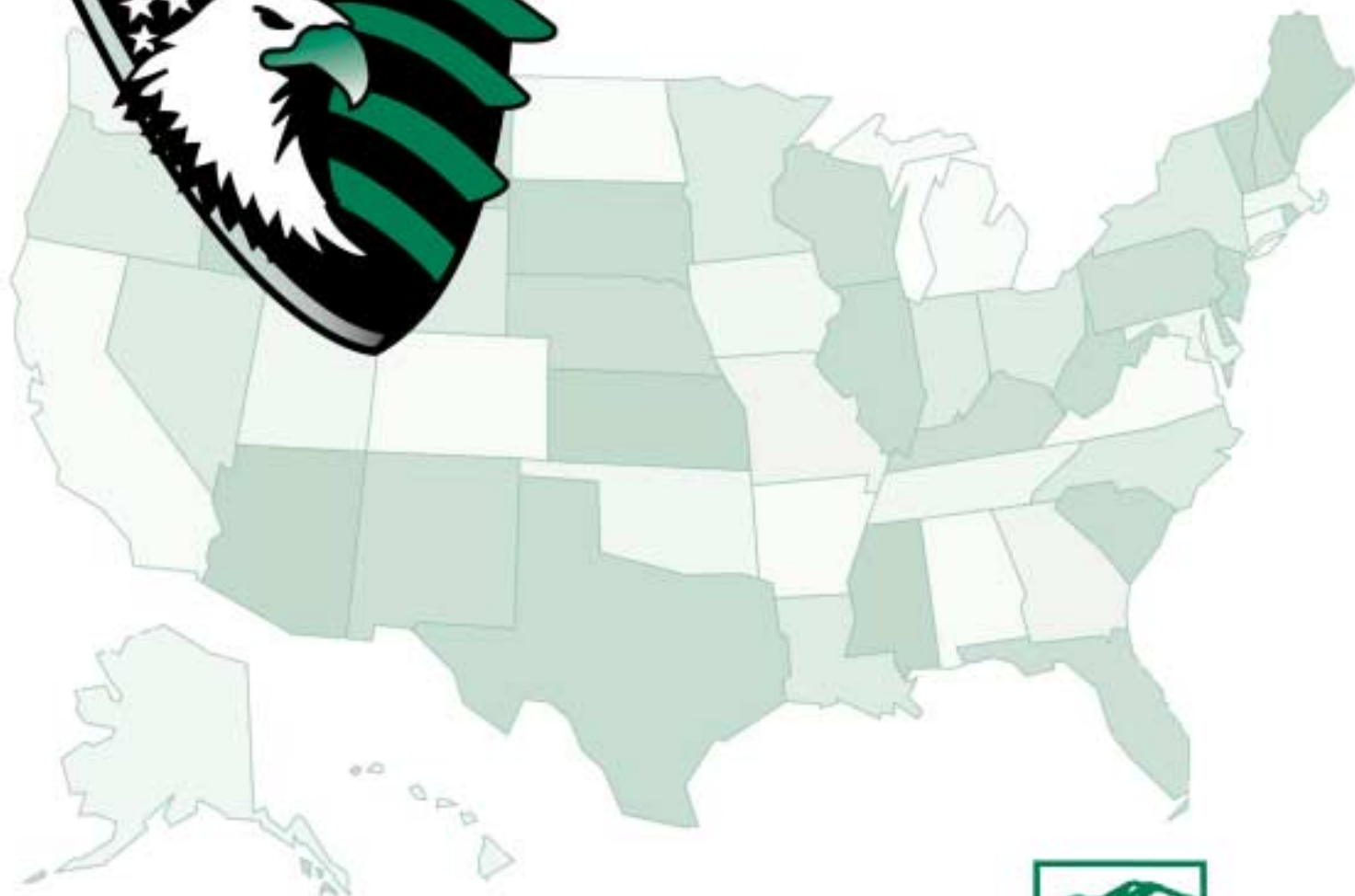


State Environmental Agency Contributions to

Enforcement and Compliance



STATE ENVIRONMENTAL AGENCY
CONTRIBUTIONS TO ENFORCEMENT
AND COMPLIANCE

The Environmental Council of the States
April 2001

Acknowledgements

THE ENVIRONMENTAL COUNCIL OF THE STATES

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About the Environmental Council of the States (ECOS)

The Environmental Council of the States (ECOS) is the national non-profit, non-partisan association of State and territorial environmental commissioners. ECOS was founded in 1993.

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MISSION STATEMENT

To improve the environment of the United States, the Environmental Council of States will:

- Champion the role of States in environmental management; and
- Provide for the exchange of ideas, views and experiences among States; and
- Foster cooperation and coordination in environmental management; and
- Articulate State positions to Congress, federal agencies and the public on environmental issues.

VISION STATEMENT

To achieve its mission, the Environmental Council of the States will:

- Serve as the primary information clearinghouse and policy forum for management and implementation of environmental laws in the United States;
- Facilitate the sharing of innovative, progressive and effective ideas and programs;
- Encourage and recognize innovations and new approaches in State environmental management;
- Work as equal partners with the United States Environmental Protection Agency and other federal agencies on policy, regulations and implementation of environmental laws;
- Advocate, promote and publicize the role of States in environmental management;
- Provide Congress and federal agencies with State and territorial environmental agencies' perspectives in the development of environmental policies and laws and in the allocation of federal funds;
- Encourage the application of pollution prevention, multi-media, and regional approaches to environmental management;
- Explore options for expansion of State capacity and supporting efforts to implement expanded State capacity;
- Advocate further devolution of authority and responsibility, together with adequate resources, to State governments;
- Work with other public and private sector partners to preserve and protect the environment; and
- Work with Congress and federal agencies to assure adequate funding for core State programs based upon each other State's individual needs.

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Report to Congress

STATE ENVIRONMENTAL AGENCY CONTRIBUTIONS TO ENFORCEMENT AND COMPLIANCE

Introduction

Congress designed most of the major national environmental acts to be “delegated” to the States.¹ To receive the responsibility for a delegated program, a State must demonstrate that it has the capacity to administer all aspects of the program that the United States Environmental Protection Agency (EPA) is delegating to it. One of the most important aspects of delegation is the capacity of the State to enforce the federal laws delegated to it.

In a delegation agreement (or in annual grant agreements or other periodic agreements), EPA requires the States to report certain enforcement statistics to it. Reporting is a necessary component of a delegated program. However, it can often be a source of difficulty for a variety of reasons, including differences in opinion about what is useful to report, the burden of filing reports, incompatible data systems, and so on. These problems are detailed across the four primary media (air, water, waste and drinking water) for all primary data systems² for the first time in this report. The severity of these problems waxes and wanes over the years and from program to program, but they have existed from the earliest delegations and they continue to this day.

In Part One of this report, we investigate the contribution of State enforcement activities for the federally delegated programs, but also for some non-federal programs. States not only contribute a high percentage of the enforcement actions taken for federal programs, they also enforce their own environmental programs that are not part of the federal environmental protection statutes. The Brookings Institution reports that about 70 percent of the environmental acts passed by States each year have nothing to do with federal statutes.³ Furthermore the number of environmental statutes passed by States in a year is significant. In 1997, the National Conference of State Legislatures reported that the States passed over 700 environmental bills⁴. The enforcement and compliance activities that States undertake pursuant to these “State only” bills are, of course, not reported to EPA. These actions are likely to constitute a significant protection to the nation’s environment, but they are not counted in such a way that Congress (or other States) would be aware of their existence.

¹ “Delegated” is a generic term. The acts may “delegate,” “authorize,” or “approve” all (or more often, parts) of a federal statute. As of 1999, ECOS research shows that about 70 percent of what can be delegated has been delegated. See http://www.sso.org/ecos/states/state_DelegationChart.htm for details.

² The systems reviewed include: AIRS, or the Aerometric Information Retrieval System used by air programs; PCS, or the Permit Compliance System, used by clean water programs; RCRIS, or the Resource Conservation and Recovery Information System, used by hazardous waste programs; and SDWIS, or the Safe Drinking Water Information System, used by safe drinking water programs.

³ Mary Graham. *Environmental Protection & the States “Race to the Bottom: or “Race to the Bottom Line?,”* Brookings Institution, 1998.

⁴ George Hagevik and C. Kohler, *Trends in State Environmental Law* (National Conference of State Legislatures: Denver) 1998.

Many State environmental leaders do not believe that their primary goal is just to conduct enforcement actions. It is more important to assure compliance, and more important still to improve environmental quality and public health. For this reason, States have been leaders in developing “compliance assistance” programs. These programs are designed to assist those regulated under environmental laws to achieve and remain in compliance. In recent years, EPA has stepped up support to States so they can increase and improve their compliance assistance, often under the direct instruction of Congress. However, to date there has been no national compilation of State efforts to conduct compliance assistance. In part, this is because most federal environmental laws do not mandate such programs, and so EPA lacks the authority to ask States about them. In part, it is because the freedom that States have to craft assistance programs tailored to the specific needs of their laws, ecosystems, and regulated community results in such diversity that a national report is difficult to construct. However, there are certain “common denominators” among State programs. In the latter part of Part I of this report, ECOS looks at the activities States conduct as part of their compliance assistance programs, and how the States themselves judge the success of their efforts.

Part Two of this report investigates State practices and concerns about the movement of data from the various State programs to the federal government (EPA). We have used the phrase “data flow” in this report, because the data flows from the States to EPA. In fact, States are responsible for collecting nearly all (on average 94 percent ñ of the environmental quality data retained in each of six major EPA national data systems that track such data.⁵ The States, through the Environmental Council of the States, and EPA, through the Office of Environmental Information, are currently tackling many of the problems detailed in this report. For this reason, Part Two also contains a description of the current activities between States and EPA that are meant to address many of the problems.

Under the delegation system, EPA not only collects data, it retains the option to conduct “oversight” of the States. Oversight is a term in general use meaning EPA will review State actions or information to determine their appropriateness or quality from EPA’s point of view. From time to time, EPA may disagree with a State’s enforcement decision and subsequent actions on a particular case. There are several courses that might occur from such a disagreement, including EPA’s decision to conduct its own enforcement actions which is generally known as “overfiling.” Overfiling occurs when EPA conducts enforcement action against a facility after the State has already initiated its enforcement action. So, the situation exists that both States and EPA may conduct enforcement actions in a State, even when EPA has delegated a program.

EPA’s Office of Enforcement and Compliance Assurance (OECA) conducts the agency’s enforcement actions, in conjunction with the U.S. Department of Justice. OECA was formed in 1994 by combining the enforcement staff previously housed in each media office into this new office.⁶ OECA is present in both the headquarters office and in most regional offices, where it may be organized and staffed differently from one region to the next. OECA analyzes State data to assist it in setting priorities and making decisions about enforcement, but much of this analysis is kept for internal use only. In 1995 OECA began publishing an annual report known as the “OECA Accomplishments Report.” Each report summarizes the Office’s priorities and results for the previous fiscal year. Although most emphasis in these

⁵ “Environmental Pollutant Reporting Data in EPA’s National Systems: Data Collection by State Agencies” (U.S. Environmental Protection Agency and Environmental Council of the States: Washington) 1999.

⁶ Enforcement at EPA had previously also been centralized until the Reagan administration.

reports is put on the EPA contribution to enforcement and compliance, these EPA reports reveal that about 69 to 80 percent of the enforcement actions taken in a year were taken by the States as part of their delegated responsibilities. The reports are crafted so as to emphasize the EPA role in enforcement actions, not the role of the States. Our report shows that the State contribution is in fact more significant.

In short, this report presents data on State enforcement and compliance activities, much of which has never before been compiled. Although this report is by design and necessity a compilation of “activities,” it would be a mistake to presume that States prefer their efforts to be judged by these sorts of counts. States as a rule prefer to be judged (when such judgement is warranted) by environmental improvements, not by “bean counting.” However, ECOS believes that the information in this report will contribute to the national understanding of the State role in environmental protection by providing a great deal of information about State efforts in enforcement and compliance not previously known.

Executive Summary

In 1999 Congress directed the Environmental Protection Agency (EPA) to provide funding to the National Academy of Public Administration (NAPA) and the Environmental Council of the States (ECOS) to:

“analyze state enforcement and compliance statistics and identify the sources of any inconsistencies among the states and EPA in data collection, reporting, or definitions, and make such information along with a summary of state enforcement and compliance activities available for review by the Congress.”

During the spring, summer and fall of 2000, ECOS developed, tested, and applied a series of research instruments delivered to all of the State and territorial environmental agencies for the purpose of addressing the charge given to us.

This report presents the results of the study in two parts. The first major section of our report, entitled “Part I. Enforcement and Compliance Measures,” is a measure of the enforcement efforts that States have taken over a five year period, from 1995-1999. We have divided this part of the report in two major sections, one addressing enforcement measures and a second one addressing compliance assistance efforts. In both cases, we believe these to be the first reports of their kind.

This section shows the breadth of the States’ contributions to environmental enforcement. Thirty-six States responded to our questions, usually from their program offices. This meant there were multiple responses from most States. However each office did not always respond to every question, or provide data for every year. To provide a more complete picture, we supplemented these data with information provided by EPA from the four national databases reviewed in Part II.

The States report that they regulated over 1.75 million sites in 1999. The States inspected these sites over 501,000 times and made over 449,000 additional compliance evaluations in 1999. The States found over 25,700 significant violations, but only 15,500 were considered significant by EPA. The States received over 88,400 citizens complaints in 1999 (data from 35 States).

Once all the problems were found, the States issued over 67,200 notices of violations and warning letters, and undertook many other kinds of enforcement actions detailed in the report. In all, States conducted about 90 percent of all enforcement actions taken by both the States and EPA. The States collected almost \$92M in penalties in 1999. ECOS also asked

States about their compliance rates, and found higher levels than reported elsewhere. We also present some trends data. Based on the information we received, State inspections appear to be increasing, while significant violations decreased slightly over the five-year period.

“In all, States conducted about 90 percent of all enforcement actions taken by both the States and EPA.”

Furthermore, the States got results from all this work, although much of it has not been previously reported to Congress. The States told us that their oral warnings resulted in compliance over 76 percent of the time. State-issued Notice of Violations got offending sites into compliance over 81 percent of the time without the need for judicial actions. The next most stringent effort, Consent Orders, worked over 83 percent of the time. For the small number of non-complying facilities remaining, unilateral orders worked 86 percent of the time. Only a very few cases remained for disposal by civil or criminal prosecution or other means.

Finally, States had a lot to say about what environmental enforcement measures work, and which ones do not. “Compliance rates” were the top of the list of measures needed. States also had many examples of enforcement measures that do not work, and we have included many of their comments.

Our compliance assistance questions have also gathered information about what States like to use. For example, the most common techniques are on-site visits and State Revolving Loan funds (the latter authorized by Congress). All the responding States used these tools. States may be having more difficulty in tabulating the impact of compliance assistance, however. None could give us effectiveness measures, but many provided comments about how well compliance assistance works.

Part II, Enforcement and Compliance Data Flow, addresses the movement of environmental data from the States to EPA. This section of our report looks at the difficulties in transferring the data and the reasons why State databases and EPA databases may not match. We investigated each of the four main data systems—one for air, one for water, one for drinking water and one for waste—for which the States provided data.

“State-issued Notice of Violations got offending sites into compliance over 81 percent of the time without the need for judicial actions.”

ECOS obtained results for Part II from 47 States and territories (and five EPA regions). ECOS found that about 80 percent of the States had experienced “significant and pervasive” data discrepancies between their State data and the same data as it appears in an EPA database. Over 88 percent of the States indicated that they have their own data system, and nearly 60% of the States are in the process of changing their system. The top three causes of the data discrepancies were: 1) Database Flaws: Difficulties in using the national database and/or database has design flaws; 2) Guidance interpretation: Problems with interpretation of EPA guidance for use of the data system. This includes frequent coding changes or a lack

of guidance; 3) Time Lags: Problems relating to data submittals, national database updating, and data being used. Our review of the EPA regions obtained similar results. The top causes of the data discrepancies from their point of view were: 1) Database Flaws; 2) Other; and 3) Time Lags.

Our final section of Part II reviews the activities currently underway between the States and EPA to address many of these issues.

In short, ECOS is pleased to report that States are making gigantic—and effective—contributions to environmental enforcement, much more than previously reported.

