installations by intermediate management levels, and are addressed even more indirectly by ODASD(E) within OSD.

The Service develops general environmental programs that address specific issues, such as hazardous waste disposal or underground tank management. Assuming a broader policy and public relations role, OSD sets the overall environmental policy for DoD, a role that requires an information system capable of providing accurate, focused information. Without a clear idea of the state of DoD's



Note: CEQ = Council on Environmental Quality; CFR = Code of Federal Regulations.

FIG. 2-2. THE DECENTRALIZED NATURE OF ENVIRONMENTAL COMPLIANCE

environmental progress and lacking ability to locate problem areas, OSD is unable to set the course for DoD. Certainly, OSD does not need detailed installation-level data. It does not have sufficient personnel to analyze such large volumes of data, nor does its role require that level of detail.

The OSD is the first line of communication with Congress and the public. EPA headquarters communicates with ODASD(E) just as the regional offices communicate directly with the installations. That public relations role also requires information. OSD's best course is to define the information it needs to make policy, and when ad hoc queries exceed the capability of the OSD system, ODASD(E) should pass such queries on to the individual Services and agencies.

CHAPTER 3

METHODS FOR MEASURING COMPLIANCE

THE MEASUREMENT PROBLEM

In order to monitor progress toward compliance within DoD and in order to focus policy where it is needed, OSD needs to develop meaningful measures of environmental compliance. In this chapter, we discuss the difficulties inherent in measuring something as diffuse as compliance and offer recommendations for measurement.

No simple, single measure exists for measuring environmental compliance since compliance consists of adhering to numerous laws and their implementing regulations at the Federal, state, and local levels. Each installation, and thus DoD overall, achieves compliance by meeting many different types of requirements.

The ultimate goal of environmental compliance is primarily to limit the release or potential for release of hazardous pollutants into the environment. In practice, that means limiting air emissions and water discharges to within defined limits and also eliminating the potential for additional releases, particularly hazardous wastes. Environmental laws and regulations establish maximum acceptable pollutant levels and each installation is obligated to ensure that its releases stay below those required levels of air emissions and wastewater discharges. In addition, each installation must ensure that it handles wastes properly and does not risk releasing additional hazardous materials into the environment.

To be in compliance, installations cannot simply limit pollutant releases; due to the United States' command and control approach to environmental regulation, they must also adhere to laws and regulations that prescribe specific management practices. They must obtain permits for air emissions, water discharges, and hazardous waste disposal. Often, they must monitor air emissions and water discharges in certain ways. They must maintain prescribed records on hazardous wastes, store those wastes in certain prescribed ways, and dispose of them according to regulation. All spills of hazardous materials, as well as petroleum products, must be reported according to prescribed protocols. In addition, environmental compliance

requires installations to maintain environmental planning documents, such as contingency plans and natural and historic resource conservation plans.

Noncompliance can range from a massive discharge of a highly toxic substance to a failure to file a required contingency plan by the proper date. Ambiguities also arise; hazardous materials, for example, must be stored in clearly labeled, undamaged containers in designated storage areas; containers must be free from dents and rust. What, precisely, constitutes damage? Is a small dent or rust spot acceptable, or does that constitute noncompliance? Compliance can depend upon the zeal of individual regulators and, importantly, upon the relationship between an installation and its regulators.

Just as environmental compliance involves meeting many requirements, measuring compliance involves measuring many quantities. Since the direct management of environmental compliance rests with the installations, and since violations are issued directly to installations, such quantities can only be measured directly by the installation.

Among the possible methods for monitoring compliance are (1) measuring direct and potential pollutant releases, (2) measuring the number of out-of-compliance items as detected by internal environmental audits, and (3) measuring the number of out-of-compliance items found by regulators during their inspections.

MEASURING POLLUTANT RELEASES

The first method – measuring direct pollutant releases – is the most comprehensive way of monitoring an installation's environmental compliance. That method, however, has at least two drawbacks. It requires each installation to measure and collect a large amount of data that are difficult to summarize or aggregate and impossible to monitor continuously. The second and more serious drawback is that the method does not address the potential for pollutant releases until after they happen.

The method requires an installation to measure a number of variables for each pollutant source; for example, air emissions could be monitored by measuring average emissions, the variance around the average, and the number of times that the standard was exceeded. Even such an apparently simple scheme, however, requires three variables per pollutant per source, since the measures are not additive.

Using this example, the number of variables is three times the number of stationary sources (e.g., smokestacks) times the number of specific pollutants designated in the CAA. The number of data elements soon multiplies into many thousands and without a way to aggregate or to summarize those data, it becomes hard to extract meaning from it.

The more serious drawback to monitoring releases directly as a measure of compliance is that it gives only a partial picture of compliance. It does not measure the potential at an installation for a serious future release, it only measures violations that have already occurred. Compliance requires certain management and other administrative practices that are not measured by pollutant emissions. For example, has the installation properly labeled and stored all hazardous materials, has it procured the required permits, is the installation's equipment in good operating condition, and are the operators properly trained? We need to answer those and similar questions to obtain complete measures of compliance today as well as the likelihood of continued compliance in the future.

MEASURING COMPLIANCE THROUGH ORGANIZATION AUDITS

Another important, even essential, measure of compliance is created by internal environmental audits.[1] Just as measuring pollutant emissions and discharges is essential to complying with the law, environmental audits are also an essential element in any compliance program. Audits enable an organization to discover the areas where they are out of compliance. All of the private-sector organizations that we talked with, as well as all three Military Services, have established programs that consist of both installation audits alternated with higher-level audits. Installation audits are self-audits carried out in order to uncover problems and to solve them (or at least to request the resources to solve them). Higher-level audits are carried out by a group above the installation level. In the case of DoD, higher-level audits are usually the responsibility of the major command or major claimant. The Inspector General also performs environmental audits. A good audit directly measures an installation's environmental compliance. The Army's audit protocol, for example, identifies the specific application of every environmental law and regulation to the installation and requires inspection of all

[1]We use the word *audit* to refer to DoD environmental inspections, whether carried out by the installation itself, another DoD organization, or a DoD contractor. We use *inspection* to refer to an environmental inspection by EPA, state, or local regulators.

relevant activities. Since the audit assesses compliance directly, a summary of audit results is an excellent measure of environmental compliance.

Despite that, internal audits are generally a poor source of data for a centralized information system. First, internal audits should be completely honest and unbiased. Each installation should feel free to find as many violations as possible and to identify as many poor management and maintenance practices as it can. If an installation knows that the data are going to higher levels, however, it is less likely to be honest with itself and the audits will be less useful as compliance *tools*.

Similarly, while the results of higher-level audits are a valuable source of compliance data within an organization, the results need not be communicated above the organizational level that commissioned them. For example, a major command or major claimant audit program should be free to find as many environmental problems as possible within its group of installations, without the fear of exposing that organization to criticism at the Service Secretary level. Attempting to use an audit program as both a compliance tool and a measure of compliance above the level conducting the audit may compromise its usefulness as a tool and thus ultimately its usefulness in measurement as well.

Nonetheless, top-level environmental audits, such as those carried out by the Inspector General, are potentially valuable sources of data for OSD. If the data are available and can be summarized succinctly, OSD should include that data in its information system. However, each audit produces a lot of data, which like emissions data are difficult to summarize. Audits generally consist of a combination of a detailed regulation-by-regulation checklist plus written comments. Summarizing such a checklist is possible but it is not easy and would absorb valuable time from the installation's environmental professionals.

MEASURING VIOLATIONS

A third way of measuring compliance is to gather data on the results of inspections by EPA, state, and local regulators. A regulatory inspection is similar to an audit, except that noncompliant items found by a regulator can be cited as legal violations. Typically, when a regulator discovers one or more items out of compliance, he or she usually issues an NOV to an installation. Occasionally, small administrative violations, if corrected on the spot, may not cause an NOV. The installation receiving an NOV (just like a private-sector facility) must generally

respond to the regulator within 30 days, either stating that the deficiency has been corrected or outlining a correction plan. Normally, if an NOV cannot be corrected within 90 days, the installation, the regulator, and responsible parties must draw up and sign a compliance order or compliance agreement (CA), which provides both a plan and a schedule for correcting the problem. An NOV may also be accompanied by a fine. NOVs are extremely important since they indicate a violation or violations of law. Ignoring an NOV or failing to solve the problem that led to it will lead to even more serious legal problems.

The NOVs, violations, fines, and CAs are, therefore, fairly accurate measures of how the regulators view the state of an installation's compliance. The fewer the violations, the closer that installation is to achieving environmental compliance.

Moreover, EPA uses this method to compare compliance performance in the private sector with that of the Federal Government. EPA has announced as one of its goals to ensure that Federal agencies achieve "compliance rates" in each media program that meet or exceed those of major industrial and municipal facilities. In Figure 3-1, Federal, industrial, and municipal compliance rates are compared. EPA calculates compliance rates for each media by dividing the number of "significant violations" by the number of pollutant sources. EPA defines significant violations based on specific criteria for each environmental law; it is often difficult for an outsider to categorize NOVs in advance of EPA's findings.

The NOVs can serve as a compliance scorecard. As a measurement, NOVs are subject to one of the same weaknesses as direct measurement of pollutant emissions; that is, many NOVs only measure environmental damage after the fact. However, to the extent that at least some NOVs also indicate potential problems such as incorrect hazardous waste storage and handling practices or administrative shortcomings, NOVs measure the potential for harm as well. As installations take steps to maintain the environment, the number of NOVs per regulatory inspection should tend to decline. Measuring NOVs has the advantage of leaving specific compliance actions to the installations, while at the same time holding them responsible for results.

Eventually, of course, DoD's goal is to be in compliance with all legal requirements. Compliance means meeting all requirements, administrative or otherwise. However, simply counting the number of NOVs does not necessarily give

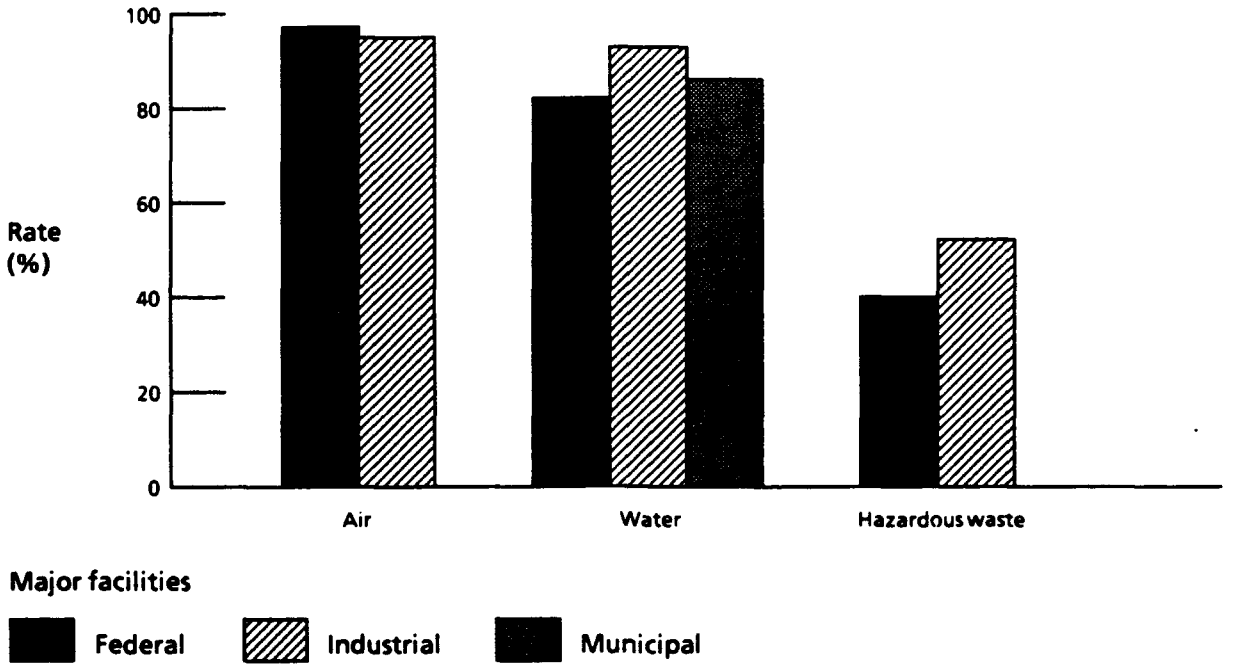


FIG. 3-1. EPA-MEASURED COMPLIANCE RATES (FY88)

a clear picture of progress toward that goal. While recognizing that inattention to less critical items may eventually lead to more serious violations, some violations are, nevertheless, clearly more serious than others. In order to monitor compliance accurately, we need to measure the seriousness of different types of violations, or noncompliance.[2]

When measuring the extent of compliance, it is necessary, in our opinion, to place greater weight on violations that have direct adverse health effects, and less weight on violations that indicate management lapses. A few such "administrative" violations indicates a need to tighten environmental management; a large number of such administrative violations probably indicates a need for a major overhaul of management practices. On the other hand, even a few serious violations indicate a need to make immediate corrections, either to management practices or to physical systems that control pollutants (and probably both). EPA's current system of labeling violations which pose an immediate or highly probable risk to health and

[2]Such distinctions are important for internal analysis of environmental problems only; they carry little or no weight outside DoD, as discussed in Chapter 1.

safety as "Class I violations" seems quite useful for this purpose as well as offering consistency between EPA and DoD record keeping.