“ECOS found that about 80 percent of the States had experienced ‘significant and pervasive’ data discrepancies between their State data and the same data as it appears in an EPA database.”

Part I: Enforcement and Compliance Measures

INTRODUCTION

Part I of this report addresses Congress' instruction to provide a "summary of State enforcement and compliance activities." The goal is to present a more complete, accurate picture of what States are doing to enforce environmental laws and help people comply with them. The results are based on two research instruments designed to assess the extent of States' enforcement measures and compliance assistance measures, respectively. We have attempted to document the State contributions to environmental enforcement and compliance using the data that the States themselves use. When we were not able to find this data, either because no records were kept or a State was unable to respond, we instead used State data reported to EPA, if it was available.

"ECOS looks on enforcement actions as 'one tool in our toolbox' to achieve environmental success."

ECOS does not support the collection of statistics about "activities" (which States and others often call "beans") alone to determine the success of environmental efforts. Environmental success should be measured by the progress we make with public health, with air, water and drinking water quality, with the management of hazardous wastes and with the reduction of pollutants, among other things. ECOS looks on enforcement actions as "one tool in our toolbox" to achieve environmental success. When ECOS does discuss enforcement, we prefer to emphasize the efforts required to achieve compliance, rather than the raw power of enforcement. However, many others champion "enforcement counts" and decry States and EPA when these decline. This being the case, it is important to establish what the true enforcement activities are—what the enforcement "beans" are—so that discussions are based on the full spectrum of efforts being undertaken, not a partial list. We believe our research substantially addresses this issue by providing a better count of the States' contributions to environmental enforcement than has been done in the 30 plus-year history of the chief federal environmental statutes. We also look at both the resulting compliance rates and at the increasingly common compliance assistance efforts that preclude the need for some enforcement activities.

BACKGROUND

Starting in 1995, EPA's Office of Enforcement and Compliance Assurance (OECA) began publishing the *Annual Report on Enforcement and Compliance Assurance Accomplishments*. These documents were, in their early versions, attempts to explain to the public what the

new office was working on and what its priorities were. Although the emphasis was on EPA activities, the agency featured the State role prominently. For example, in the first year a figure near the front of the report showed that States conducted 11,334 of the total 13,580 enforcement actions (about 83 percent). The very next year the report did not mention State contributions at all. Whether or not the OECA report included State contributions continued to vary in subsequent years, and the reports were always limited to “formal” enforcement actions. “Informal” actions were never included. When these reports were the only national picture of enforcement available, Congress and the public were sometimes receiving incomplete snapshots.

Additionally, States and EPA often disagree on what constitutes an enforcement action. The most common disagreement centers around the Notice of Violation or (NOV), which is usually a letter a State sends to a facility in violation of an environmental regulation. The letter is typically the State’s first formal notification to a facility that it is not in compliance with a law. The terminology used for this activity varies. Most States call such a letter an NOV, but some call it a Notice of Non-compliance (NON). EPA usually refers to all these actions as “warning letters.” EPA policy has been not to count warning letters (i.e., NOV’s) and other “non-enforceable” actions because they have no force of law. EPA enforcement officials say in meetings with the States that these are not “enforceable” documents (See the insert entitled “What are ‘formal’ and ‘informal’ enforcement actions and why does it matter?” later in the report.) EPA has historically referred to these activities as “informal” enforcement actions. They are not included in the totals that EPA compiles. For a long time, this was merely a minor irritant to State environmental agencies (because they issued a lot of warning notices and found that they were effective in securing compliance). However, the annual publication of the OECA’s accomplishments report, which neither included this data or much other State enforcement data, exacerbated the situation. When their enforcement contributions were not included in national totals, States grew concerned that their role in environmental enforcement was largely unknown and unappreciated.

Unlike the States’ enforcement efforts, compliance assistance is not a delegated program, or even part of a delegable program (with some exceptions such as the Section 507 Small Business Assistance Program of the Clean Air Act Amendments of 1990). Every State conducts compliance assistance efforts, often with EPA assistance (financial or otherwise). Yet there is little reporting to EPA about these efforts because EPA has no clear authority to ask for the data. States consider compliance assistance an important tool in achieving environmental progress because it provides compliance quickly and reduces the need for enforcement actions. Although States have been conducting compliance assistance activities for years, there is little data on State efforts to conduct compliance assistance across all the media (air, water, and hazardous waste). We believe this report represents the first attempt to document these efforts and the measures States use to gauge their success.

METHODOLOGY

Two research instruments, one focusing on enforcement measures and the other on compliance assistance measures, were sent to every State and territory. Several States—including Montana, Utah, New York and Michigan—were chosen as pilots to begin the project. After the pilots were conducted, we modified our research instruments accordingly. ECOS sent out the revised research instruments for this portion of the project in September 2000 and States had until the end of December 2000 to return them. If we did not receive a reply from a State, we followed up with e-mails and phone calls.

Enforcement Measures

This section deals with the enforcement measures research instrument only; compliance assistance is addressed in the subsequent section. The enforcement measures instrument contained detailed questions on:

- the total number of regulated sites in each State for each reporting program,
- total number of on-site inspections,
- total number of evaluations or assessments,
- total number of sites in Significant Non-compliance according to EPA's definition,
- total number of sites in significant violation using the State's definition,
- citizen complaints,
- a description of each enforcement mechanism the State might use, from the least to the most severe,
- data on the number of times these enforcement mechanisms were used,
- the penalties collected from the use of the enforcement mechanisms,
- total enforcement cases managed by each State program,
- the compliance rate for each State program,
- the statistics that each State would prefer to report to EPA to best demonstrate its enforcement efforts,
- data currently reported to EPA that State programs believe has little value in demonstrating their enforcement efforts.

A complete copy of the research instrument is in the Appendix.

As with the rest of ECOS' effort in this research report, we asked States to provide us information on *all* of their programs—whether they were delegated from the federal government or originated from the State itself. However, nearly all the programs for which we received data were programs delegated from EPA⁷ or were directly related to them.

The quality of the responses rests primarily on three points: the number of programs within a State responding, the number of years for which they responded, and the completeness of the response.

Thirty-eight States returned responses from 217 programs, while the rest were unable to respond. Generally, ECOS received replies from air, wastewater, drinking water and hazardous waste programs in the responding States. Most of the replies were filled out by senior level staff from each State environmental (or health) agency and were returned via e-mail or mail. We followed up with phone calls and e-mails to gather more data in those cases where a response was incomplete. EPA provided data to ECOS for the programs that we were missing from the responding States, and for States that were unable to respond (58 programs from 17 States) from its national databases (which are filled with data from the States themselves). The answers were then entered into ECOS' database and analyzed. So, all 50 States and Puerto Rico and the District of Columbia are represented.

⁷ As noted in the general introduction to this research report, ECOS uses the term "delegated" to mean a program EPA has turned over for a State to run. Some federal laws refer to this as "authorized," "approved," or "primacy." Generally, only portions of a federal law are delegated, and for some laws the process continues each year. So, what is "delegated" in one State is likely not the same in another.

In some cases many programs within a State responded (New Hampshire, Vermont and Alabama among others). This increases the likelihood that all enforcement and compliance data were captured for that State. In at least one case (Texas), the State provided a consolidated response. In this State a central office compiled all data from its programs and sent a single reply to ECOS. Either system is valid, but it does lead to some disparity for certain data types (see discussion under “Size of the Regulated Universe” below).

ECOS asked the States to provide information for the years 1995 through 1999 for most items. States were usually better able to provide information from more recent years, with 1998 and 1999 data being most readily available. Some data that EPA supplied was across all five years, but other data were limited to the most recent year (1999). Because it would be inaccurate to compare uneven data across five years, ECOS eliminated all data from programs unable to provide five years of data for our trends analysis. ECOS cautions readers not to seek trend data from the tables that follow unless the table is so entitled.

SIZE OF THE REGULATED UNIVERSE (SITE DATA)

ECOS asked the States to supply figures for the number of regulated sites, facilities and incidences. A “site” might be a regulated location without a building, such as a well field; a “facility” is the typical regulated entity, such as a factory; and an “incident” might be a spill on a highway. Each of these entities—which we are jointly referring to as “regulated sites”—may require environmental oversight or regulation by the State environmental agency. Counting them from State to State is a difficult business, however. The totals for certain of these entities are very large numbers, so that if one State counts them and another does not, very large differences may result. Some States, for example, were able to provide data on the number of on-site wastewater systems (e.g., septic tanks), but other States did not provide this data, either because these systems are not regulated by the State or the State did not have the data on their numbers. States that provided the numbers of underground storage tanks also tended to have very large totals, because there are a lot of these (each gas station may have several). These data are therefore a very conservative estimate of the total number of regulated sites in the States⁸. ECOS suspects the actual numbers to be higher.

ECOS also notes that the data does not necessarily support a conclusion that a certain State has more regulated sites than another. For example, several different State programs may regulate a site. When a State provides a consolidated reply, it is more likely to only count the site one time, compared to a State that provides multiple responses from its various programs, many of which may regulate the site. A State expends effort to regulate a site, and if it does so multiple times, the effort is increased. So, a State like Texas (which provided a single Statewide response) is likely to have presented the most accurate count of the total number of regulated sites, but is less likely to have conveyed the level of effort required to regulate them. Naturally, some sites are more complex (such as a petrochemical facility) and require much more effort. Other sites are quite numerous and may have a total environmental impact of some consequence, but each site is relatively minor itself (a septic tank).

Table 1, “Number of Regulated Sites in the States,” presents the results from all responses. This table also shows the number of programs from each State that responded. In two cases,

⁸ In addition, when data States submitted to EPA were used for those States unable to respond, the data often represented a subset of the actual universe. For example, not all facilities that are regulated under the Clean Air Act are required to be tracked in AFS and, thus, the number of facilities, the number of inspections, etc., obtained from AFS would under count the actual totals.

**TABLE 1:
Number of
Regulated Sites
in the States**

State	Number of Programs Reporting	1995	1996	1997	1998	1999
Alabama	12	65,656	62,724	66,230	66,631	67,302
Alaska	2					1,842
<i>Arizona</i>	4					8,304
Arkansas	4	2,181	2,016	1,972	1,943	4,289
California	7	10,822	10,846	10,655	14,460	71,046
Colorado	3	10,538	10,296	10,637	10,718	10,719
Connecticut	2	8,500	8,500	8,750	9,000	9,400
Delaware (see note 6)	6	68,942	71,585	73,068	75,958	77,804
Delaware (w/o on-site systems)	5	1,942	2,516	2,218	3,329	3,213
<i>District of Columbia</i>	3					1,129
Florida	5	4,372	4,381	26,550	27,480	44,023
Georgia	7	52,672	43,453	58,139	45,355	61,366
Hawaii	7	8,414	8,882	13,245	13,826	14,852
Idaho	3	3,312	3,364	3,409	3,421	3,838
Illinois	3			95,114	96,174	97,227
Indiana	4	6,884	15,893	15,542	14,262	20,766
<i>Iowa</i>	4					11,570
Kansas	4	11,375	11,529	15,373	17,423	17,776
Kentucky	4					16,986
Louisiana	4	13,745	17,071	13,745	17,935	26,981
<i>Maine</i>	4					4,296
<i>Maryland</i>	4					16,124
<i>Massachusetts</i>	4					16,631
Michigan	7	65,510	70,348	73,541	73,618	83,264
Minnesota (see note 7)	13	62,449	60,140	98,359	98,441	123,666
Minnesota (w/o water qual. feedlots)	12	17,449	18,140	58,359	58,441	86,666
Mississippi	4					7,506
Missouri	4	7,376	10,552	11,721	12,086	15,638
Montana	3	832	1,295	1,295	1,313	2,964
<i>Nebraska</i>	4					6,456
<i>Nevada</i>	4					4,224
New Hampshire	15	11,232	18,305	22,770	24,131	28,743
New Jersey	8	65,452	64,464	65,621	64,819	86,360
<i>New Mexico</i>	4					4,416
New York	4	26,944	26,845	26,823	26,722	39,267
North Carolina	4	1,800	6,062	6,245	7,885	15,929
North Dakota	6	4,817	4,905	4,924	4,869	4,764
Ohio	2	7,977	7,668	7,467	7,321	18,602
Oklahoma	6	7,164	7,122	7,102	7,079	8,220
Oregon	4	3,551	3,607	3,619	3,606	12,041
Pennsylvania	8	104,864	106,629	108,213	113,056	136,778
<i>Puerto Rico</i>	3					3,871
<i>Rhode Island</i>	5					6,592
South Carolina	7	18,079	15,853	14,893	16,975	27,304
South Dakota	9	6,766	7,364	7,458	8,941	8,740
Tennessee	4	14,655	15,121	17,577	16,192	16,956
Texas	1	220,000	222,000	220,000	222,000	220,000
Utah	5	9,873	10,164	10,250	9,208	9,655
Vermont	10	33,017	36,456	40,272	44,887	48,357
<i>Virginia</i>	4					19,170
Washington	6	17,858	22,157	21,611	22,753	24,183
<i>West Virginia</i>	4					11,592
Wisconsin	5	14,951	14,431	14,370	54,906	72,994
<i>Wyoming</i>	4					4,106
TOTALS	283	983,809	1,010,181	1,205,812	1,265,569	1,754,865

Notes:

- 1) Texas provided consolidated reports for the entire State.
- 2) Because data were more often supplied for more recent years, readers are cautioned not to interpret this data as an indication of an increasing number of sites. See Trends Table 8.
- 3) *Italics indicate State data come from EPA databases only.*
- 4) Data are not comparable across years in this table because some State programs did not report data for all five years. For comparable data, see the Trends Table.
- 5) Ohio provided data from two programs from 1995-1998 and three programs for 1999.
- 6) Includes on-site wastewater systems; this total is included in the total at the bottom of the table.
- 7) Includes water quality feedlots; this total is included in the total at the bottom of the table.

Delaware and Minnesota, ECOS has segregated the data to show where a large impact of a regulated site-type affects the count for that State (for Delaware the site-type is on-site wastewater systems, while for Minnesota the site-type is water quality feedlots). In both cases, the larger number was included in the totals. This table shows that the States regulated over 1.75 million sites in 1999. For reasons previously mentioned, ECOS believes this to be a conservative figure. Because data were more often supplied for the most recent years, readers are cautioned not to interpret this data as an indication of an increasing number of sites. ECOS has extracted comparable data for the purpose of assessing trends. These data are in the Trends Table at the conclusion of this section.

INSPECTIONS

With some idea about the size of the regulated universe, ECOS sought to understand how States conduct their surveillance of those sites. One of the most recognized methods is the on-site inspection, or site visit. Each media program uses site visits differently. They are not so common in the drinking water programs because that program relies more on laboratory water quality testing results to determine compliance. There are different types of inspections, which may be tracked in EPA's national databases as well. For example, a "Type I" inspection is a "drive-by" type in which a site is observed without entering the property. Such an "inspection" might be conducted to note that a facility appears to be permanently closed. At the other end of the inspection continuum is an "evaluation" inspection, which can take days and involve checking records at the facility in addition to looking at emissions points.

For example, the following is a list of some of the inspection types found in the Clean Water Act (this is not necessarily a complete list):

Industrial User Toxics Inspection	Industrial User Non-Sampling Inspection
Pollution Prevention	W/Pretreatment
Compliance Biomonitoring	Performance Audit
Pretreatment Follow-Up	Compliance Eval (Non-Sampling)
Compliance Assistance	Pretreatment Audit
Enforcement Case Support	Industrial User Inspection
Pretreatment Compl. Inspection	Multimedia
Compliance Sampling	Reconnaissance
Stormwater	Ind. User Insp. W/ Pretreatment Audit
Combined Sewer Overflow Inspection	Toxics Inspection
Sludge	

ECOS asked the States to provide information on the total number of inspections (whatever type) under the assumption (based on contact with our members) that the majority of these fall somewhere in the middle: they are neither "drive-by" nor full "evaluations" but are visits to a site to determine compliance status.