NORMALIZING COMPLIANCE MEASURES

In addition to measuring compliance by using one or a combination of the above measures, it is important to produce measures – such as violations per source – that allow unbiased comparisons between dissimilar groups or organizations. For example, comparing the total number of violations received by each Service is misleading since the Army has more installations than either the Air Force or the Navy. Measuring violations per installation is slightly better, but installations still vary by size and by mission. Larger installations probably tend to receive more violations than smaller ones. A better measure for comparison is violations per pollutant source, since we would expect the number of pollutant sources to be proportional to the number of potential violations. Violations per inspection normalizes for the number of regulatory inspections, since one would expect the number of violations to increase with the number of inspections. Since an inspection of an installation with many potential pollutant sources will likely produce more violations than an inspection of a smaller or less industrial installation, violations per source per inspection is an even better measure of the situation.

It is important to normalize variables effectively if OSD wishes to place emphasis in the proper areas. Without normalization, OSD may target its environmental policies on the wrong areas and misallocate scarce resources.

The natural tendency in setting priorities is to compare oneself with similar activities, and to the extent that one appears to be better, there will be no incentive to act. Therefore it is critical to make the initial assessments of the situation and progress using the most appropriate method. In Figure 3-2, for instance, the Army appears to have the greatest need for an improved RCRA compliance program. Figure 3-3 makes it clear that (for this set of figures, at least) the other Services, including the Defense Logistics Agency (DLA), also need to improve RCRA management. The point of this sample comparison (using actual data) is that the Army's problem is one of scale but DLA's problem should not be ignored. This type of management information must be available to ODASD(E) in order to accurately assess DoD's compliance programs, and it is only possible if OSD collects appropriate normalization data.

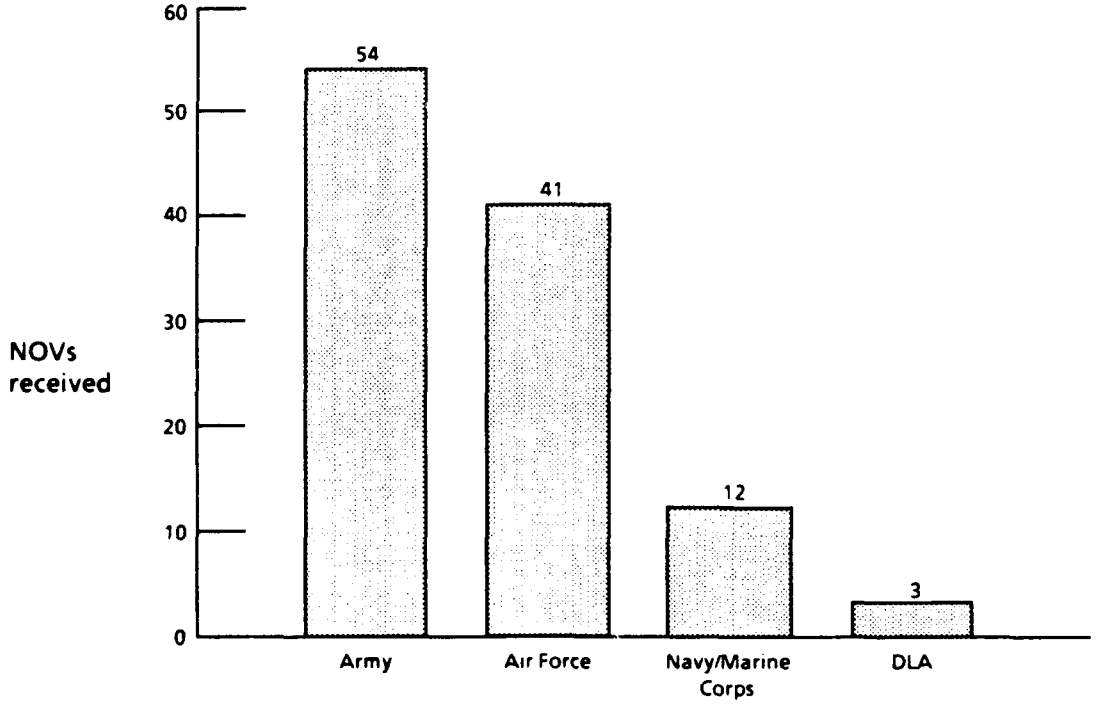


FIG. 3-2. RCRA HAZARDOUS WASTE NOVs RECEIVED BY EACH SERVICE, FY88

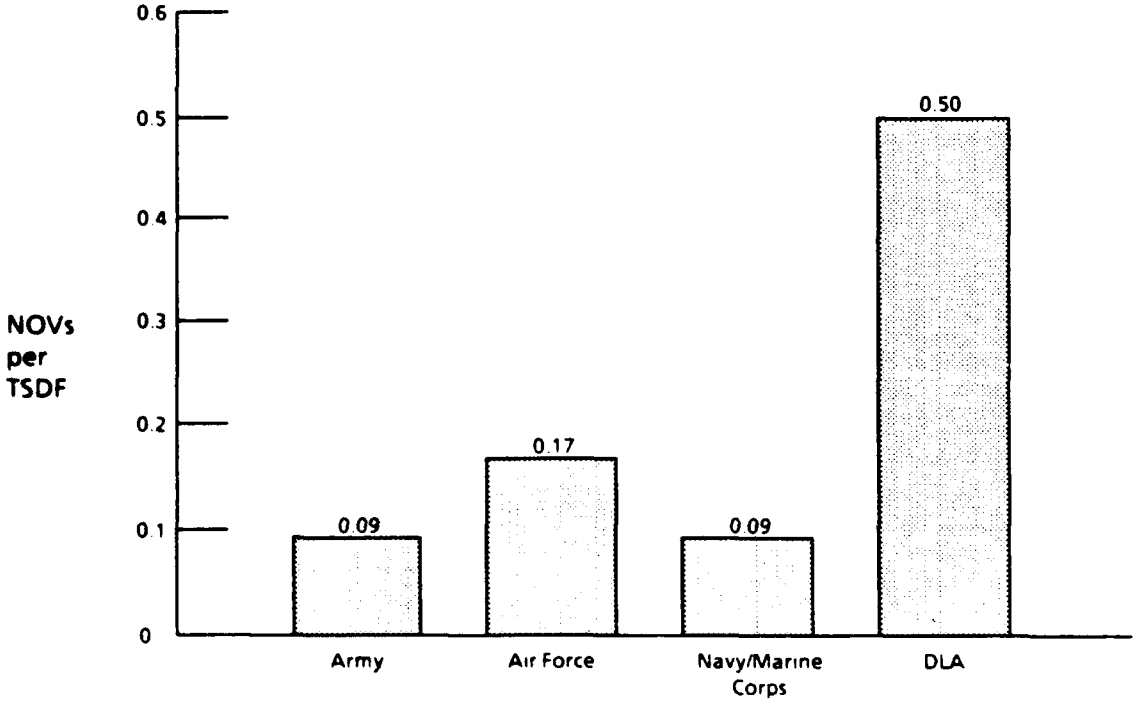


FIG. 3-3. RCRA HAZARDOUS WASTE NOVs PER TREATMENT, STORAGE, AND DISPOSAL FACILITY (TSDF), BY SERVICE, FY88

CONCLUSION

Since the increasing number of NOVs is one of DoD's major current problems, we conclude that the number of NOVs received is the most appropriate measure of environmental compliance for DoD. DoD also needs data with which to normalize those NOVs, making analysis of the problem possible.

At the present stage of DoD's environmental program, therefore, OSD needs an information system that records and measures NOVs received and resolved. At a later stage, when DoD has shown consistent progress in reducing NOVs, other direct measures of DoD's environmental impact will take on more importance.

CHAPTER 4

PRIVATE-SECTOR COMPLIANCE MEASUREMENT

Private-sector businesses have been subject to strong regulatory pressure to comply with environmental laws and regulations since their inception over 20 years ago. Unlike private companies, however, Federal agencies long enjoyed exemption from regulatory scrutiny under sovereign immunity. They were allowed to police their own compliance with environmental law. This is no longer true. Today, Federal agencies are subject to environmental regulation to essentially the same extent as the private sector.

Since corporations in the private sector have more experience with compliance, it follows that DoD – and other agencies – may be able to learn from their experiences. We have reviewed the compliance practices and information requirements of 18 Fortune 500 corporations in businesses paralleling those of DoD – aerospace, heavy maintenance, transport, automotive operations, health care, manufacturing, and high technology enterprises – and have applied the essence of their lessons learned to DoD. Again, by compliance we consider current pollution prevention, not cleanup of past pollution.

Private-sector compliance programs appear to follow five steps. First, companies enunciate clear objectives at the topmost levels. Second, they set up procedures designed to prevent violations and to train their personnel in those procedures. Third, they audit their facilities; some emphasize external audits by corporate-level staff, others emphasize division or plant self-audits, and still others undertake some combination of the two. Fourth, they establish formal pollution-prevention programs to reduce the potential for noncompliance. Last, and least, they institute reporting systems.

All of the corporations felt that their environmental successes provided them with a small, but important, competitive advantage. We have not disclosed the identities of these corporations and have not quoted their published material because several of them expressed concern that our publication of their approaches and views would reduce their competitive advantage or lead to increased scrutiny by regulators.

CORPORATE OBJECTIVES

Most companies agreed that the prerequisite for success in any comprehensive compliance program is continuing emphasis by top-level executives on the company's commitment to a clean environment. That commitment is supported through formal company publications, by requiring environmental issues to be addressed in routine operating reports, and in many cases by a comprehensive public-relations effort. More importantly, in the view of the executives we interviewed, almost every corporation had a published statement affirming a corporate concern for environmental issues.

New employees are briefed on the corporations' expectations, and environmental concerns are included in the employees' sense of the corporations' priorities from the first day on the job. In addition to reports and other publications, environmental goals and ethics are promulgated with posters, and in the cases of an airline and a hospital chain, at least, through a video presentation.

Many companies have special environmental boards, whose members include senior corporate executives plus outsiders from various other disciplines such as lawyers, academics, retired corporate executives, and environmental professionals. Such boards give companies a better perspective on the external image they project and perceptions of environmental progress. The boards usually have no formal powers but the quality of their membership ensures that their comments and suggestions are often adopted as goals or at least areas of concern. DoD could implement such a program by creating formal advisory boards or by sponsoring annual environmental symposia.

TRAINING AND PROCEDURES

The private sector has found that the first line of defense against environmental pollution is a concerned and informed work force. Companies invest significant resources in initial and follow-on training. Environmental training is usually included as an integral part of job training.

Company environmental programs are not viewed as an over-the-shoulder regulatory effort carried out by the environmental coordinator alone. In the companies we visited, environmental staffs with technical backgrounds interact with line managers. New procedures, or recommended changes, are discussed in terms of

their effect on the environment as well as their effect on the company's technical work and profit. In short, the environmental staff we observed are problem solvers, not simply problem identifiers. We found them consulting with suppliers about new versions of a standard product, discussing with workers the possible environmental considerations on a job about to be started, or developing new and more effective auditing protocols for use by line supervisors; they did not concentrate on accumulating data or filling checklists.

Environmental professionals must depend on other workers to follow procedures, to identify discrepancies, and to question potential problems. It is up to the companies' environmental professionals, however, to spot new hazards beyond the companies' procedures manuals. That requires a commitment to continuing training to keep plant environmental professionals current with the dynamic world of Federal, state, and local environmental regulations.

AUDITING

Despite top-level commitment and employee training, accidents and errors occur. All of the companies we spoke with rely on audit programs to identify deficiencies so they can be corrected at the operating level before those deficiencies become health hazards and, hopefully, before they are identified by state or Federal regulators. "Don't let an outsider be the one to tell you that you have a problem" is heard frequently. One company representative stated that internal audits are the only way to measure compliance. Those corporations generally rely on self-audit programs through the operating divisions, but provide a detailed audit of a small sample of facilities to ensure that self-audits are being carried out effectively. At least one company is integrating corporate environmental auditing with its financial auditing.

Auditing staffs, even within large corporations, are generally quite lean. In many cases, they are supplemented by outside consultants; like DoD, private-sector companies cannot afford the salaries of the best environmental professionals on a full-time basis. The object is to provide quality control over operating unit self-assessment programs, and in even the largest companies fewer than a dozen environmental professionals are required at the corporate level. Those teams may provide unique inspections or may be part of a plantwide, all-functions business audit much like a military annual general inspection.

In all cases, audit findings are followed up with action plans for remediation, and both the findings and the action plans are often provided to the corporate environmental staff, which then selects the most significant issues to present to the Chief Executive Officer.

PREVENTION STRATEGIES

Most major companies are undertaking major efforts to reduce their potential exposure to environmental issues, going well beyond legal limits. Some are even eliminating processes to reduce emissions and generation of waste. In pursuing these goals, which usually require tracking a target statistic down toward a stated goal, most of the elaborate information systems are found in the private sector.