Table 2, "Total Inspections by State, 1995-1999," presents the results from all responses. Like Table 1, this table also shows the number of programs from each State that responded. This table shows that the States made at least 501,000 inspections in 1999. Counts may vary unexpectedly from one State to the next. For example, several States have more inspections

**TABLE 2:
Total Inspections
by State,
1995-1999**

State	Number of Programs Reporting	1995	1996	1997	1998	1999
Alabama	12	15,168	15,378	18,200	17,292	18,507
<i>Alaska</i>	4	113	130	113	100	78
<i>Arizona</i>	3	225	241	262	437	341
Arkansas	3	201	182	177	399	280
California	5	1,722	12,149	12,288	12,474	16,346
Colorado	3	2,197	1,728	1,109	1,661	1,657
Connecticut	1	1,970	1,799	14,587	14,092	12,050
Delaware	6	547	589	8,248	8,503	1,488
<i>District of Columbia</i>	3	153	154	141	172	153
Florida	5	12,622	11,899	14,322	15,986	15,808
Georgia	7	2,019	1,732	4,457	3,896	13,038
Hawaii	6	491	861	1,149	1,008	1,533
Idaho	4	1,060	884	737	698	976
Illinois	3	0	0	77,072	76,078	75,538
Indiana	4	5,112	6,408	7,905	11,915	9,733
Iowa	2	1,400	1,429	1,591	1,474	1,467
Kansas	5	1,285	1,260	2,524	4,255	3,661
<i>Kentucky</i>	3	4,759	4,549	3,938	4,103	3,139
Louisiana	3	4,227	5,032	4,873	5,410	4,190
<i>Maine</i>	4	601	511	499	528	562
<i>Maryland</i>	3	3,423	2,923	2,377	2,334	1,777
<i>Massachusetts</i>	3	2,334	2,069	1,991	2,151	1,496
Michigan	6	33,562	26,877	27,582	30,166	32,528
Minnesota	12	10,280	9,998	10,121	13,215	11,663
<i>Mississippi</i>	4	1,162	1,132	1,807	1,613	1,346
Missouri	6	1,095	801	8,594	9,671	11,076
Montana	3	377	420	474	514	599
<i>Nebraska</i>	4	539	623	485	578	631
<i>Nevada</i>	3	367	599	470	585	316
New Hampshire	16	3,433	7,979	10,499	11,326	12,339
New Jersey	7	24,639	29,957	18,958	19,371	21,040
<i>New Mexico</i>	3	300	274	373	331	385
New York	4	3,135	3,063	3,197	3,509	4,356
North Carolina	4	4,331	5,162	5,540	5,026	4,824
North Dakota	6	1,483	1,433	1,495	1,782	1,571
Ohio	3	5,521	6,249	5,520	4,555	4,583
Oklahoma	7	7,961	9,902	6,943	11,694	11,622
Oregon	4	510	499	554	696	603
Pennsylvania	8	10,874	10,830	12,450	16,312	44,890
<i>Puerto Rico</i>	3	331	416	474	498	453
Rhode Island	5	119	69	97	117	11,860
South Carolina	8	7,716	8,111	15,845	16,065	16,126
South Dakota	8	1,679	1,563	1,535	1,951	2,136
Tennessee	6	8,570	8,677	9,326	12,215	11,962
Texas	1	34,207	66,504	65,186	61,782	75,706
Utah	5	3,966	4,671	4,481	4,767	4,185
Vermont	9	1,478	1,561	1,583	2,017	2,251
<i>Virginia</i>	3	2,191	2,277	2,434	2,396	2,076
Washington	7	1,366	1,846	2,056	1,153	1,502
<i>West Virginia</i>	3	993	1,071	1,200	1,114	1,150
Wisconsin	6	7,179	6,775	5,562	5,508	6,292
<i>Wyoming</i>	3	576	522	504	637	584
TOTALS, ALL STATES	259	255,117	304,204	423,281	445,124	501,492

Notes:

1. *Italics indicate State data come from EPA databases only.*
2. *Connecticut and Texas provided consolidated reports for the entire agency, with the exception that for Connecticut's 95 and 96 data, only three programs are included.*
3. *Data are not comparable across years in this table because some State programs did not report data for all five years. For comparable data, see the Trends Table 8.*

listed than California. One of these is Alabama, which, compared to California, is not a large industrial State with many sites. However, California was not able to easily provide inspections of its Air Program, in part because local air districts conduct much of that program. This means that California's inspection count is almost certainly higher than we show. For this reason, ECOS considers these to be conservative counts of actual State inspections.

Furthermore, because States and EPA more often supplied data for the most recent years, readers are cautioned not to interpret this data as an indication of an increasing number of sites. ECOS has extracted comparable data for the purpose of assessing trends. These data are in the Trends Table at the conclusion of this section.

EVALUATIONS AND ASSESSMENTS

Inspections are only one way that States determine the compliance at a regulated site. Another common method is an evaluation or assessment of environmental data. This is often conducted off-site, for example at an environmental agency office. One of the most common evaluations is the Discharge Monitoring Report (DMR), which a facility regulated under the Clean Water Act's National Pollution Discharge Elimination System (NPDES) provides, often monthly. In the DMR, the facility reports the results of water sampling that it conducted (or had conducted by a third party), and compares it to the permit limit for the facility. The State environmental agency then determines if a violation has occurred and proceeds accordingly. DMRs are sometimes called "self-assessments" or "self-monitoring" because the State is not usually involved in the sampling or testing. However, the State is involved in determining whether a violation has occurred, and if so, how serious it is. Off-site evaluations are also common in other programs, such as drinking water and hazardous waste.

Table 3, "Evaluations and Assessments, 1995-1999," presents the results from all responses. Like the previous tables, this table also shows the number of programs from each State that responded. This table shows that the States made more than 449,000 evaluations in 1999. As in the previous table, unexpected disparities among States may reflect differences in the ability of the State to provide complete data. For this reason, ECOS considers this a conservative figure. Because data were more often supplied for more recent years, readers are cautioned not to interpret this data as an indication of an increasing number of sites. ECOS has extracted comparable data for the purpose of assessing trends. These data are in the Trends Table at the conclusion of this section.

**TABLE 3:
Evaluations and
Assessments,
1995-1999,**

State	Number of Programs Reporting	1995	1996	1997	1998	1999
Alabama	11	66,182	66,706	69,203	69,456	69,004
Alaska	0	0	0	0	0	0
<i>Arizona</i>	0	0	0	0	0	0
Arkansas	1	0	0	81	92	81
California	3	224	665	1,105	1,079	1,043
Colorado	3	25,734	24,028	22,331	23,438	24,326
Connecticut	3	938	963	1,292	1,315	1,315
Delaware	4	192	228	1,106	1,112	1,142
<i>District of Columbia</i>	1	0	8	0	20	0
Florida	3	7,995	9,449	10,251	10,702	10,808
Georgia	4	580	580	3,510	7,895	9,792
Hawaii	3	1,868	1,830	2,090	1,915	2,318
Idaho	1	235	313	250	317	168
Illinois	3	0	0	30,391	30,288	31,701
Indiana	4	15,883	14,889	18,040	19,321	18,744
Iowa	0	0	0	0	0	0
Kansas	3	5,612	5,718	5,845	5,965	5,871
<i>Kentucky</i>	1	465	286	345	387	227
Louisiana	0	0	0	0	0	0
<i>Maine</i>	1	0	0	0	0	1
<i>Maryland</i>	1	0	0	3	5	8
<i>Massachusetts</i>	1	16	100	16	1	0
Michigan	2	1,317	792	1,585	1,975	3,638
Minnesota	6	2,161	2,285	2,495	2,676	2,573
<i>Mississippi</i>	1	86	78	70	63	47
Missouri	1	276	204	248	110	168
Montana	1	28	33	22	21	32
<i>Nebraska</i>	1	25	24	21	21	24
<i>Nevada</i>	1	0	1	97	0	0
New Hampshire	9	2,651	3,263	3,182	3,374	4,815
New Jersey	0	0	0	0	0	0
<i>New Mexico</i>	0	0	0	0	0	0
New York	2	2,592	2,431	2,488	2,508	2,542
North Carolina	1	21,500	0	0	20,000	20,000
North Dakota	6	2,323	2,369	2,326	2,199	2,350
Ohio	1		69,950	68,530	67,950	66,000
Oklahoma	4	3,875	4,239	3,933	9,979	12,280
Oregon	1	230	101	127	173	171
Pennsylvania	2	144	144	144	144	6,212
<i>Puerto Rico</i>	0	0	0	0	0	0
Rhode Island	2	0	1	110	103	216
South Carolina	2	20,364	18,624	17,148	15,804	15,310
South Dakota	3	547	548	619	578	554
Tennessee	4	7,457	8,795	10,907	9,089	9,368
Texas	1	0	64,069	64,543	56,943	83,788
Utah	3	3,171	3,515	3,586	4,040	4,068
Vermont	5	7,242	7,282	7,268	7,311	7,297
<i>Virginia</i>	1	106	237	178	192	242
Washington	4	5,921	8,362	9,475	10,131	9,901
<i>West Virginia</i>	1	0	1	0	0	2
Wisconsin	5	45	33	25	1,942	21,114
<i>Wyoming</i>	1	0	1	0	0	2
TOTALS	120	208,338	323,451	365,309	390,849	449,396

Notes:
1. *Italics indicate State data come from EPA databases only.*
2. *Data are not comparable across years in this table because some State programs did not report data for all five years. For comparable data, see the Trends Table 8.*
3. *Texas supplied a consolidated report for all agency programs.*

CITIZENS' COMPLAINTS

ECOS asked each State to provide a count of citizens' complaints. These complaints are usually phone calls to the agency from a person who believes an environmental problem is occurring to which the State agency ought to respond. Many of these calls result in inspections or other contact with the facility. We included them because they demonstrate the level of contact the State agencies have with the public and because this statistic has not previously been recorded.

Table 4, "Citizens' Complaints, 1995-1999," presents the results from all responses, in this case 35 States. Like the previous tables, this table also shows the number of programs from each State that responded. This table shows that the States received slightly more than 88,000 citizens' complaints in 1999. For reasons previously mentioned, ECOS consider this a conservative figure. Because data were more often supplied for more recent years, readers are cautioned not to interpret this data as an indication of an increasing number of complaints. ECOS has extracted comparable data for the purpose of assessing trends. These data are in the Trends Table at the conclusion of this section.

SIGNIFICANT NON-COMPLIANCE

This section addresses the differences in definitions between EPA and the States for a violation known as Significant Non-compliance, which are commonly called SNCs and pronounced "snicks". The term of art actually varies from one program to another. In the air program, for example, these are referred to as High-Priority Violations or HPVs. A SNC describes a violation that is not administrative in nature (i.e., there is a release of pollutants exceeding the permitted amount); or if it is administrative, it is a serious breach. For example, it is a violation of the regulations to submit an unsigned monthly wastewater self-monitoring report. Nearly everyone agrees this is not a SNC because it is an administrative oversight that does not affect environmental discharge. However, failure to submit a signed monthly report for several consecutive months, while still administrative, is more serious and, therefore, more likely to be classified as a SNC.

One idea behind the use of SNCs is to assess how many environmental violations are occurring that may actually be adversely affecting the quality of the environment. States often believe that they are better able to assess the seriousness of a violation because they are closer to the problem and have likely investigated it. EPA is, of course, further from the problem, but it faces the need to make a national compilation of such violations for many reasons, such as determining where to put its resources and priorities. Thus, EPA's SNC definitions are by necessity more rigid. States and EPA may negotiate the definitions, as was recently done in the air program for "High Priority Violations," but implementation problems may still remain. States and EPA often disagree on the SNC definitions, but many of these disagreements are largely administrative and perhaps may be resolved. However, researchers attempting to assess or evaluate one of the national media programs often cite the number of SNCs. They also tend to use SNCs to make judgments about the willingness of States (or EPA) to enforce environmental laws. At such times the differences of opinion are no longer just administrative, but may affect public opinion and policy makers. Due to problems with data transfer (discussed in Part II of this report), there may be additional differences in SNC counts between State and EPA databases.

**TABLE 4:
Citizens'
Complaints,
1995-1999**

State	Number of Programs Reporting	1995	1996	1997	1998	1999
Alabama	12	2,614	3,120	2,284	2,958	3,136
Alaska	1	361	621	580	544	383
Arkansas	2	479	457	450	431	470
California	1	1,035	924	958	649	616
Colorado	3	1,482	1,375	1,080	1,701	1,970
Connecticut	3	991	805	1,777	1,454	1,440
Delaware	1	3,361	3,370	3,028	2,935	3,102
Florida	3	1,207	2,229	1,778	1,722	1,710
Georgia	6	133	185	3,587	4,883	4,937
Hawaii	4	1,032	1,140	1,106	1,095	1,048
Idaho	1					315
Illinois	2			2,350	2,172	2,001
Indiana	4	680	980	843	841	833
Kansas	3		300	296	319	400
Louisiana	3	3,299	2,693	2,175	2,056	1,840
Michigan	5	1,932	1,991	2,162	2,382	6,165
Minnesota	9	3,262	2,733	2,399	3,091	3,180
Missouri	6	567	437	3,879	4,613	4,597
Montana	1	30	21	9	0	0
New Hampshire	11	745	969	813	861	937
New Jersey	6	3,620	2,991	3,408	3,595	3,760
North Carolina	1	254	205	191	235	302
North Dakota	5	174	176	175	182	177
Ohio	1	5,999	6,255	5,112	4,914	4,428
Oklahoma	1	7,447	7,287	7,691	7,819	6,271
Pennsylvania	5	2,925	3,096	3,015	2,915	3,858
Rhode Island	1			3,398	3,732	4,340
South Carolina	11	2,069	7,612	7,933	7,350	6,793
South Dakota	4	41	136	139	102	112
Tennessee	5	2,480	3,286	3,389	3,101	4,449
Texas	1	9,754	9,224	9,118	8,983	8,557
Utah	3	405	540	490	455	532
Vermont	3	1,417	1,305	1,473	1,652	1,532
Washington	5	3,890	4,251	4,113	3,967	4,218
Wisconsin	3	777	681	697	973	1,111
TOTALS (35 States)	119	63,701	70,726	81,220	83,719	88,417

Notes:

1. Texas and Oklahoma are consolidated, statewide reports.
2. Connecticut's data for 98 and 99 is for four programs.
- 3 Blanks indicate no data are available.
4. Data are not comparable across years in this table because some State programs did not report data for all five years. For comparable data, see the Trends Table 8.

In Table 5, ECOS presents data summarizing some of these differences. ECOS did not attempt to collect each State program's definition of a significant violation. Instead, we asked the State to provide the numbers of violations it provided to EPA (using the EPA definitions) and how many it internally considers to be significant violations (using its own definitions). In order to assure comparability, the data in Table 5 is only from State programs that were able to provide both EPA's assessment of Significant Non-Compliance violations (SNCs) and the program's own assessment of a significant violation. Many other State programs were able to provide ECOS with their own assessment of significant violations, but could not supply the SNC numbers they would normally report to EPA. For some programs, such as Underground Storage Tanks, this is because EPA does not compile this data. About 16 States were unable to provide any data (this is not necessarily because the State does not have the data), and seven of the remaining 32 could provide the data only for certain programs. For these reasons, the totals in Table 5 for 1999 (over 112,600 for the 34 reporting States) are likely short of the actual number of significant violations. ECOS also noted that the SNC data States said they reported to EPA and the State data supplied by EPA to us often did not match. ECOS took care to assure that the data States provided us and that we requested from EPA covered the same time period. This was not always possible and some differences may be attributable to that. However, the comparative data in Table 5 do suggest the level of differences between EPA and State definitions.

“Most State programs report a higher number of significant violations under the State definition than under the federal definition.”

Most State programs report a higher number of significant violations under the State definition than under the federal definition. Across all State programs for which comparable data were provided, States reported just over 112,600 significant violations, compared to just over 60,700 Significant Non-Compliances by EPA. There are many reasons why States have counted more significant violations than EPA. States may be more stringent enforcers than some observers may have thought. States may have a lower threshold for what constitutes a significant violation. States may count violations at smaller sources. Even when the State and federal definitions match, the databases kept at the State program level and at EPA may not (as Part II of this report discusses in detail). The difference in counts seems to be an area for further thought and research. Yet it is clear that States are not lax about citing significant violations, even though there has been little opportunity to date to show this data at a national level.