There appear to be three major prevention strategies. First and most important is the elimination of future Superfund liability as a potentially liable joint-site user by keeping all hazardous waste operations within the company where they can be controlled. Second, in conjunction with that effort, is taking an in-depth look at company processes to identify where waste generation (hazardous and other) can be eliminated altogether. Third, underground storage tanks are being removed as quickly as budgets allow.

Prevention strategies may be simpler to implement in the private sector because of their narrower range of products, which make it easier to identify the points at which a waste-reduction initiative may be most effective. Nonetheless, DoD could adopt the private-sector approach to identification, which means identifying wastes that cause the highest actual and potential costs and pose the highest risks and then make energetic efforts to reduce a few key waste streams. In addition, to the companies we surveyed, Polaroid, 3M, and Borden recently have released details of their waste reduction programs that followed this same model.

REPORTING

As a rule, private-sector firms do not use detailed reporting systems for upper management. Some managers require immediate reporting of significant incidents (NOVs, fines, news reports, accidents, and on occasion simply the arrival of regulators on site) together with summary routine reports. Although firms do not generate detailed reports for management, they usually generate detailed

information at the operating level, including environmental audits, hazardous waste manifests, and violation reports.

Otherwise, environmental issues are dealt with as part of overall business reporting in the normal cycle. That cycle may be monthly, quarterly, or annual, but the report is usually not overly detailed, focusing instead on general trends and on qualitative assessments of potential problems or open issues.

Technical information data bases for use at the operating level generally consisted of statutory and regulatory requirements and chemical hazard and exposure data. As a rule, those data bases were not accompanied by corporate-dictated reporting or data collection programs.

In addition to data bases, automation was commonly used to generate legally required forms, documents, and reports to ensure they are filled out correctly and on time. Again, these systems are used at the operating level with little corporate oversight, although the corporation headquarters often had funded the initial procurement and customization of commercial software.

Three of the major companies we surveyed have extensive automated environmental reporting data bases, natural extensions of their status as world leaders in automated systems. For the most part, at the corporate level, spot reports were entered and limited report data were updated annually; at the operating level, personal computer programs were used that had been developed by plant engineers for their own purposes. This practice was followed even by computer firms which could have integrated environmental data into existing on-line networks.

CONCLUSIONS

Environmental compliance becomes a habit, rather than a program, at major industrial companies. One reason the companies are reluctant to be identified or to release details about their specific practices is that they have come to see environmental soundness as a significant competitive edge. In addition to providing them with a cost advantage over their direct competitors, a number of the companies we talked to have found a significant revenue source in their expertise. Some companies were using their nationwide facilities to develop sophisticated audit protocols applicable in any jurisdiction. They sold either the protocols or the audit service itself to other companies or to operating divisions of the same company in

order to save money and supplant external consultants. While in some cases the environment became an issue out of fear of EPA's capability to disrupt operations and levy fines, those corporations as well as those who subscribed out of good citizenship, discovered to their pleasure that once environmental compliance has been achieved, it can be maintained at relatively low cost and offers significant benefits.

To follow the lead of the private sector, DoD environmental compliance will require a combination of top-level commitment, effective environmental training for all personnel, in-house audits, and review processes that reduce hazardous wastes and generate summary compliance information.

CHAPTER 5

COMPLIANCE REPORTING SYSTEMS

We noted in Chapter 4 that major corporations generally do not use extensive reporting systems for detailed management of environmental compliance activities. However, they often maintain detailed information concerning specific programs of interest to corporate executives. Typical examples are cleanup, waste reduction, and underground storage tank closing.

As long as DoD installations place emphasis on compliance and receive the necessary resources to comply with the law, compliance within DoD similarly requires relatively little active involvement and detailed information at higher levels within DoD. Even the Services' major commands and major claimants have smaller compliance management roles than the installations. Major commands screen budget requests for environmental projects, as they do for other programs. They also become involved, to a certain extent, in major installation restoration projects, resolution of outstanding violations, interagency compliance agreements, and other major environmental actions. Even in such cases, however, the installations play the most important role. Further up the command chain, active participation continues to diminish. At the OASD(E) level, the compliance role is quite different. ODASD(E) plays almost no part in actively managing compliance; however, it has an important role as policy maker, proponent for Service environmental programs and their budgets, spokesman for DoD, and monitor of compliance.

OSD INFORMATION REQUIREMENTS

A DASD(E) information system must reflect its functional management responsibility. Without such clearly defined goals and objectives, information system requirements could eventually be subject to change at the whims of individuals without giving sufficient thought to the DASD(E)'s overall management responsibility. Such information system changes can produce a diluted system which offers no information, or a bloated system that attempts to address every conceivable question but is fundamentally inaccurate.

In order to monitor DoD's overall progress toward compliance with applicable law, ODASD(E) requires information to track progress from one year to another and to compare progress among the Services. OSD also needs information to prepare periodic reports for the Secretary of Defense and for Congress. Both of those functions require structured data and the ability to analyze that data in new ways. While OSD's policymaking role also requires ad hoc data capabilities, such information needs can never be fully anticipated in an information system. Those ad hoc questions will normally require one-time data calls in contrast to the periodic data gathering ability of an automated information system.

OSD is currently implementing the DEMIS to fulfill those periodic information requirements. We concentrate on compliance information requirements with an emphasis on tracking NOVs. Some of those information requirements are included in the current DEMIS specification, others are not.

LESSONS LEARNED FROM PAST SYSTEMS

For many years, ODASD(E) collected environmental data by way of the DESR. Unfortunately, however, the DESR was a time-consuming manual system that yielded unreliable data of limited usefulness. We summarize those shortcomings below to derive a number of lessons learned. The new ODASD(E) and Service reporting systems should aim to avoid DESR's shortcomings.

The DESR had five major flaws and a number of minor ones. First, it was essentially a manual system, which slowed the process of gathering data and made it more difficult to check the data for consistency.[1] The manual system made it impossible to conduct normal data base operations on the data, making ad hoc or even routine analysis based on DESR data extremely difficult.

Second, each year the DESR required installations to input data for both the prior year and the current year. The prior year DESR data collected in any particular year should have matched the current year DESR data collected in the previous year. When we compared data that ostensibly represented the same fiscal year but was collected in two consecutive DESRs, however, we found numerous discrepancies, some of which were relatively large. Table 5-1 provides an example of those inconsistencies for the number of NOVs received per year. In addition to causing

[1]Although DESR was implemented in Lotus 1-2-3, it made almost no use of 1-2-3's data organization and analysis capabilities. DESR essentially used 1-2-3 as a word processor.

data discrepancies, the task of re-entering the previous year's information placed a larger workload on the installation staff.

TABLE 5-1

DESR INTERNAL DATA INCONSISTENCIES: NOVs RECEIVED

Report year:	FY84	FY85		FY86		FY87		FY88
Data period:	FY84	FY84	FY85	FY85	FY86	FY86	FY87	FY87
Reported data								
Air	99	106	94	94	104	93	113	112
Wastewater	27	21	32	29	74	69	68	70
Hazardous waste	70	112	120	97	145	110	194	184
Landfill	8	6	11	7	20	24	34	31
Safe drinking water	14	14	14	16	14	12	10	10
Grand total	218	259	271	243	357	308	419	407
		FY84		FY85		FY86		FY87
Internal data inconsistencies								
Air		7		0		(11)		(1)
Wastewater		(6)		(3)		(5)		2
Hazardous waste		42		(23)		(35)		(10)
Landfill		(2)		(4)		4		(3)
Safe drinking water		0		2		(2)		0
Total difference		41		(28)		(49)		(12)
Percent of (most recent) total		16		12		16		3

Third, the DESR gathered some data elements as inputs that would be better calculated from more fundamental input elements. For example, the DESR asked for the number of outstanding NOVs as an input when that number could easily be calculated from two other DESR input elements: NOVs received minus NOVs resolved. With DESR, the person entering the data had to do the calculation; computers do such calculations faster and more accurately. The comparison of outstanding NOVs reported versus outstanding NOVs calculated in Table 5-2 reveals numerous inconsistencies in the data. That table also shows inconsistencies in data reported for the same fiscal year in consecutive reports, as discussed above.

TABLE 5-2

DESR INTERNAL DATA INCONSISTENCIES: NOVs OUTSTANDING

Report year:	FY84	FY85		FY86		FY87		FY88	
Data period:	FY84	FY84	FY85	FY85	FY86	FY86	FY87	FY87	FY88
Reported data[a]									
Air	22	26	66	61	31	30	40	39	60
Wastewater	6	10	18	9	31	31	29	31	38
Hazardous waste	0	19	56	52	35	35	68	75	87
Landfill	4	10	5	3	5	6	8	11	16
Safe drinking water	3	3	3	2	4	3	6	6	6
Total	35	68	148	127	106	105	151	162	207
Calculated data[b]									
Air	16	60	66	41	30	52	51	64	60
Wastewater	2	15	18	26	24	69	67	40	39
Hazardous waste	0	0	19	56	52	35	35	68	75
Landfill	4	3	10	6	4	10	13	18	16
Safe drinking water	3	5	4	5	3	3	1	11	11
Total	25	83	117	134	113	169	167	201	201
Reported less calculated									
Air	6	(34)	0	20	1	(22)	(11)	(25)	0
Wastewater	4	(5)	0	(17)	7	(38)	(38)	(9)	(11)
Hazardous waste	0	19	37	(4)	(17)	0	33	7	12
Landfill	0	7	(5)	(3)	1	(4)	(5)	(7)	0
Safe drinking water	0	(2)	(1)	(3)	1	0	5	(5)	(5)
Total	10	(15)	31	(7)	(7)	(64)	(16)	(39)	6
Percent of reported total	29	22	21	6	7	61	11	24	3

[a] NOVs outstanding at the start of the fiscal year.

[b] (NOVs reported outstanding at start of prior FY) + (NOVs received in prior FY) – (NOVs resolved in prior FY).

Fourth, OSD could not be sure that the same number of installations was reporting each year, so year-to-year comparisons may not be consistent or meaningful. DESR data were collected at the installation level, summed by the major commands and major claimants, and then summed by Service. The total number of responding installations was not included in the summary Service data so

that ODASD(E) could not check whether every installation reported each year. Nor could OSD calculate averages per installation. The level of aggregation also eliminated other important information. A number of sources have asserted that regulatory activity and regulatory zeal varies by jurisdiction. Since the DESR data cannot be subdivided by state or by EPA region, but only by Service, OSD had no data with which to measure those differences.

Fifth, much of the data in the DESR were not defined clearly enough, so that different interpretations were possible at the installation level. As a result, even when installations reported data accurately, they were not always consistent with each other. Aggregating such data can lead to incorrect conclusions.

What must a compliance data base do to avoid the DESR's shortcomings? We have distilled the following five lessons learned from the preceding findings.

First, the ideal data base should be as lean as possible. Large volumes of data and complex formats invariably lead to inaccuracies when the input is the responsibility of relatively few people. A consensus exists within DoD's environmental community that DoD has an insufficient number of installation environmental coordinators. An inflated data base consumes an inordinate amount of a coordinator's time; that time would be better spent avoiding violations.

Second, ODASD(E) should collect data that are useful at the installation level, not just the headquarters level. If the data are not useful to the installation, seriously reconsider the need for it at higher levels. Either collect data that the coordinators are already using or else convince them that the additional data will also make their jobs easier. If local personnel have no stake in the data, they will be motivated to fill out the forms quickly rather than to fill them out well.

Third, the data system should provide feedback to those who provide data. When all of the information goes in one direction only, interest in the process and the amount of care going into it will decrease. Installation personnel will not "waste" their time on something with no perceivable use. Feedback can be in the form of useful information, or just summaries. Ideally, copies of reports to Congress should always go back to the installations. Such feedback will demonstrate that the data are useful. Such feedback may be provided, through an effective data system, from any

appropriate level: it should not be viewed solely as "the data base" of any particular office.

Fourth, OSD and the Services should incorporate some means of auditing the data. Most importantly, for a bottoms-up data base that collects data from the installation level, include a way to check that all installations have submitted data. Otherwise, numbers may change from year to year partially because the number of submittals changes, thus obscuring the real trends. One way to do this is to have some sort of installation counter. The number of installations reporting serves a dual function. It not only ensures stability in the number of submittals but also serves as a valuable piece of data for normalization. Using it, we can calculate, for example, the number of NOVs per installation.

Fifth, the data system should use the power of automation to make data entry easier and to reduce errors. Never make a system user enter the same number twice (as DESR did in asking for the prior year numbers). Use data entry checks to eliminate obvious errors. Never ask the user to make a calculation (like NOVs still outstanding) when the computer can do it. Try to ask for basic inputs and have the computer do all of the calculations. This makes the data base leaner and improves accuracy.