**TABLE 5:
Comparison of
State and EPA
Significant
Violations,
1995-1999**

State	1995		1996		1997		1998		1999	
	EPA Count	State Count	EPA Count	State Count	EPA Count	State Count	EPA Count	State Count	EPA Count	State Count
Alabama	18	508	26	575	18	522	38	681	31	439
Arkansas	11	99	16	126	13	148	39	157	32	156
California	81	199	55	176	37	145	30	83	34	108
Colorado	54	375	42	912	46	879	62	839	81	792
Connecticut	0	0	23	101	22	117	21	1,188	38	1,369
Delaware	0	49	4	39	1	34	4	40	1	42
Florida	68	695	121	769	113	978	149	1,111	152	1,175
Georgia	0	0	0	0	35	59	93	134	88	197
Hawaii	24	37	25	65	2,645	2,686	1,953	2,015	1,151	1,188
Idaho	4	42	5	22	4	19	3	24	5	19
Illinois	0	0	0	0	1,000	3,583	989	3,818	1,086	3,094
Indiana		2,533		3,069	223	2,724	243	3,662	293	3,408
Kansas	8	68	9	23	567	634	204	295	674	772
Louisiana	10	95	13	86	23	175	87	209	39	161
Michigan	11	1,100	8	1,100	18	1,100	11	1,120	13	1,060
Minnesota	14	30	38	341	51	267	139	390	102	353
Missouri	421	421	596	596	518	2,043	523	2,219	786	2,181
Montana	3	31	2	48	5	18	14	66	14	93
New Hampshire	3	43	5	47	3	46	5	89	16	99
New York	24	202	31	190	53	248	36	228	40	281
North Dakota	156	398	168	296	101	260	70	263	77	187
Ohio	583	188	584	3,227	339	3,073	263	2,554	213	2,160
Oklahoma	890	1,457	679	1,060	183	1,359	147	1,337	151	1,017
Oregon	1,095	1,953	771	2,062	512	1,981	456	1,894	597	1,988
Pennsylvania	1	277	0	87	9	206	6	82	4	108
Rhode Island	0	0	0	0	6	622	1,235	697	0	0
South Carolina	5	42	16	53	17	35	39	74	33	60
South Dakota	81	420	43	388	24	282	21	272	15	238
Tennessee	136	750	61	713	53	674	79	749	54	809
Texas	5,744	1,299	5,363	1,076	5,378	695	5,598	916	9,128	1,004
Utah	802	242	672	220	389	278	330	261	464	340
Vermont	0	0	10	8	14	55	18	92	24	47
Washington	6	130	30	121	33	174	40	209	41	206
Wisconsin	52	751	43	372	13	283	34	321	100	587
TOTALS	10,305	14,434	9,459	17,968	12,466	26,402	12,979	28,089	15,577	25,738
GRAND TOTAL	<i>EPA Count: 60,786</i>		<i>State Count: 112,631</i>							

Notes:
Only States for which both EPA data and State data were available were included in this Table. Because every State program might not have provided data for every year, this data should not be used to establish any annual trends. See Trends Table 8 instead.

ENFORCEMENT MECHANISMS

In the previous sections of this report, we have looked at State efforts to identify regulated sites, investigate their compliance, and then cite a violation when warranted. In this section, we look at the enforcement actions States might take when they find a violation. Although there is no fixed progression among the variety of enforcement actions a State might take, we have listed the options in order of severity.

ECOS asked each State to list its enforcement tools, from the least severe (verbal warning)⁹ to the most severe (civil and criminal proceedings). In nearly all of the States, the least severe mechanism is usually an oral warning or a written warning letter. The oral warning

⁹ The words “oral warning” and “verbal warning” are used in this report interchangeably. Although the word “verbal” may also refer to a written message, in this usage it does not. “Verbal warning” is the more common way States refer to what are essentially oral warnings.

may be a notice by an inspector that a violation was found during an inspection, or it may be a phone call from the office that a violation has been noted. Oral warnings are easy for States to do and are (perhaps surprisingly) effective (see section below on “Effectiveness/Benefits of Enforcement Efforts”).

“Oral warnings are easy for States to do and are (perhaps surprisingly) effective.”

The warning letter is very common throughout State programs. States use the warning letter for a variety of reasons. In some cases they are required by their own State law to issue these. The letters may also be the first approach the agency takes when informing a regulated entity that the State believes it to be in violation of a State regulation and/or law. Some States indicated that a warning letter is usually issued when a violation is minor in nature. A few States use a warning phone call in place of or in addition to the letter.

States may also issue a Notice of Violation (NOV) in addition to or instead of the warning letter. The NOV has many names (Notice of Non-Compliance, Notice of Alleged Non-Compliance, etc.), but most have one or more of the following characteristics:

- the State environmental agency (or one of its divisions) is notifying a regulated entity that, in the opinion of the State, it is not complying with the environmental laws or regulations of the State.
- corrective action is requested (it is usually not “required” at this stage) by a certain date.
- it is a “formal” or “informal,” action, depending on the State (see separate discussion on this topic below).
- a penalty is either referred to as a future possible action if compliance is not quickly achieved, or a penalty is assessed in the letter. An opportunity for a meeting between the regulated entity and the State may be offered.

The State may take further enforcement actions if the Notice of Violation does not result in a timely return to compliance. For example, an agency may draft an “agreed order” or “consent order” or an “administrative order by consent.” These are legal documents that typically include a statement of the violation and a compliance schedule. They may also include penalties or may state that penalties could be forthcoming if compliance is not achieved. These sorts of orders are treated like a contract between the regulated facility and the agency and are frequently used when the facility needs to conduct an extended effort to return to compliance. For example, if a facility has to replace a pollution control device, it may enter into a consent order to give it six months to design, order, install and test the equipment. Operation of the facility may be restricted during this time. The order provides an opportunity for the facility to return to compliance without need for the State to commit resources to a court action.

The next most common step beyond a consent order is some sort of non-judicial unilateral order. These have a variety of names, including “Secretary’s Order,” “Administrative Order,” “Compliance Order,” “Abatement Order” or even “Unilateral Order.” These differ substantially from the previous enforcement action in that they are issued solely by the agency without consent of the other party, under authority granted to the agency under State law. These orders are issued by the agency, however, not a court. They instruct the regulated entity to take certain steps by some deadline or face further escalation of action. For

example, a facility may be ordered to cease operation, or to repair or replace a pollution control device. There is often a monetary penalty included with these orders. As the level of severity of enforcement actions increases, more diversity occurs among the States. States may have a mechanism for “Emergency Orders,” “Revocation of Permit,” “Temporary Restraining Orders” and civil and criminal proceedings.

Emergency orders are also unilateral and usually non-judicial. They may be issued when the head of the agency believes human health or the environment is facing immediate harm, and may stop or curtail the operation of the facility by temporarily revoking their environmental permit(s). Temporary restraining orders also serve this function, but may be issued by a court instead of the agency. All agencies also have some procedure for permanently revoking a permit, although as a practical matter these procedures are rarely needed because other actions are taken instead.

As the final level of enforcement actions, an agency can seek relief either in a civil or a criminal proceeding. Some State agencies have their own attorneys (under agreement with the State Attorney General), but it is most common to refer these actions directly to the State Attorney General for disposal. In a few States, these referrals are made to local prosecutors. Most environmental agencies do not continue to track the enforcement progress once a case has been referred to counsel. At that point, tracking is conducted by the Attorney General’s office. However, State agencies told ECOS that the Attorney General’s office does not usually separate and track cases by the department from which they originated; rather they are tracked by the type of legal action the office is taking. This makes tracking outcomes more difficult.

There are certainly other options for enforcement that States can take. For example, hearing officers (or administrative judges) are often used. Some States provide for hearings before a citizen’s board, such as a Water Pollution Control Board. The enforcement actions we have discussed above are simply the most common throughout the States.

“EPA has traditionally not tracked any of the “informal” actions that States take, and so they have not been previously reported.”

FREQUENCY OF USE OF ENFORCEMENT MECHANISMS

States conduct thousands of the types of enforcement mechanisms discussed in the previous paragraphs. However, EPA has traditionally not tracked any of the “informal” actions that States take, and so they have not been previously reported. Table 6 presents the data ECOS received from both States and EPA. The most widely used enforcement mechanism is the Notice of Violation (NOV). In 1999, the 49 States responding to this question used the NOV enforcement method over 36,700 times. The complete number for all States is certainly higher for three reasons. First, not all States responded. Second, when a State did provide data, not all enforcement units in each State necessarily responded. For example, we did not receive a response to this question from the air program in California (in part because it is delegated to many local governments). For missing States and State programs, we used EPA data when it was available. However, EPA does not generally require States to submit NOV data—States may use these data fields when they choose to do so (NOV data fields are not available in all the national databases). So, 36,798 NOVs is certainly a conservative figure, and the actual number issued is likely higher.

“...if just the NOV’s and warning letters are added, the State contribution to environmental enforcement actions is about 90 percent.”

The second most common action taken was the issuance of the warning letter. Just over 30,000 of these were issued in 1999 from the State programs from which we received responses. The third most widely used “informal action” was consent agreements. These were used over 7,300 times and the remaining type of “informal” actions, oral warnings, were used much less frequently; just over 6,700 times in 1999. Data limitations for these measures are similar to those discussed above for NOV’s.

TABLE 6:
Use of “Informal”
Enforcement
Mechanisms
by State
Environmental
Agencies,
1995-1999

State	Number of States Reporting	1995	1996	1997	1998	1999
Oral Warnings	38	3,710	3,788	3,825	4,523	6,714
Warning Letters	38	18,651	26,689	22,618	28,057	30,456
Notices of Violation	50	24,211	35,127	38,646	37,159	36,798
Consent Agreements	31	3,227	3,347	4,145	5,063	7,347
Total		49,799	68,951	69,234	74,802	81,315

Note: Because data were more often supplied for more recent years, readers are cautioned not to interpret this data as an indication of increased enforcement. See Trends Table 8 instead. In some States, consent agreements are considered to be “formal” actions.

Previous national compilations presented to Congress have not included the actions listed in Table 6. For example, in 1999 EPA’s Office of Enforcement and Compliance reported that the States conducted 8,188 formal administrative actions, but NOV’s and warning letters were not usually included in this total (neither were Consent Orders, or verbal warnings). Because EPA conducted 3,532 formal administrative actions in 1999, that year States performed nearly 70 percent of all actions, according to EPA’s calculations. However, NOV’s and warning letters are also administrative actions. Table 7 shows that if just the NOV’s and warning letters are added, the State contribution to environmental enforcement actions is about 90 percent.

TABLE 7:
Contribution
of States to
Administrative
Environmental
Enforcement

Administrative Enforcement Action Types	EPA’s Calculation for 1999	ECOS’ Calculation for 1999
State Oral Warnings	not included	6,714
State Formal Administrative Actions	8,188	8,188
State Warning Letters	not included	30,456
State Notices of Violations	not included	36,798
EPA Formal Administrative Actions	3,532	3,532
EPA’s Notices of Violations	not included	5,211
TOTAL	11,720	90,899
PERCENT OF TOTAL CONDUCTED BY STATES	70%	90%

Notes:

1. EPA’s data are from the OECA Accomplishments Report.
2. This table only presents data for “administrative” actions, not judicial and other types of actions.
3. EPA provided the count for its Notices of Violations to ECOS by letter dated March 22, 2001.

TRENDS IN STATE ENFORCEMENT AND COMPLIANCE

Naturally, ECOS was interested in trends for all the data presented in the first six tables. For this table, ECOS only counted data from State programs that were able to provide figures for each of the five years we requested. Fortunately, this was a significant portion of the total response (about two-thirds on average for each data item). These data are presented in Table 8, “Trends in State Enforcement and Compliance, 1995-1999.” Readers are cautioned that the totals in the Table 8 are generally less than in previous tables, because ECOS dropped totals for any State that was unable to provide five years of data, in order that we would compare like data across the five years. ECOS also recognizes that States were better able to provide data for more recent years. We therefore caution the reader to view these data as suggestive, not definitive, trends. We believe these data suggest further study, under more rigorous conditions than we were able to impose, is warranted.

“The greatest increase was for inspections, which grew by 18 percent between 1995 and 1999.”

The trends fall into four groups: high growth, moderate growth, low growth, and decline. The first group, high growth, includes two items. The greatest increases were for use of consent orders, which grew over 55 percent between 1995 and 1999 and for inspections, which grew by 18 percent between 1995 and 1999. One State (New York) had a large growth in the use of consent orders, accounting for much of this growth. Citizens’ complaints also grew during those years, but not quite as much (16.2 percent). The next group included oral warnings (9.3 percent growth) and notices of violation (8.1 percent growth). All but one of the remaining measures grew less than 5 percent. The one measure that declined, the number of significant violations, remained essentially flat as it decreased by less than 1 percent.

What might these trends tell us? As the number of the early enforcement actions (those first actions that States take, e.g., warning letters) has increased during the last five years, the number of significant violations has decreased, despite an 18 percent increase in inspections.

“As the number of the early enforcement actions...has increased during the last five years, the number of significant violations has decreased, despite an 18 percent increase in inspections.”

There are nearly one million sites, facilities, and incidences listed in this table for which we have five years of continuous data. This does not mean there are necessarily one million different sites, because some sites are regulated by more than one environmental law—but there are about one million places regulated that we can list here. For 1999, these sites were inspected or evaluated about 475,000 times (296,807 inspections plus 178,858 evaluations). Again, a single facility may have been inspected or evaluated numerous times in a year, but overall the States looked at just about half of these sites. In 1999, the States found just over 11,500 significant violations. Once again, a single facility may have received multiple

violations, but overall, just over 1 percent of all sites had a significant violation, or about 2.4 percent of those assessed (calculated by 11,500 / 475,000). The data suggests, then, that about 97.6 percent of the regulated sites for which the State made a compliance assessment are not in “significant non-compliance.” However, we contrast this observation with the information presented in the section below entitled “Compliance Rate.”

**TABLE 8:
Trends in State
Enforcement and
Compliance,
1995-1999**

Trend	Number of States Included	1995	1996	1997	1998	1999	Change from 1995 to 1999
<i>Determining Compliance</i>							
Sites/Facilities/Incidences	33	925,079	931,207	948,602	959,049	969,673	4.60%
Inspections	49	243,476	274,979	282,503	287,979	296,807	18.00%
Evaluations/Assessments	33	170,939	173,931	178,661	179,002	178,858	4.40%
Citizens' Complaints	26	49,373	52,701	55,080	54,845	58,884	16.20%
<i>Issuing Violations</i>							
Significant Violations	27	11,631	11,350	11,033	11,468	11,535	-0.80%
<i>Initial Enforcement Steps</i>							
Oral Warnings	31	3,694	3,741	3,772	3,953	4,073	9.30%
Warning Letters	36	12,232	17,175	11,520	12,057	12,886	5.10%
Notices of Violation	41	26,648	28,532	26,048	29,771	29,012	8.10%
Consent Agreements	27	3,227	3,302	3,284	4,185	5,011	55.30%

Notes:

The numbers provided for each year are based on comparable data sources: States which were able to provide all five years of data. The numbers in this table should not be used as national totals because not all States are included.

ADMINISTRATIVE PENALTY AUTHORITY

This authority allows the State agency to assess a fine when it alleges an environmental violation, somewhat like a traffic ticket. If the regulated entity disagrees, it can pursue other legal remedies, otherwise it pays the fine. Twenty-nine States gave at least one division in the environmental agency the power to use Administrative Penalty Authority (APA). Of the responding States, three States (Alaska, Florida, Illinois) do not have this power. Two States did not respond to this question (New York and Montana). Some States, like Colorado, gave one division (Water Division) APA power but did not give it to another one (Air Division).

WHAT ARE “FORMAL” AND “INFORMAL” ENFORCEMENT ACTIONS AND WHY DOES IT MATTER?

EPA reports annual enforcement statistics to Congress and others in its “OECA Accomplishments Report.” This report includes various “administrative actions” that EPA and States take. These have, to date, been limited to “formal” actions, which means that State (and EPA) oral warnings, warning letters, most notices of violations are not included. States have found these to be useful enforcement tools that help achieve compliance, and so has EPA. So, why does EPA only count the “formal” actions?