THE CONGRESSIONAL REQUIREMENT

In addition to DoD's own need for information, Congress has imposed information requirements upon DoD. Section 352 of the 1990 Defense Authorization Act requires that DoD develop a data base on violations of environmental law or regulation plus accompanying fines and compliance agreements. (The data that Congress requires pertain only to violations cited by EPA and state and local regulators; items found to be out of compliance during a DoD environmental audit need not be included in that data base.) The wording of the Act is as follows:

> SEC. 352. REQUIREMENT FOR DEVELOPMENT OF ENVIRONMENTAL DATA BASE
>
> (a) *Environmental Data Base.* – The Secretary of Defense shall develop and maintain a comprehensive data base on environmental activities carried out by the Department of Defense pursuant to, and environmental compliance obligations to which the Department is subject under, chapter 160 of title 10, United States Code, and all other applicable Federal and State environmental laws. At a minimum, the information in the data base shall include all the fines and penalties assessed against the Department of Defense pursuant to environmental laws and paid by the

> Department, all notices of violations of environmental laws received by the Department, and all obligations of the Department for compliance with environmental laws. The Secretary may include any other information he considers appropriate.

That congressional requirement requires the Services to collect and record fundamental installation-level and violation-level data. It is not essential that ODASD(E) have access to that fundamental level of data since it does not manage the resolution of environmental violations; if ODASD(E) does not wish to maintain a centralized data base, however, it is necessary that the Services maintain data bases with that fundamental data. Those data bases can then be queried as needed.

Access at either OSD or the Service level to individual violation data by installation is required for two reasons: first, the required information must be calculated from data on individual violations; second, the data base must be able to answer congressional queries in a timely fashion. Otherwise, Congress is likely to determine that DoD is in violation of the Section 352 requirement. In other words, DoD as a whole must maintain the required data base, whether that be a centralized data base at OSD level or a distributed data base maintained by the Services. Maintaining installation-level data at the major command or claimant level would require two levels of data tasking in order to answer congressional queries and would be less responsive.

PROPOSED NOV TRACKING SYSTEM

Key to fulfilling the congressional requirement is the ability to track each and every violation in order to flag the following four items: (1) when the violation is cited, (2) when the violation is resolved, (3) if the violation is accompanied by a fine, and (4) if the violation results in a compliance order or a compliance agreement. In turn, the system must track the dollar amount of fines, the date when a fine is resolved, and the date when a compliance agreement is resolved.

We recommend that OSD and the Services implement a system for tracking individual NOVs. Such a system should create a record for each new NOV as soon as possible after it is received. NOVs in those records will count as outstanding until the NOV is either resolved to the regulator's satisfaction or else converted into a compliance order or the equivalent. The system can either be integrated with DEMIS or maintained separately.

In addition to NOV records, the system should also create subsidiary records for all of the violations within a single NOV. RCRA NOVs, in particular, tend to consist of a number of separate violations within a single notice. Each violation record should include the cause of the violation and its proposed solution.

We illustrate such a system in Figure 5-1. The figure demonstrates the type of data available at each major organizational level. The tracking system will provide OSD with a summary of outstanding NOVs by EPA region and by state. Those data will include a distribution of NOVs by days outstanding and could include any other summary data that OSD requires.

The Services and Defense agencies will maintain a more detailed list by installation, together with summary violation data including roll-ups of cost estimates. The detailed information behind those summaries would, of course, also be available at that level. Finally, the installation level submits the individual NOV and violation records. The number of such records depends solely on the number of violations issued to that installation. In the appendix, we present a detailed description of a sample NOV tracking system and of the information that it would require.

Such a tracking system will have several advantages. First, it will provide more accurate NOV data than currently exists. That data will include not only the number of NOVs received, but also the number of NOVs outstanding at any given time, distributions of the time required to resolve NOVs, and the number converted into compliance agreements. In addition to such numeric data, the system will provide information on the causes and solutions of compliance violations and even a means of estimating compliance costs. Accurate data will enable DoD to provide a credible challenge to EPA's NOV data, if they differ.

In addition, the system will meet the congressional requirement for a compliance data base and will allow DoD to measure progress toward its recently announced compliance goal.

The system can be relatively simple; even if NOVs increase to 1,000 per year (with an average of five violations per NOV), each Service and Defense agency will have to provide records for only about 200 violations per quarter. Since the information required is relatively succinct and is normally required in a written response to the regulatory agency in any case, the reporting burden would be

OSD

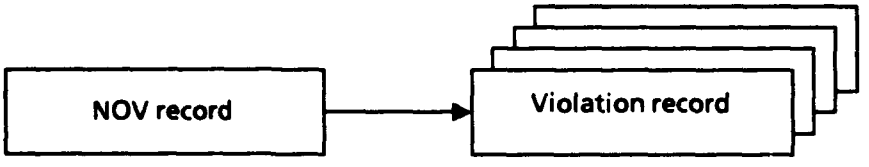
EPA Region 1 NOVs outstanding	
1 – 91 days	35
92 – 182 days	24
183 – 273 days	8
274 – 365 days	3
Over 1 year	0
Total outstanding	70

Service/Agency

NOVs outstanding/resolved					As of: 910430
Installation	**ID**	**Date received**	**Date resolved**	**Days outstanding**	**Fine**
Base X	–	910204	–	56	0
Base Y	–	901124	–	128	0
Base Z	–	901015	901120	–	$1,500
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•

Media	**Summary violation data**				
	Percent cost of proposed solution				
	Construction	**Maintenance**	**Administrative**	**Training**	**Other**
Air	14	28	34	22	2
Water	24	37	18	19	0
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•

Installation



Note: Numbers are illustrative only.

FIG. 5-1. VIOLATION-TRACKING SYSTEM

minimal. Moreover, installations with fewer NOVs have a correspondingly reduced reporting burden.

The violation-tracking system should be able to produce distribution tables of outstanding violations, fines, and compliance agreements; that is, a table showing the number of outstanding violations, fines, or compliance agreements versus the amount of time since the violation was issued. Such distributions cannot be produced from roll-ups of major command/claimant records, but must be derived from the individual violation records.

APPENDIX

SAMPLE VIOLATION-TRACKING SYSTEM

In this appendix, we present a sample set of forms that could be used for a violation-tracking system. The forms can be filled out manually or created as computer screens in an electronic system. The basic input form is shown in Figure A-1. The installation enters information about each notice of violation (NOV) issued by a regulatory body on the *Report of NOV (or Equivalent) Received.* The minimum information consists of the installation name and address, the date of the notice, the level of regulatory agency, and the number of violations. [The Federal facility identification data are the same as used in Office of Management and Budget (OMB) A-106 submittals.[1]]

For each violation within an NOV, the installation must also fill out a *Detailed Report of Violation (or Equivalent) Received* form, shown in Figure A-2. Our sample form repeats the installation name and the date of the notice (to link the NOV data with the violation data) plus data concerning the specific violation. The medium code and pollutant category codes are exactly the same as for the OMB A-106 submittal. Table A-1 identifies these codes. We provide a space for an abbreviated description of each violation. In addition, our form asks for an estimated breakdown of the proposed solution between construction, maintenance, administration, training, and other solutions. Rather than asking for dollar cost at this early stage, we feel that an approximate percentage split between common solution types is easier to provide.

We ask for cost data on the final form (Figure A-3) completed when the violation has been resolved. In addition to cost data, the form asks for a cross-reference to the A-106 submittal, if any.

[1]Federal facilities are required to submit an A-106 report for all environmental projects. DoD submits its A-106 reports to the U.S. Environmental Protection Agency (EPA), which collates and publishes the information. The A-106 reporting system provides support for environmental budgeting.

REPORT OF NOV (OR EQUIVALENT) RECEIVED

You must complete and submit this report within 30 days of receiving an official written notice from the EPA or an authorized state or local environmental regulatory agency of a violation of regulation or law. Complete one report for each written notice received.

Attach the necessary number of detailed reports of violation received (DD Form X-A) *and* a copy of the written notice from the regulatory agency.

Installation name

|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

Federal facility ID number:

State abbreviation |_|_|

Agency code |_|_|

Major command/major claimant code |_|_|

GSA installation number |_|_|_|_|_|

Date of written notice:

Calendar year |_|_|_|_| Month |_|_| Day |_|_|

Regulatory agency: EPA   State   Local

NOV number[1] |_|_|_|_|_|

NOVs in this written notice:[2] |_|_|_|

[1]The first two numbers are the fiscal year (e.g., for FY92, enter 92). The last three numbers are a sequence number for the NOVs within the fiscal year, starting over with 001 each October 1st.

[2]Count the number of specific offenses cited within one written notice.

DD Form X

Note: GSA = General Services Administration.

FIG. A-1. REPORT OF NOV (OR EQUIVALENT) RECEIVED

DETAILED REPORT OF VIOLATION (OR EQUIVALENT) RECEIVED

Page ____ of ____

Attach as many pages as needed to DD Form X.

Installation name

Date of written notice (from DD Form X):

Calendar year Month Day

NOV number

Violation number[1]

Medium code[2]

Violation description

Pollutant category code[2]

Are there prior NOVs for the same violation? Yes No

Requires pollution abatement project? Yes No

Estimated percent cost of proposed solution:

New construction %

Increased maintenance %

Administrative change %

Training %

Other (explain) %

[1]Number violations consecutively within NOV.

[2]See instructions, Table 1 (same as OMB A-106).

DD Form X-A

FIG. A-2. DETAILED REPORT OF VIOLATION (OR EQUIVALENT) RECEIVED

TABLE A-1

MEDIUM AND POLLUTANT CATEGORY CODES

(From OMB A-106)

Medium	Medium code	Pollutant category	Pollutant category code
Air	A	Hazardous pollutants	HAZD
		Mobile air pollutants	MOBL
		Radioactive pollutants	RADN
		Stationary source	STAT
Water	W	Hazardous pollutants	HAZD
		Publicly owned treatment works	POTW
		Marine sanitation device	MSDV
		SPCC plan	SPCC
		Toxics (pretreatment)	PRET
		Radioactive pollutants	RADN
		Underground injection control	UIC
		PCB control	PCB
		Non-point source	NPS
		Groundwater monitoring	GWAT
		Biological monitoring	BIOM
Noise	N		
Pesticides	P	Hazardous pollutants	HAZD
		Groundwater monitoring	GWAT
Radiation	R	Hazardous pollutants	HAZD
		Radioactive pollutants	RADN
Drinking water	DW	Radioactive pollutants	RADN
		Groundwater monitoring	GWAT
		Drinking water	DWAT

Note: SPCC = Spill Prevention Control and Countermeasure; PCB = polychlorinated biphenyl.

TABLE A-1

MEDIUM AND POLLUTANT CATEGORY CODES (Continued)

(From OMB A-106)

Medium	Medium code	Pollutant category	Pollutant category
Solid waste (includes RCRA)	SW	Hazardous pollutants	HAZD
		Radioactive pollutants	RADN
		Underground injection control	UIC
		PCB control	PCB
		Leaking underground storage tanks	LUST
		Groundwater monitoring	GWAT
		Corrective action (3004U)	CORA
		Landfill (subtitle D)	SUBD
TSCA	TS	Hazardous pollutants	HAZD
		PCB control	PCB
		Groundwater monitoring	GWAT
		Asbestos removal	ASB
Ocean dumping	OD		
CERCLA	SF	Hazardous pollutants	HAZD
		Radioactive pollutants	RADN
		PCB control	PCB
		Groundwater monitoring	GWAT

Note: RCRA = Resource Conservation and Recovery Act; TSCA = Toxic Substances Control Act; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act.

REPORT OF VIOLATION (OR EQUIVALENT) RESOLVED

You must submit a copy of this report for each violation as soon as possible after it has been resolved.

Installation name

|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|

Federal facility ID number:

State abbreviation |__|__|

Agency code |__|__|

Major command/major claimant code |__|__|

GSA installation number |__|__|__|__|__|

Date NOV resolved:

Fiscal year |__|__|__|__|

Month |__|__|

Day |__|__|

NOV number:[1] |__|__|__|

Violation number:[1] |__|__|__|

Did this violation require a pollution abatement project? Yes No

If yes, A-106 agency project number: |__|__|__|__|__|__|__|__|__|__|

Cost of solution ($ thousands):

New construction $ |__|__|__|__|__|,000

Increased maintenance $ |__|__|__|__|__|,000

Administrative change $ |__|__|__|__|__|,000

Training $ |__|__|__|__|__|,000

Other (explain) $ |__|__|__|__|__|,000

|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|

|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|

[1] As entered on DD Form X, *Report of NOV Received.*

DD Form Y

FIG. A-3. REPORT OF VIOLATION (OR EQUIVALENT) RESOLVED

REPORT DOCUMENTATION PAGE

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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
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13. ABSTRACT *(Maximum 200 words)*

This report examines the problem of notices of violation of environmental laws issued to the DoD, the number of which increased dramatically between FY83 and FY89. Those violations result from current environmental practices.

We find that the lack of progress to date is tied to the broad scope and complexity of environmental regulations, together with the large number of regulatory authorities, spread among 10 U.S. Environmental Protection Agency regions, 50 states, and numerous localities.

Future progress requires that DoD managers be able to identify the specific types of problems causing violations in order to determine how resources can be apportioned among competing solutions. We recommend that DoD follow the environmental lead of the private sector by (1) establishing top-level compliance goals, (2) creating a more efficient information system for measuring violations, and (3) increasing the number of self-audits to catch violations before regulators do. Specifically, we recommend that OSD and the Services implement a system to track notices of violation from receipt to resolution in order to determine more accurately how to avoid violations, how to resolve them once received, and how long it takes to resolve them.

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