ECOS asked EPA to provide its basis for determining what was, or was not, a “formal” enforcement action. EPA provided ECOS a memorandum entitled “Revised Policy Framework for State/EPA Enforcement Agreements,” dated August 25, 1986. This document includes the following:

“Definitions of formal enforcement actions: Regions should reach agreement with States as to how certain State enforcement actions will be reported to and interpreted by EPA. This should be based upon the essential characteristics and impact of State enforcement actions, and not merely upon what the actions are called. National program guidance setting forth consistent criteria for this purpose should be followed pursuant to the principles listed [elsewhere herein].”

The “criteria” adds this language:

“Contains requirements that are independently enforceable without having to prove original violation and subjects the person to adverse legal consequences for noncompliance.”

Finally, we asked EPA about the origin of the term “enforceable.” The origin of the use of this term was not readily available, but EPA indicated that “an enforceable obligation is one that another can compel one’s obedience to.” This means that “if [an administrative order] is truly a ‘order,’ then...the agency that issues it can seek to have obedience with its terms compelled through the judicial branch.” (F. Stiehl, personal communication, March 1, 2001).

Any enforcement action that is not “formal” is, therefore, “informal,” and has not been counted in annual reports. ECOS notes that States and EPA may have agreed not to exchange the information needed to report “informal” actions in order to reduce State reporting burdens, or for other reasons. How to report this success needs to be developed so as not to burden the States reporting it.

The data that ECOS collected for this report suggests that State informal actions may be effective in addressing environmental violations. There is no assessment of the effectiveness of either “formal” or “informal” enforcement approaches in annual reports to date. That is, we do not know which action is the most likely to cause a violator to return to compliance, and which gets the most result for the level of effort the enforcing agency makes.

The States and EPA are currently working to agree upon a set of standard data definitions for the purpose of exchanging information. This group, the Enforcement and Compliance Data Standards Action Team, is part of the Data Standards Council described elsewhere in this report. The group has not yet completed its work, but has dropped the term “formal” and “informal” from its descriptive terms.

**TABLE 9:
State Agency
Programs with
Administrative
Penalty
Authority**

State	Division	Michigan	Drinking Water and Radiological Protection
Alabama	Land-Solid Waste Branch	Minnesota	Air
Alabama	Water Branch	Minnesota	Water
Alabama	Water-Groundwater Branch	Minnesota	Hazardous Waste
Alabama	Air Branch	Minnesota	Solid Waste
Alabama	Field Operations Branch	Minnesota	Storage Tanks
Alabama	Land Branch	Minnesota	Spills
Arkansas	Hazardous Waste Branch	Minnesota	Noise
Arkansas	Air Enforcement Branch	Minnesota	Feedlots
California	Department of Toxic Substances Control	Minnesota	Stormwater
California	Compliance and Enforcement Division	Minnesota	Individual Sewage Treatment Systems
California	Permitting & Enforcement Division	New Hampshire	Petroleum Remediation Section
California	Special Waste Division	New Hampshire	Underground Storage Tanks
California	Diversion, Planning & Local Assistance	New Hampshire	Solid Waste
California	Recycled Content Newsprint Program	New Hampshire	Waste Management
California	Waste Prevention and Market	New Hampshire	Air Resources Division
Colorado	Water Quality	New Hampshire	Water Division
Connecticut	Office of Long Island Sound Programs	New Hampshire	Water Quality Engineering
Connecticut	Bureau of Air Management	New Hampshire	Subsurface Systems Bureau
Connecticut	Bureau of Waste Management	New Hampshire	Water Division-Wells Board
Delaware	Ground water		Program
Delaware	Sediment and Stormwater	New Hampshire	Water Division-Wetlands
Delaware	Air & Waste Management		Bureau
Delaware	Underground Storage Tanks	New Hampshire	Winnepesaukee River Basin Program
Delaware	Hazardous Waste	New Hampshire	Water Division-Darn Bureau
Georgia	Paint and Asbestos	New Hampshire	Public Bathing Facility Program
Hawaii	Air Branch	New Hampshire	Shoreland Protection
Hawaii	Clean Water Branch	New Hampshire	Water Division
Hawaii	Hazardous Waste	New Hampshire	Water Division-Water Supply
Hawaii	Emergency Planning and Response	New Jersey	Air Enforcement
Hawaii	Safe Drinking Water	New Jersey	Discharge Prevention, Containment and Countermeasures
Hawaii	Underground Injection Control Program	New Jersey	Pesticide Control
Hawaii	Underground Storage Tanks	New Jersey	Right-To-Know Program
Idaho	Water Quality Programs	New Jersey	Solid Waste
Idaho	Waste Management and Remediation Program	New Jersey	Hazardous Waste
Indiana	Hazardous Waste Section	New Jersey	Water Program
Indiana	Water Enforcement Section	North Carolina	Hazardous Waste
Indiana	Office of Enforcement	North Carolina	Water Quality-Compliance & Enforcement Unit
Kansas	Bureau of Water	North Dakota	Solid Waste
Kansas	Bureau of Waste Management, Hazardous and Solid Waste	North Dakota	Hazardous Waste
Kansas	Bureau of Air and Radiation	North Dakota	Drinking Water Program
Kansas	Division of Environment	North Dakota	Division of Water Quality
Kansas	Bureau of Environmental Remediation	Ohio	Hazardous Waste Management
Louisiana	Office of Environment Compliance	Ohio	Air Pollution
Louisiana	Air	Oklahoma	Lab Certification
Louisiana	UST/Radiation/Solid Waste	Oklahoma	Water Quality
Louisiana	Hazardous Waste	Oklahoma	Municipal I Industrial Wastewater
Louisiana	Water	Oklahoma	Air Quality
Michigan	Air Quality Division	Oklahoma	Solid Waste
Michigan	Storage Tank Division	Oklahoma	Hazardous Waste
		Oklahoma	On-Site Sewage and Water
		Oregon	Drinking Water Program
		Oregon	Statewide enforcement Section
		Pennsylvania	Bureau of Mining Reclamation

Pennsylvania	Oil
Pennsylvania	Land Recycling
Rhode Island	Air, Waste & Compliance
South Carolina	Air Quality Enforcement
South Carolina	Mining and Reclamation
South Carolina	Waste Management
South Carolina	Water Enforcement
South Carolina	Hazardous Waste Enforcement
South Carolina	Drinking Water Enforcement
South Carolina	Underground Storage Tanks
South Dakota	Drinking Water
South Dakota	Solid Waste
Tennessee	Division of Underground Storage Tanks
Tennessee	Water Supply
Tennessee	Solid Waste Management
Tennessee	Air Pollution Control
Tennessee	Solid Waste Management Program

Tennessee	Water Pollution Control
Vermont	Water Supply Division
Vermont	Waste Management Division, Solid Waste Program
Vermont	Enforcement Division
Vermont	Air Pollution Control
Vermont	Water Quality
Washington	Water Resources
Washington	Spill Prevention
Washington	Nuclear Waste
Washington	Shoreland and Environmental Assistance
Washington	Solid Waste
Washington	Drinking Water
Washington	Hazardous Waste & Toxics Reduction
Wisconsin	Water Division

Note: States not listed did not report.

PENALTIES COLLECTED

ECOS also asked the States to provide information about the monetary penalties that they collected. ECOS used data from both the direct State responses and from EPA sources for those States or State programs that were unable to respond. In the case of data obtained from EPA, only penalties assessed by States were included (not penalties assessed by EPA). There are at least two further limitations to this data. The data obtained from EPA is not necessarily complete (in part, because EPA only requires States to enter penalty data for RCRA), and a few State penalty data may include penalties for non-delegated environmental programs. EPA also collects a substantial amount of penalties, often based on case work conducted by States. These data are presented in EPA’s annual enforcement report. Data from all 50 States are included in Table 10.

States and EPA usually combine enforcement efforts for very large or important cases. ECOS did not ask States to differentiate between “State-only” enforcement cases and those which may have been included in previous reports on this subject. Unlike the enforcement actions previously discussed, which are more or less the same in each State, penalties may vary widely from one State to the next. This is because States do not uniformly have very large penalty cases every year. That is, occasionally a very large case is settled, resulting in a large penalty. Since this does not occur every year in most States, the penalties assessed may vary more widely. We also note that “Supplemental Environmental Projects” (SEPs) are included in this table as a “penalty.”¹⁰ Finally, it is common for States and EPA to cooperate on enforcement cases, especially on a large case within a single State. When such a case occurs, the federal government may assess the final penalty, not the State. This does not mean, however, that the State did not contribute materially to the successful outcome. In any case, it is clear from the data that States collect tens of millions of dollars in fines and supplemental environmental projects each year, and that these penalties are a significant portion of the national total.

¹⁰ SEPs are not technically penalties, but are arranged under various environmental laws to allow a beneficial environmental project to be conducted instead of a paying a penalty. There are many restrictions, not the least of which is that if the SEP is not satisfactory, the original penalty must still be paid in full. We include SEPs in this table because they are closely related to penalties, even if not technically penalties themselves.

**TABLE 10:
Penalties
Collected
by States,
1995-1999**

	1995	1996	1997	1998	1999
Administrative	\$37,914,259	\$32,263,281	\$34,788,102	\$37,262,038	\$45,310,647
Civil	\$10,680,362	\$17,916,871	\$20,031,175	\$33,760,856	\$17,434,094
SEPs	\$20,632,137	\$17,596,643	\$29,758,939	\$38,624,785	\$21,949,216
Criminal	\$763,796	\$833,025	\$5,290,847	\$8,028,956	\$275,003
Combined	\$9,644,148	\$11,137,634	\$5,608,445	\$17,668,168	\$7,001,742
TOTALS	\$79,634,702	\$79,747,454	\$95,477,508	\$135,344,803	\$91,970,702

Note: "Combined" is data from EPA consisting of all four of the types above. "SEPs" are Supplemental Environmental Projects, which are in lieu of penalties.

ENFORCEMENT CASES

ECOS asked each State to tell us the number of enforcement cases it addressed each year. A case may involve several enforcement actions—for example, both a Notice of Violation and a Consent Order. This question was our attempt to acquire the number of cases that a State opened, worked on, and closed in a given year.

However, only a few States were able to answer this question, primarily because they do not track their enforcement information in this way. No data from this inquiry is included.

EFFECTIVENESS/BENEFITS OF ENFORCEMENT EFFORTS

ECOS also wanted a measure of the efficacy of the enforcement actions that States take. For example, ECOS wanted to know how often the Notice of Violation letter resulted in the offending facility returning to compliance without need for any further action on the State agency's part. ECOS asked the States to assess the effectiveness of all of their enforcement tools. For the most part, they were best able to do this for the first four or so steps of enforcement (typically oral warning, warning letter, notice of violation, consent orders and unilateral orders). Later enforcement steps, such as judicial actions, were more difficult for us to group, or were more difficult for the States to assess effectiveness. Partly, this is because in many States, the case leaves the agency's control when it is passed on to the Attorney General. For example, one State indicated that criminal cases from the most recent three years were still unresolved. So, the State could not yet count them as having succeeded or failed to bring the offending facility back into compliance.

It is, however, very common for the agency to assess the effectiveness of the enforcement actions it takes itself. Ninety-one programs from 28 States were able to provide effectiveness data for their programs. Although States varied somewhat in their use of enforcement tools, there were four main categories which we were able to group in order to ascertain an effectiveness rating. These are shown in Table 11. States determined these success rates by calculation or by estimates based on their experiences with the techniques.

These data suggest that basic State enforcement actions are very effective in returning violating facilities to compliance, and that their effectiveness increases as the severity increases. Those facilities that do not return quickly to compliance by these methods will likely have more stringent methods used, such as cease and desist orders, injunctions, court orders and other judicial actions.

TABLE 11:
States’
Assessment
of Effectiveness
of Enforcement
Tools

Enforcement Tool	Mean of Reported Success Rates (%)
Oral Warning	76
Warning Letter/Notice of Violation	81
Consent Order	83
Unilateral Order	86

Note: “Success Rate” means the percentage of cases satisfactorily resolved by use of this tool.

“These data suggest that basic State enforcement actions are very effective in returning violating facilities to compliance, and that their effectiveness increases as the severity increases.”

Oral (often called “verbal”) warnings may occur when a field inspector inspecting a facility advises that it is in violation, but commonly is a phone call from the agency after the inspection. Over three-quarters of the time, this simple approach results in the facility correcting the problem and returning to compliance.

Data show that the “warning letter” or Notice of Violation is about 81 percent effective. This letter is typically sent after the agency has determined that a violation (or violations) has occurred, and may follow or replace a verbal warning.

An agency issues a consent order if there are multiple violations, if the agency considers the violation requires a compliance schedule and sometimes if the agency wants to assess a penalty. Consent orders are effective about 83 percent of the time.

An agency may not necessarily use a verbal warning, warning letter and consent order on the same facility. That is, one or more of those tools might be skipped if the situation warrants. However, it is common for a facility to progress through each step if compliance is not achieved. If a facility is still not in compliance by this point, many States are likely to use the unilateral order approach previously described (in the section, “Enforcement Mechanisms”). The head of the agency usually issues these. Data show that these are the most effective tool, resulting in compliance about 86 percent of the time.

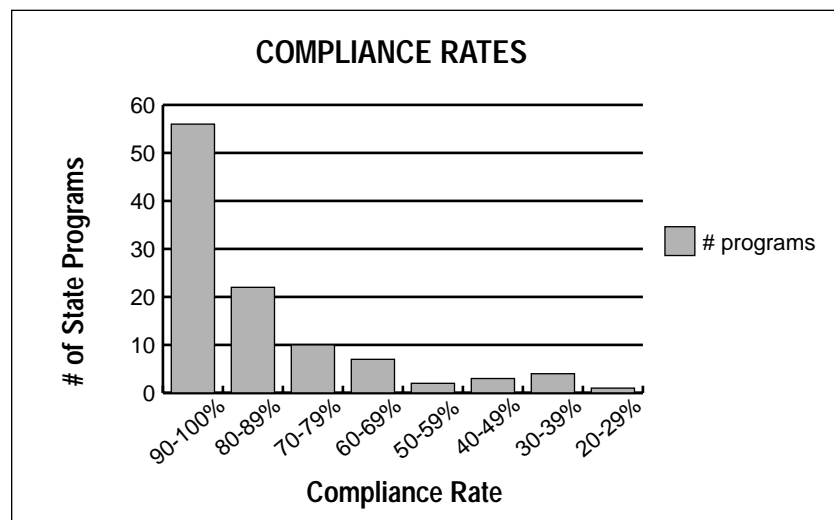
A State may use one or more of the previous enforcement methods on a facility, but the reader should not assume that there is necessarily a regular procession from one step the next for every violation. After a State uses one or more of these techniques, a very small number of facilities have still failed to achieve compliance. Most of these will likely undergo a more stringent enforcement process, such as referral to the State’s attorneys for an administrative hearing or a judicial action.

COMPLIANCE RATE

The term “compliance rate” is used to describe the number of facilities that are in compliance from the full universe of facilities that are regulated. Advocates of this term believe it is a better measure of how well (or poorly) the regulated community is doing in meeting environmental laws, and is more meaningful than the traditional “bean” counts such as number of inspections, number of enforcement actions, etc.

However, there are a series of definitional and usage problems that frustrate those who would like to use this term. For example, how does one determine the compliance rate for a facility that has not been inspected this year? Is it assumed to be in compliance (that is, it is innocent until proven guilty) or is it unknown (no assessment can be made), or is it whatever it was last time that it was inspected? What if a program’s compliance rate is high, but one facility that is not in compliance has a very significant adverse environmental impact?

**FIGURE 1:
Reported
Compliance
Rates of Various
State Programs**



Furthermore, States and EPA may differ over what time period to use to determine the compliance rate. For example, EPA assesses compliance quarterly. In EPA’s view, a company that is out of compliance once each quarter (from the same or different emission points), may be considered out of compliance for the entire year. On the other hand, a State may assess the kind of violation to determine whether it was isolated or repetitive and calculate the days it was out of compliance, resulting in, for example, 15 days out of 365, or about 96 percent in compliance. Finally, one could look at compliance at emission points. A complex facility might have a hundred points that are regulated. If a different emission point failed to meet its compliance requirement each day, would the plant be 100 percent out of compliance (out every day) or 99 percent in compliance (99 out of 100 emission points in compliance each day)? These are as yet unresolved issues between EPA and the States. Table 12 shows many of the methods that State programs use to calculate compliance rates.

States may calculate compliance rates differently, and some States have provided data on more programs than others, so there are several potential barriers to calculating a meaningful national compliance rate. In spite of these definitional shortcomings, ECOS asked each State to tell us whether it calculated compliance rates and, if so, what rates were being measured. Figure 1 presents the compliance rates calculated or estimated by the 105 State offices from 35 States that kept track of this value. Compare these figures to the calculated value (97.5%) presented in the section of this report entitled “Trends in State Enforcement and Compliance.”

**TABLE 12:
Examples of
State Methods
for Calculating
Compliance Rate**

HAZARDOUS WASTE AND UNDERGROUND STORAGE TANKS

- “Compliance rate was determined by comparing the current number of open incident cases to the number of incident cases identified as inactive. The inactive cases have likely received enforcement or will receive enforcement. Some sites are inactive, however, due to inability to pay for site work.”
- “Number of inspections showing operational and equipped compliance divided by the number of inspections.”
- “Divide # of Compliance Advisories issued by # of hazardous Waste inspections performed.”
- “Number of sites in compliance at time of unannounced inspection divided by (Total number of inspections conducted).”
- “27 Significant Non-compliers of 243 Random Inspections (number of significant non-compliance divided by number of random inspections)”
- “Number of Solid Waste Facilities With No Significant Non-compliance Divided By The Number of Facilities Inspected (statewide)”
- “Divide the number of facilities found with significant violations by the total number of inspections”
- “Percentage of cases brought back into compliance at current time”
- “For effectiveness of Compliance Assistance (CA): # of facilities receiving CA that do not have violations vs. total # of facilities receiving CA that are inspected.”

WATER

- “Divide the number of systems without a violation by the total number of active water systems for one year.”
- “Divide the number of facilities in compliance by the total number of facilities.”
- “Large systems: Divide the number of facilities to be in compliance at time of inspection by number of facilities inspected.”
- “Small systems: Subtract number of replacement system permits issued from total number of permits and calculate percent.”
- “(# of plants inspected - # of plants receiving Unacceptable ratings) / # of plants inspected”
- “Divide the number of facilities without significant non-compliance by the total number of facilities. Convert to a percentage by multiplying by 100.”
- “Total Discharge Monitoring Reports (DMR) Reporting Periods without Violations / Total DMR Reporting periods”

AIR

- “100% minus rate of significant noncompliance based on NOV’s issued divided by number of sources evaluated.”
- “Source in compliance / total sources”

DEPARTMENT WIDE

$(1 - (\# \text{ of facilities out of compliance} / \text{total } \# \text{ facilities})) * 100\%$ at a given point in time

BEING DEVELOPED

We are currently developing/revising our methodologies for calculating compliance rates. We are not satisfied with current methodologies and we lack them in some areas. We are scheduled to conclude these efforts next spring. Until that time, we have no data.

ADDITIONAL COMMENTS FROM STATES

There were also two final questions. The first asked States to make any additional comments relative to their office’s enforcement efforts and/or ways that they believe current reporting practices at EPA could be changed.

One of the questions in the research instrument asked the State environmental agencies to list several statistics that they believe best show their enforcement efforts. A few States were concerned about additional reporting burden if they were to suggest new reporting measures, but no old measures were removed. However, Table 13 shows the enforcement activities that States currently undertake that are not normally reported to EPA, but which, many States believe, would more accurately portray their progress. ECOS suggests that the information in this table might be a basis for further discussion on how best to report State enforcement information.

**TABLE 13:
State
Preferences
for Enforcement
Statistics**

Preferred Enforcement Reporting Measure	Number of State Programs	Percentage of State Programs
Compliance Rate	32	27.83%
Number of Cases	22	19.13%
Facilities Regulated vs. Facilities Found in Violation	18	15.65%
Number of Inspections	18	15.65%
Notices of Violations (NOVs)	12	10.43%
Compliance Assistance	10	8.70%
Informal Enforcement Actions	8	6.96%
Departmental Annual Reports	8	6.96%
Penalty Information	5	4.35%
Time Spent on Compliance & Enforcement Issues	5	4.35%
Money Spent on Compliance & Enforcement Programs	2	1.74%
TOTAL STATE PROGRAMS RESPONDING (does not total due to multiple answers)	115	

WHAT IS THE MOST VALUABLE ENFORCEMENT INFORMATION TO REPORT?

These are 14 representative comments from the States about what enforcement measures best reflect their efforts. Multiple responses from a single State indicate opinions from more than one program in the State.

We note some contradictions among the States between this section and the next “What is the Least Valuable Enforcement Information to Report?” For example, Colorado suggests that EPA should consider “how well we cover the regulated universe (number and quality of inspections, number and quality of compliance assistance efforts, and resulting compliance rates, etc.),” rather than “counting beans and microscopically reviewing the adequacy of settlements and penalties.” On the other hand, Illinois suggests to delete reports on the “number of inspections. Providing an inspection date does nothing but indicate that source was visited.” Such contradictions occur regularly. However, on some items there may be

broader agreement. For example, Florida suggests, “Providing copies of all NPDES inspection reports as required in our delegation agreement to EPA seems to be of little value, since they are not regularly reviewed by EPA’s staff.” It seems clear that there is room for improvement on how enforcement and compliance is reported to EPA, and that such a discussion with the States should occur not just one media program at a time, but across the agency.

ALABAMA

“Demonstration of compliance, however, would best be accomplished by tracking the number of violations cited in relation to the degree of compliance achieved. Determination of compliance is done by follow-up site inspections and review of correspondence/data submitted as a result of an enforcement action. In terms of a demonstration to EPA, it would be difficult to accomplish since rules/definitions/terminology do not match.”

COLORADO

“EPA should measure how well we cover the regulated universe (number and quality of inspections, number and quality of compliance assistance efforts, and resulting compliance rates, etc., versus the size of our regulated community) as a measure of our effectiveness, rather than counting beans and microscopically reviewing the adequacy of settlements and penalties. If the deterrent for non-compliance is there, and the encouragement for compliance is there, and the compliance rates are high and/or improving, then we’re getting what we want.”

ILLINOIS

1. The number of facilities inspected or reviewed divided into the number of facilities found to be in violation.
2. The number of compliance assistance visits.
3. The percentage of compliance assistance visits that found deficiencies.
4. The number of SNCs (Significant Non-compliance violations).”

ILLINOIS

“Compliance rates, together with amount of time to develop acceptable compliance plans after identification of violations, the amount of time required to return facilities to compliance and sustained compliance assessments, measure the effectiveness of Agency enforcement and compliance assistance efforts.”

NEW HAMPSHIRE

“Measure the compliance rate on a quarterly basis rather than yearly. This would provide a quarterly facility compliance rate that more accurately reflects compliance on a day-to-day basis. Facilities in violation are generally not in noncompliance more than one reporting quarter per year.”

NEW HAMPSHIRE

“EPA’s enforcement response policy should return the classes of violation (e.g., class 1, class 2). Compliance rates could then be determined as to the type and degree of hazard to human health and to the environment. The compliance rate could then be the total number of facilities inspected, divided into the number of facilities with SNC status, class 1 violations, and class 2 violations.”

NEW JERSEY

“Compliance Rates

Percentage of inspections where non-compliance was discovered

Amount of [air] emissions reduced as a result of enforcement actions

Number of compliance monitoring strategy activities performed annually

All data pertaining to Significant Non-Compliers and those reporting serious violations

Number and status of referrals to the State Office of Attorney General

Number of repeat violators

Number of regulated entities in various sectors, and the percentage of that sector that are inspected annually”

OREGON

“The number of inspections made divided by the number of possible facilities in that regulated universe is a good measure of enforcement coverage. The number of formal enforcement actions initiated divided by the number of violators identified is a measure of enforcement consistency. The number of cases and amounts of penalties is an indicator, but not a good measure, of work performance by the enforcement staff.”

RHODE ISLAND

“Probably the most meaningful measure of enforcement effectiveness is the overall compliance rate. This should probably be combined with a measure of “reach” quantifying the interaction the agency has had on either sectors, geographic areas or other targets. Reach should include formal, informal and compliance assistance methods.”

UTAH

“Number of water systems contacted via telephone, on site or e-mail to provide technical assistance. Number of hours spent on compliance issues (telephone contacts, e-mail contacts, on site assistance, participation in training seminars, etc.). All identified contacts would paint a more complete picture. However, we would resist the added reporting burden.”

UTAH

“Number of operational inspections completed, number of facilities in compliance at time of inspection, number of non-complying facilities which come into compliance within 90 days, and number enforcement actions taken.”

UTAH

“Avoidance of enforcement actions—correction of problem, compliance rates, technical assistance.”

VERMONT

“Number of inspections, report reviews and other evaluations, coupled with respective compliance status of sources. Number of notices of violation issued and enforcement actions taken.”

VERMONT

“This division does not report its enforcement statistics to EPA. If we did, we would choose to send EPA our end-of-the-year legislative report. This report contains all of the investigative and legal enforcement work (citizen complaints, NOVs, administrative settlements, etc.) we perform for the calendar year.”

WASHINGTON

“1-A look at the repeat offenders may help provide info on whether the type of enforcement action taken was effective for the facility.

2-Take a holistic look at enforcement data. Give equal focus on the penalty amount and the SEP gained from settlement.

3-Make an effort to be sure the data are good. Work with States to develop a good review loop of the data to ensure it is up to date and accurate.

4-Current measures are sufficient for measuring the extent of our enforcement efforts. There is not much more to it than counting # of visits, # of violations, # of enforcement actions and severity of enforcement Actions. One additional datum that might be helpful would be some way of tracking locations that close as a result of enforcement actions. Environmental enforcement often seems to be the final ‘nail in the coffin’ of businesses that are poorly managed.

5-A better question would involve measuring the effectiveness of our efforts. It is easy to go out and find violations that exist. It is far more difficult to measure how many violations did not occur, due to educational and outreach efforts.”

WASHINGTON

“We would report the number of compliance actions (both technical assistance and enforcement). We are also developing the capability of quantifying the water savings (outcomes) associated with compliance actions.”

WISCONSIN

“EPA should not collect and evaluate the individual permit data elements. Their concern should be on the overall program compliance and not to develop and maintain a system to monitor the individual permitted facilities. The Permit Compliance System is of no use to the WDNR (Wisconsin Department of Natural Resources) in managing the [wastewater] program. It serves as a drain on valuable resources to maintain the system. The PCS [Permit Compliance System used for Clean Water Act data] database is old, technically dated and is not user friendly. The EnPPAs have framed a new philosophical approach to the relationship between EPA and the States that is diametrically opposed to the management strategy used to design PCS. The States should be asked to supply the data needed to reflect the overall status of the programs and not the detailed program and monitoring information required by PCS.”

WHAT IS THE LEAST VALUABLE ENFORCEMENT INFORMATION TO REPORT?

ECOS also asked States to list the statistics that they report to EPA that they feel have little value in showing the extent of their enforcement efforts.

ALABAMA

“The Hazardous Waste Branch of ADEM currently submits to EPA an End-of-Year Report, which is basically a compilation of accomplishments compared to commitments as defined in the Work plan submitted with the federal grant application. Within this report, only the total numbers of each type of enforcement action are given. There is no correlation between actual resources expended and overall enforcement efforts. Rather, a ‘pricing factor’ in terms of ‘work days’ is assigned to each type of action that may or may not reflect the true effort of the agency. However, to provide a more meaningful statistic would itself require significant additional effort on the part of Hazardous Waste Branch personnel.”

CALIFORNIA

“The ‘coverage areas’ as established by US EPA, consist of three-letter codes [that] are not generally useful to DTSC [Department of Toxic Substances Control]. The elimination of this data collection would provide a small benefit by reducing the data that DTSC is required to collect. These codes include the following: Generator: GGR, GLB, GMR, GOR, GPT, GSC, GSQ, TSD, DCH, DCL, DCP, DFR, DGS, DGW, DIN, DSI, DLT, DMC, DMR, DOR, DPB, DLB, DLF, DTR, DTT, DWP; Transporter: TGR, TMR, TOR, TWD; Other: CAS, FEA.”

CALIFORNIA

“Currently we compile and submit what is called the Quarterly Noncompliance Report. This report has little value in showing whether major water quality issues and concerns are being addressed. It also does a poor job of showing which enforcement efforts are providing returns. As indicated [previously], the steps needed to determine Significant Non-compliance have evolved into something unintelligible that takes five pages to describe and is of little use in actually trying to achieve widespread compliance amongst all facilities.”

COLORADO

“None of the data we report to EPA currently, which is the same data most States are required to report, is necessarily bad. It’s just that EPA does not use it correctly. It should be used to help States make their programs better using expertise available at EPA, not used for punishing States that don’t meet the letter of every EPA policy (written or unwritten), and not to second guess the State’s decision making in the enforcement and settlement processes.”

DELAWARE

“AIRS Code: compliance status. A facility is either in compliance or not in compliance. Additional codes are needed to reflect the true compliance status of the facility. For instance, facilities are required to maintain a code of not in compliance until the violation is resolved. Yet other emission units are and have been in compliance.”

DELAWARE

“Breaking inspections into different categories for compliance.”

FLORIDA

“Providing copies of all NPDES inspection reports as required in our delegation agreement to EPA seems to be of little value, since they are not regularly reviewed by EPA’s staff.”

GEORGIA

“Annual compliance reports [have little value]. The data used to generate this report already exists in the SDWIS/Fed data system. There is no need for the States to resubmit a report with the same information.”

HAWAII

“State findings, orders, State, civil and criminal referral report.”

IDAHO

“Days returned to compliance. Some cases take longer than others; the most difficult take the longest.”

ILLINOIS

“Number of inspections. Providing an inspection date does nothing but indicate that source was visited. While compliance activities do happen during an inspection, an inspection is not the only means of determining compliance. For a good number of the major (or synthetic minor) sources, it is not necessary to visit all of them every year or two.”

LOUISIANA

“The mid-year and end-of-year Enforcement Reviews by EPA do not accurately reflect the States time and expense or manpower utilized in obtaining compliance through means other than the traditional enforcement actions.”

MINNESOTA

“The only data that should be reported to EPA is ‘outcome’ information, such as violations. Data that show how the State reached the outcome or maintains compliance should not be required.”

NEW HAMPSHIRE

“The federal database only has a small subset of our activities. We try to put the required data in the federal site but have trouble getting the data in and little confidence that the data EPA pulls is accurate, especially if not all data are updated.”

NEW HAMPSHIRE

“If anything, RCRA Part C tends to over report data into RCRIS; however, EPA doesn’t seem to be interested in partial inspections or informal enforcement data to demonstrate a State’s enforcement efforts. Why not?”

NEW HAMPSHIRE

“A failure to submit a required chemical sample (e.g., a volatile organic chemical sample or VOC) is transmitted to EPA as 22 violations! This is because each chemical constituent of a VOC test is considered a separate violation. The same holds true for SOC and IOC tests.”

NEW JERSEY

“Hazardous Waste does not report the number of LQGs, SQGs, CESQGs [types of hazardous waste facilities] inspected, but provides EPA with the ID numbers of the facilities inspected. EPA in turn compares these ID numbers to their handler universe and assumes that the facility falls into a certain category of inspection, i.e., LQG. Often this handler database maintained by EPA is erroneous and outdated and thus the information presented by EPA is erroneous as well.”

RHODE ISLAND

“Strictly focusing on the effectiveness of formal enforcement has little value when not considered in the total context of all our efforts to ensure compliance.”

UTAH

“Many water system inventory elements are not required to determine what rules apply or are adhered to. Hence, they don’t relate at all to enforcement (lat. and long for instance).”

UTAH

“Number of enforcement action, penalties collected [has little value].”

VERMONT

“EPA required reporting for federal violations and enforcement actions. The missing pieces of the program are the enforcement actions taken for violation of State regulations.”

WASHINGTON

“The data submittals that are limited to formal enforcement actions result in an incomplete picture of our enforcement actions when outputs are from PCS [Permit Compliance System].”

WISCONSIN

“There is little benefit in sending information regarding the fines collected and the number of stipulations and court actions. It is a statistic that reflects only the failure of an agency to keep facilities in compliance with permit conditions.”

Compliance Assistance Measures

INTRODUCTION

Compliance assistance is an important tool that States use to help assure regulated facilities are in compliance. Environmental compliance assistance may exist in both the environmental agencies and sometimes in other related but non-regulatory agencies. Compliance assistance may especially be important to small businesses that have not been regulated, or when new rules are about to come into effect. States have found that strong efforts to help the regulated community understand what they are required to do reduces incidences of non-compliance. Although many environmental agency leaders believe in the importance of compliance assistance, surprisingly little research has assessed the tools and results from a national perspective. In part, this is because there is no national mandate to provide compliance assistance (although Congress has instructed EPA to provide it for certain regulated sectors). As previously noted, because compliance assistance is not delegated, there is little incentive for States to expend resources supplying information to EPA or for EPA to expend resources to collect this information.

The ECOS research instrument sent to States and territories was designed to ask questions about their compliance assistance activities and about how they measure success. ECOS did not attempt to define success, but rather left that to each State.

METHODOLOGY

ECOS sent a research instrument containing eight questions to each State and territory in conjunction with the enforcement measures instrument. These instruments were sent in September 2000 and States had until the end of December of the same year to finish and return them. We followed up with e-mails and phone calls to remind States to return the information, to remind them of the due date and to help answer any questions about the instrument. ECOS received 145 compliance research instruments from 35 States. The research instrument asked detailed questions designed to obtain:

- A list and description of all State compliance assistance activities
- All measures used to calculate the success of the compliance assistance programs
- Any other comments regarding compliance assistance.

We provided seven categories of compliance assistance activities that preliminary research had indicated were among the most common. The seven provided were:

- On-Site Visits (visits to a facility for the purpose of assisting the facility with compliance)
- Educational Seminars (training about how to comply with State regulations)
- 1-800 Number (a phone number where a facility could obtain compliance help)
- Web Page Access (Internet pages where a facility could obtain compliance help)
- Online Permitting (the ability to apply for a permit electronically)
- One-Stop Permitting (a permit applicant deals with a single agency contact who helps determine which permits are needed)

- Revolving State Loans (a loan system designed to help public wastewater and drinking water systems remain in compliance)

We also left space for any additional compliance assistance activities that a State or territory might use, such as the production and distribution of compliance newsletters.

**TABLE 14:
Compliance
Assistance
Activities and
Counts, 1999**

State	On-site Visits	Seminars	Seminar Attendees	1-800 Number	1-800 Calls	Web Access	Online Permitting	One-Stop Permitting	Resolving Loans	Newsletter Recipients
Alabama	Y	108		Y		Y	Y	Y	Y	
Arkansas	Y	Y		Y		Y	N	N	Y	
California	5	37	634			119,513	Y	UD	Y	Y
Colorado	13	32	894	N	3,548	29,859	Y	N	Y	
Connecticut	Y	Y		Y		Y			Y	
Delaware	244	Y		Y		Y	UD	UD	Y	Y
Florida	139	Y		Y		Y	UD	Y	Y	
Hawaii	29	5	271	N		Y	N	N	Y	
Idaho	96	4		Y		Y		Y	Y	
Illinois	Y	Y		Y	65	Y	UD	UD	Y	
Indiana	250	45	2,500	Y	2,350	3,691	Y	N	Y	
Kansas	2,034	107	1,080	Y	500	Y	Y	Y	Y	11,006
Louisiana	435	11		Y		Y			Y	3,400
Michigan	7,474	3		Y	4,800	Y	N	Y	Y	3,200
Minnesota	8,109	24	4,000	Y	4,409	6,000,000	Y	Y	Y	
Missouri	540	200		Y	17,500	Y	UD		Y	
Nebraska	31	Y		Y	64			N	Y	
N. Hampshire	2,879	2,425	287	Y	15,972	2,803	Y	Y	Y	Y
New Jersey	Y	Y		Y		Y	Y	Y	Y	
New York	20	25				Y			Y	Y
N. Carolina	Y	3					Y		Y	
N. Dakota	72	33	1,865	Y	1,065	Y	Y	UD	Y	
Ohio	160	Y		Y		Y	Y	N	Y	
Oklahoma	Y	Y		Y		Y		Y	Y	
Oregon	771	36	400		198		Y	Y	Y	Y
Pennsylvania	1,497	115	241	Y	12,097	14,200			Y	Y
Rhode Island	85	13	250		200				Y	
S. Carolina	1,200	Y		Y		Y	Y	Y	Y	
S. Dakota	5	2		Y		Y	Y	Y	Y	
Tennessee	299	280		Y		Y			Y	
Texas	318	66		Y	4,600		N	N	Y	
Utah	49	Y	665			Y	Y		Y	
Vermont	500	20	654	Y		Y	N	N	Y	
Washington	1,915	24		Y		14,400		Y	Y	Y
Wisconsin	2,001	20		Y		12,000	UD	Y	Y	Y
TOTALS	31,170	3,638	13,741	N/A	67,368	6,196,466	N/A	N/A	See below	17,606

Notes:

1. A Yes (Y) or No (N) response instead of a number indicates that the State performs the indicated activity but did not provide any data.
2. UD=Under Development.
3. Vermont provided 238 hours of training during its seminars.
4. Every State has a State Revolving Loan Fund for water projects, but not necessarily for other media. Between 1987 and 2000, the SRF has invested over \$29B in water projects (source: <http://www.epa.gov/r5water/cwsrf/pdf/invst.pdf>; March 27, 2001).
5. Since some States may not have provided data for every program, the results in this table should not be used to establish any comparisons. States not listed did not provide data.

DATA ANALYSIS

It was clear that compliance assistance programs are common throughout the State agencies, because we received compliance assistance information from 145 respondents in 35 States. Obviously, this means compliance assistance is not just provided by a part of an agency dedicated to that purpose, but is also integrated into the line functions of the agencies. Of these 145, 30 have a stand-alone compliance assistance as part of a media division. Eight States have a separate, high-level compliance assistance office. These eight States are Hawaii, New Jersey, Connecticut, California, Pennsylvania, Texas, Utah and Michigan.

“Every reporting State uses the most common compliance assistance measures: on-site visits, seminars and revolving loan funds for water.”

Every reporting State uses the most common compliance assistance measures: on-site visits, seminars and revolving loan funds for water. Toll free numbers and web page access are compliance assistance measures also favored by the respondents. Thirty of 35 States have web pages dedicated to compliance assistance; 27 of 29 reporting State programs have a toll free number available. On-line permitting is used by 15 of 20 reporting States, and it is under development in five more States. One-stop permitting is used by 14 of 20 responding programs, with four more under development. Newsletters were the least likely method to be used (11 States).

EFFECTIVENESS OF COMPLIANCE ASSISTANCE MEASURES

ECOS asked for a list of measures used to calculate the success of compliance assistance programs for the time period 1995-1999. States were able to supply basic information about the numbers of compliance assistance activities, but were unable to provide other measures of effectiveness, except in the comments that they provided.

“States were able to supply basic information about the numbers of compliance assistance activities, but were unable to provide other measures of effectiveness...”

ADDITIONAL COMMENTS

Several State programs provided additional comments regarding their compliance assistance program(s). These included:

ILLINOIS Bureau of Water

“Compliance assistance provided in advance of new program requirements can be extremely effective. For example, as the result of a recent compliance assistance outreach effort, we achieved over 98 percent compliance statewide during the first year of a new and complex Consumer Confidence Report requirement.”

“...as the result of a recent compliance assistance outreach effort, we achieved over 98 percent compliance statewide during the first year of a new and complex Consumer Confidence Report requirement.”

OKLAHOMA

“Our most successful approach in obtaining compliance has been to focus on a particular source category, include industry trade organizations/industry representatives in the development of a general permit and guidance documents, then hold workshops for owners of affected facilities under threat of inspection.”

VERMONT Water Supply Division

“All Water Supply Division staff spend a considerable amount of time providing technical and compliance assistance with water systems over the phone. Valuable information such as avoiding monitoring or public notification violations or how to chlorinate a well are communicated over the phone.”

Some States also provided comments on this research instrument and/or their responses to it. These are useful for assessing how States think about measuring compliance assistance performance. These included:

NEW HAMPSHIRE Air Resources Division

“Direct correlation between compliance of facilities and outreach and assistance efforts are difficult to identify. Significant improvements in Air Resources Division databases have increased ability to track and evaluate compliance activities.”

WASHINGTON Hazardous Waste Division

“Technical assistance to a business may lead to improved compliance with the regulations and pollution prevention opportunities explored and implemented. Ecology’s Hazardous Waste Division staff are cross trained to be knowledgeable in the regulations to help businesses learn what to do to comply with the regulations as well as help the business identify measures they may take to reduce or eliminate wastes they generate. Therefore, this research instrument looks at a broad view of technical assistance activities that will help businesses achieve both goals.”

Part 2: Enforcement and Compliance Data Flow

INTRODUCTION

This part of the report will look at the problems that States and EPA have when States move their data into EPA's databases. This is an important part of the State-EPA relationship, because States are responsible for collecting nearly all—on average 94 percent—of the environmental quality data retained in each of six major EPA national data systems that track such data.¹¹

In this part of the report, ECOS looks at whether there is a difference between State enforcement and compliance data as kept in State systems, compared to that same data sent to EPA systems. EPA and others use the State data kept in EPA's systems for a variety of purposes, including to report to Congress and to set policies. EPA also makes the data available to the public. Is the data that the States supply a fair representation of what the States themselves have in their own databases? If not, what are the reasons? How does the State data get put into the national systems? Do the States rely on the national systems for their own data management? The first section of this part of the report presents our findings. By necessity, this is a somewhat technical discussion. The latter section presents direct comments from States, which are easier to understand and which we selected as representative of the comments we received.

Although ECOS describes and documents data flow problems in this part of the report, we do not suggest many solutions. This is for two reasons. One, our purpose is primarily to document the problems thoroughly. Two, the last section of this part of this report, "Working Toward a Solution: The National Environmental Information Exchange Network" describes the work that States and EPA are currently doing to solve data problems. ECOS welcomes further discussions with both EPA and Congress on the issues presented throughout this report.

The ECOS Enforcement and Compliance Data Flow research instrument gathered information relevant to discrepancies between the States' enforcement data and the data collected by EPA to monitor States' enforcement efforts. By closely tracking the data flow between States and the EPA, this instrument identified challenges to efficient and accurate data flow management between the States and the EPA. Much national policy is based on State enforcement statistics released by the EPA that, at present, may not accurately represent the extent of the States' efforts in enforcement and compliance.

¹¹ "Environmental Pollutant Reporting Data in EPA's National Systems: Data Collection by State Agencies" (U.S. Environmental Protection Agency and Environmental Council of the States: Washington) 1999.

ECOS did not attempt to directly address one other current data issue which is often mentioned along with those in this report: data gaps. Data gaps is the idea that additional data not currently available are needed to assess environmental quality or to manage the environment.

DESCRIPTION OF THE FOUR MAIN EPA DATABASES

There are four components to the Data Flow instrument, involving four media databases: the Aerometric Information Retrieval System/AIRS Facility Subsystem (AIRS/AFS) for air data from stationary sources; the Permit Compliance System (PCS) for wastewater data; the Resource Conservation and Recovery Information System (RCRIS) for hazardous waste data; and the Safe Drinking Water Information System (SDWIS) for drinking water data.¹²

AIRS is an air pollution database that includes data from the United States and several other World Health Organization (WHO) member countries. The system is maintained and administered by the U.S. Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS), Information Transfer and Program Integration Division (ITPID), found in Research Triangle Park, North Carolina. AIRS is installed on the IBM computer system at the EPA's National Computer Center in Research Triangle Park, North Carolina. The AFS database is a subset of AIRS that deals with data about stationary sources, or facilities; it came online in April of 1990 as a replacement database for several other systems.¹³ State AFS was the EPA's official repository for air pollution emissions data, although in September 2000 the National Emissions Trends (NET) database replaced this function of the AFS database. AFS includes compliance data on stationary sources at both the plant and point (areas within and around a facility's physical plant) levels, as well as information about tracking, classification status, compliance status, inspections, operating permit applications, and permit renewals. AFS data are for sources regulated by the EPA and State and local agencies. AFS also contains annual emissions data regarding criteria pollutants. The two mechanisms for data entry into AFS are batch files and online processes.

PCS contains water information, specifically about the National Pollutant Discharge Elimination System (NPDES) permit data. NPDES permits track wastewater discharges from municipal and industrial sources that flow into the navigable waters of the United States. Permit issuance, operating data, and monitoring data are all tracked in PCS, which contains data on approximately 75,000 facilities throughout the United States. State PCS became operational in 1974 and is also located at the EPA's National Computer Center in North Carolina. Specific PCS data includes mailing address information, general facility and permit information, Significant Non-Compliance lists, enforcement action information, compliance schedule information and facility inspection information.

RCRIS is the national database that deals with the management and inventory of hazardous waste handlers.¹⁴ Under the Resource Conservation and Recovery Act (RCRA), handlers

¹² While there are other major EPA databases that contain data originating from States, it was not feasible for the purposes of this report to evaluate the problems associated with the transfer of data from the States into these databases. For example, most pesticide enforcement and compliance authority is with State agricultural agencies, not State environmental agencies, and therefore would have involved a significant expansion of the project to investigate.

¹³ AFS replaced the National Emissions Data System, the Hazardous and Trace Emissions System and the Emissions Inventory System for emission point source data reporting. AFS also replaced the Compliance Data System, formerly used by EPA and the States for compliance and emission point source data reporting, and the Continuous Emissions Monitoring Subset, used for point continuous emissions monitoring data.

¹⁴ The functions RCRIS was performing were being switched to a new database known as RCRAInfo in Fall 2000. However, States were still using RCRIS when this research was conducted.

may fit into one of the following categories: Treatment, Storage and Disposal Facilities, Large Quantity Generators, Small Quantity Generators, or Transporters. RCRIS handler data includes identification information, location information, permit status, closure status, compliance status and cleanup activities.

SDWIS is a national database that stores information about public water systems and their violations of the EPA's drinking water regulations. Data include basic mailing information, monitoring and reporting violations, monitoring and sampling results indicating violations of maximum contaminant levels, standards and treatment techniques, enforcement actions and sampling results for specifically targeted contaminants. There are two levels of the database: SDWIS/Fed and SDWIS/State. SDWIS/Fed is designed for EPA to meet its oversight and management goals regarding the Safe Drinking Water Act. SDWIS/Fed covers about 175,000 public water systems. SDWIS/State mainly stores State inventory, sampling and monitoring information from States and EPA Regions.

METHODOLOGY

Prior to administration, the research instrument was pilot-tested on eight States, with modifications made as needed. There was one staff-administered information gathering session, usually through a telephone conference, for each of the four databases. Some of the instruments were mailed in as deadlines approached and telephone conferences became difficult to schedule. Most conferences involved a State information management staff person and a supervisor, section chief, or other higher level management staff. ECOS staff and State respondents went through the document question by question. This helped clarify the intent of the questions and improved completeness. Of the 184 total responses, there were 47 States and territories interviewed with an average of 3.9 offices per State. Two States were interviewed at the local level for the AFS database: California (seven districts interviewed) and Washington (four districts interviewed).

FINDINGS

Data Discrepancies

Of 184 total responses, nearly 80 percent (79.9 percent, or 147 responses) identified discrepancies between their enforcement and compliance data and EPA's portrayal of that data (Table 1). The percentage of data discrepancies varied slightly by database, with a spread of about 5 percentage points.

“nearly 80 percent (of the State responses) identified discrepancies between their enforcement and compliance data and EPA's portrayal of that data”

The clear majority (about two-thirds) of AFS, PCS and RCRIS users reported that they submitted data directly into the database, by direct entry or batch or file upload (Table 2). SDWIS data were mostly submitted to the EPA Regions. Some States submitted data to both the EPA Region and the database directly, depending on the type of data; these responses were counted in multiple categories.

**TABLE 1:
Data
Discrepancies
by Database**

Database	Total Reponses	Discrepancies Noted	Percentage
AFS (Air)	58	47	81.0%
PCS (Water)	41	33	80.5%
RCRIS (Waste)	43	35	81.4%
SDWIS (Drinking Water)	42	32	76.2%
TOTALS	184	147	79.9%

**TABLE 2:
Where States
Submit Data**

Database	Submit to Database Directly	To EPA Region	To EPA Headquarters
AFS	49	12	1
PCS	35	10	1
RCRIS	31	13	0
SDWIS	12	26	3

Notes: Results are the numbers of State program responses. Multiple responses occurred.

States were more likely to have to enter data twice for AFS and PCS systems, with four each, while RCRIS had one such entry. Most States enter data directly into the national databases, so they are dealing with the database infrastructure on a first-hand basis.¹⁵ Drinking water (SDWIS) information is the exception. The importance of the EPA Regions should not be overlooked, however, since a significant number of States submit their information to the Regions. The EPA Region data flow information will be discussed in a later section of the paper.

State Use of National Databases

States reported using the national databases to varying degrees (Table 3). Only 23 percent of the responding programs use EPA’s system as the primary system for State data. AFS was used by a majority (36 responses) for required “reporting purposes only,” with “very little for own purposes” second at 12 responses. PCS was mostly utilized as a “primary system,” with 16 responses; “reporting purposes only” was second with 10 responses; and “very little for own purposes” was third with 8 responses. RCRIS was used as a “primary system” in 17

“Only 23 percent of the responding programs use EPA’s system as the primary system for State data.”

responses, with “used equally with State system” in second place with 10 responses, followed closed by “very little for own purposes” with 8 responses. Finally, SDWIS was cited 21 times as being used for required “reporting purposes only,” with “very little for own purposes” a clear second with 13 responses. These results suggest that States do not

¹⁵ RCRIS is more complicated than most of the other databases in that there is not just one database but rather models that vary from EPA Region to Region. In its most complex form, there is a State RCRIS database for each state in a Region, a Regional database for each state in that Region and the RCRIS National Oversight Database. Once a month, all State RCRIS databases in a Region and all the Regional databases are merged (e.g., if there are five states in a particular EPA Region then 10 databases are merged). Then all 10 EPA Regional databases are merged to form the RCRIS National Oversight Database.

tend to use AFS and SDWIS for their own purposes, but do use PCS and RCRIS more as primary or equal systems.

In addition to dealing with Federal databases, State environmental agencies are also dealing with their own State database changes (Table 4). Of 184 responses, 163 (88.5 percent) indicated that they had their own database or tracking system, with the rest using EPA's systems. Of the first group, 96 (52 percent) are in the process of changing their State system in some way. Of course, many States are moving to a custom-built system, but broad trends were found. Oracle and Access systems were popular, comprising 25 percent and 10.4 percent of the total changes, respectively. Fifteen responses cited changing to SDWIS/State; the rest of the responses were other systems. Oracle and Access systems were widely viewed as being comprehensive, flexible and user-friendly.

**TABLE 3:
State Use of
EPA's National
System**

Database	State Reported Data Discrepancies	State Uses EPA System as Primary System	Uses Equally with State System	Uses Very little for own purposes	Uses for Required Reporting Only	Other	Database Total
AFS	Yes	5	2	11	30	0	48
	No	2	0	1	6	1	10
Subtotal (% of Database Total)		7 (12%)	2 (3%)	12 (21%)	36 (62%)	1 (2%)	58 (100%)
PCS	Yes	12	4	8	8	1	33
	No	4	1	0	2	2	9
Subtotal (% of Database Total)		16 (38%)	5 (12%)	8 (19%)	10 (24%)	3 (7%)	42 (100%)
RCRIS	Yes	13	7	7	5	2	34
	No	4	3	1	0	0	8
Subtotal (% of Database Total)		17 (40%)	10 (24%)	8 (19%)	5 (12%)	2 (5%)	42 (100%)
SDWIS	Yes	2	1	10	16	2	31
	No	0	1	3	5	1	10
Subtotal (% of Database Total)		2 (5%)	2 (5%)	13 (32%)	21 (51%)	3 (7%)	41 (100%)
GRANDTOTAL (% of Grand Total)		42 (23%)	19 (10%)	41 (22%)	72 (40%)	9 (5%)	183 (100%)

**TABLE 4:
State Systems
in Transition**

Database	AFS	PCS	RCRIS	SDWIS	TOTAL
Oracle	11	4	6	3	24
Access	5	2	3	0	10
I-STEPS	3	0	0	0	3
SDWIS/State	0	0	0	15	15
Other	12	15	9	8	44
TOTALS	31	21	18	26	96

Note: Number of States using indicated system for each data type.

Reasons for Discrepancies

The key part of the ECOS research instrument is the “Reasons for Discrepancies” section, which addresses the perceived reasons why State and federal databases might not match. Respondents were asked to select relevant reasons from a list and discuss the reasons for their selections and any examples. The reasons represent significant and/or pervasive data discrepancies between State or local authorities and one of the national databases (AFS, PCS, RCRIS or SDWIS).

The categories of reasons are defined below (these are merely in the order we presented them in the research instrument):

1. Guidance Interpretation: Problems with interpretation of EPA guidance for use of the data system. This includes frequent coding changes or a lack of guidance.
2. Definitions: Differences between the EPA’s and a State’s definitions and categories.
3. Criteria Differences: Differences between the EPA’s and a State’s criteria, methodology, or hierarchy for determining numbers of activities (e.g. inspections, enforcement actions).
4. Database Flaws: Difficulties in using the national database and/or database has design flaws.
5. Data Conversions: Problems with transferring or converting data in a State database or tracking system for submittal to the EPA national database.
6. Time and Resources: Problems relating to time and resources that are required to maintain the State database or tracking systems and/or the EPA national database.
7. Human Error by State: Problems with data entry errors, misfiling reports or QA/QC.
8. State Did Not Submit Required Data in a Timely Manner: Data differences due to a State not submitting required data in a timely manner.
9. State Did Not Submit Data: Data differences if a State did not or could not submit required data.
10. Data Changed: Problems with data changing, being lost or disappearing after the State submitted information to the EPA.
11. Data Queries or Generated Lists: Problems in understanding lists, determining criteria used in data pulls or difficulties in querying.
12. Time Lags: Problems relating to data submittals, national database updating, and data being used.
13. Other: Data differences due to another reason not covered by the rest of the categories.

Table 5 shows the reasons for discrepancies listed in order of their frequency cited. Database Flaws received the most cites, with 93 (13.5%). Guidance Interpretation (number 1) and Time Lags (12) followed, with 71 cites each (10.3%), and Definitions and Data Queries or Generated Lists were third, with 65 each (9.4%). Answers in the Other category were placed in an appropriate category if it was warranted, but otherwise were left in Other. Most answers in the Other category involved State-specific incidents or EPA human error.

**TABLE 5:
Reasons Cited
for Discrepancies**

Reason	Number of Times Cited by States	Percentage
Database Flaws	93	13.5%
Guidance Interpretation	71	10.3%
TimeLags	71	10.3%
Definitions	65	9.4%
Data Queries or Generated Lists	65	9.4%
Criteria Differences	61	8.8%
Time and Resources	55	8.0%
Data Changed	54	7.8%
StateDataNotTimely	41	5.9%
Data Conversions	37	5.4%
Human Error by State	32	4.6%
Other	24	3.5%
State Did Not Submit Data	22	3.2%

Once respondents had selected all of their reasons for data discrepancies, they were asked to rank their choices in first, second, and third place. Table 6 lists the frequencies of the first, second, and third place rankings, with the list sorted according to the first rank. Database Flaws appeared at the top of all three rank frequency lists, with 26, 17 and 18 cites for first, second and third places. For the first rank, Guidance Interpretation was second with 18 cites, followed closely by Time and Resources (16 cites), Criteria (14 cites), and Data Queries or Generated Lists (14 cites). The second place in the second rank frequency was Criteria Differences (16 cites), followed by Time Lags (14 cites), Time and Resources (12 cites), and Definitions (11 cites). The second place in the third rank frequency was Time Lag (13 cites) followed by Definitions (12 cites), Data Changed (11 cites) and Guidance Interpretation and Data Queries or Generated Lists (10 cites each). It is interesting to note the high rankings of Database Flaws, Guidance Interpretation, Time and Resources, Criteria Differences, and Data Queries or Generated Lists; these five reasons capture 54 percent of the total rank citations.

**TABLE 6:
Rankings of
Reasons for
Discrepancies**

Reason	First Rank Frequency	Second Rank Frequency	Third Rank Frequency
Database Flaws	26	17	18
Guidance Interpretation	18	10	10
Time and Resources	16	12	8
Criteria Differences	14	16	5
Data Queries or Generated Lists	14	8	10
DataChanged	12	6	11
Definitions	10	11	12
Data Conversions	10	9	5
Time Lags	8	14	13
Other	8	8	3
Human Error by State	4	5	6
State Data Not Timely	2	4	5
State Did Not Submit Data	1	3	2

The ranked reasons can also be broken down by database. Table 7 shows the breakdown of the first ranked reasons, divided by national database. Database Flaws is the top cited reason for both AFS (10 cites) and PCS (7 cites), and it is second place for RCRIS (6 cites). Data Queries or Generated Lists is the most cited top reason regarding data differences in RCRIS (7 cites), while Guidance Interpretation and Data Conversion are the most cited reason for SDWIS (5 cites each). Time and Resources was another significant reason for AFS (8 cites) and SDWIS (4 cites).

**TABLE 7:
Breakdown of
First Ranked
Reasons by
Database**

Database	AFS	PCS	RCRIS	SDWIS
Guidance Interpretation	6	3	4	5
Definitions	6	0	4	0
Criteria Differences	6	3	5	0
Database Flaws	10	7	6	3
Data Conversion	2	3	0	5
Time and Resources	8	3	1	4
Human Error by State	0	2	2	0
State Data Not Timely	1	1	0	0
State Did Not Submit Data	0	0	0	1
Data Changed	2	3	4	3
Data Queries or Generated Lists	4	1	7	2
Time Lags	0	3	3	2
Other	2	2	1	3
TOTAL	47	31	37	28

DATA FLOW PROBLEMS

The number one reason States gave for problems with data flows was Database Flaws, with 93 cites. We have summarized the main points of concern about each of the four databases, providing comments and examples.

- **AFS:** AFS collected the most comments of all four databases, earning it a dubious distinction. The respondents used descriptive adjectives such as cumbersome, complicated, archaic, time-consuming, clumsy, resource-intensive, old, bad, not intuitive and outdated. Access and navigation are difficult, and States complained that the database goes down frequently, preventing it from being updated. Updating AFS is also difficult because of the many steps involved. Other problems include the inability to remove facilities once they are entered in AFS (e.g., facilities that have been closed), and the accuracy of the search capabilities of the database. Also, it is hard to enter activities involving a facility that lacks an EPA identification number, so AFS data do not show the full extent of State activities that protect the environment and human health. There is a steep learning curve associated with AFS and it is not user-friendly even with specialized training. There are problems at the Regional and national levels as well. Regional and national action type codes may not match, so errors may occur even after data has left the State end of AFS, and the State may not find out about the errors for weeks.
- **PCS:** PCS collected the second greatest number of comments about database flaws, and it has a similar story as the AFS database. The system is not user-friendly for field staff, and it is hard to get information into it (e.g., permit codes, Confined Animal

Feeding Organization information, sludge information). There is blind entry into the PCS database, which means that it is virtually impossible to check back over the data that has been entered. Entry screens are hard to use and may not work correctly or may be mis-numbered. Some States complained of too many codes for similar things; one State said the surplus of federal codes clogged up their State database. Servers freeze often and it is difficult to determine what data has been lost. It may take multiple upload attempts to transfer the data, and the process is far from real-time data entry; the time lag is typically a couple of days. The “inherently antiquated” mainframe system must be “tricked” into accepting certain types of data, and the tricks EPA teaches are in lieu of fixing the problems. It is difficult for EPA to maintain its expertise on PCS.

Overall PCS is cumbersome and hard to correct. PCS does not recognize if the State has closed a case early (the official deadline date must be entered). PCS cannot easily recognize quarterly average limits; it works primarily for monthly limits. It cannot deal with seasonal limits (e.g., ammonia limits in the summer), so data are either omitted or the facility is out of compliance for all the other seasons.¹⁷ If a limit needs to be changed, the data must be taken out (and the facility is marked non-compliant by default) and must then be re-entered. There are problems with the penalty portion of PCS: fields may overlay one another or may not be functional. Some facilities may need a fourth Standard Industry Code, but only three codes are allowed in PCS. If the State wants to change any information, it must be done within the 30 days before PCS archives the information. After that, the State loses access to it. Finally, States cannot enter incidents involving non-NPDES permitted facilities, so PCS data will not show the full extent of State activities. The technical hotlines available may not have answers for PCS problems, which can at best delay matters and at worst earn the State additional oversight from EPA. The problems with PCS lead to bureaucratic inefficiency because many States do double entry into PCS and their own State database.

- **RCRIS**: The function RCRIS was performing were being taken over by a new system called RCRAInfo in the fall of 2000, so many of the problems documented and studied here may no longer be relevant. RCRIS is another system that is slow, cumbersome and not user-friendly. It is difficult and time-consuming to access; it locks up often; and the multiple hierarchical screen interface is hard to use. Even when data entry is accomplished, it is hard to retrieve. Linked servers make navigation more difficult because moving from server to server takes time and involves backtracking. It is very hard to generate reports, customize the report menu or query the system. Checking the data entered (that is, quality control) is onerous until the report phase is reached, but getting RCRIS to print out the report may be daunting. It is difficult to correct historical data in RCRIS, and the database does not track the history of a particular facility well. In RCRIS violations must be linked to enforcement actions, but the linking process is confusing and it is easy for people to make mistakes. Sometimes codes might change without the data entry person understanding why. Finally, it is easy to get counts but hard to get facility details; RCRIS is also hard to use, to sort, or to get lists of facilities. RCRIS will not accept data regarding facilities that have no EPA identification number, so States may not get credit for all their enforcement and compliance activities.

¹⁷ EPA asserts that we are incorrect regarding PCS’ inability to work with quarterly and seasonal limits. Our interviews with users indicate that if PCS is capable of working with these limits, some users have been unable to get PCS to do so and they are unaware that PCS can do so.

- **SDWIS:** The SDWIS system had the fewest complaints of all the databases, with the main issues being limited access problems and bugs. Some States said SDWIS is not user-friendly and lacks a modern structure. SDWIS only offers a limited selection of ready-made reports; States may have to ask the EPA Regions for customized reports. It may be hard for States to find straightforward instructions on the SDWIS/State system; SDWIS is complex and has some technical design problems. There are also compatibility issues between the State and EPA databases (e.g., unregulated monitoring data; latitude and longitude data may be rejected). Finally, if more than one violation is cited during a compliance period, the system will only register one, which means the State data in SDWIS might be inaccurate.

DIFFERENCES IN DEFINITIONS

There were 65 comments under the reason “differences between EPA and State’s definitions and categories” regarding data discrepancies. Several common themes can be found. Differences over how to define the frequently issued Notice of Violation were listed in nine separate instances, as were differences over how to define Significant Non-Compliance. What a “major source” represents was also a source of differences; sometimes the EPA definition was too narrow or too broad in comparison to the State definition.

Differences over how to define a High Priority Violation (HPV) were cited eight times. Many times a State has its own definition for a High Priority Violation, which may not be compatible with EPA’s definition. Historical classification may be difficult, especially if the party responsible for data entry has changed over time. Confusion was also mentioned in the context of defining “Day Zero” of an HPV. Also, several States expressed concern over the data entry mistakes of third party contractors and the EPA. Finally, States and the EPA may track HPVs differently: the EPA tracks by facility, while States may track by violation or emission units. Such scope differences add to the possibility of data discrepancies since data may have to be forced into the federal database no matter how inappropriate the fit.

Other cited terms for which definitional differences exist include:

- Public water system/supply
- Community water system
- Late reporting
- Reportable Non-Compliance (RNC)
- Violation
- Bacteriological quality violations
- Noncompliance
- Inspections
- Facility
- Complete permits and partial permits
- Procedural compliance versus other types of compliance
- Synthetic minor sources
- Hazardous waste generators
- Enforcement action

Going beyond specific terms, there were broad differences in how EPA and State enforcement and compliance procedures and documentation fit together. The Notice of Violation (NOV) is an example of a document that States and EPA use in different circumstances and with different levels of formality. States may struggle with reconciling

their own definition of an NOV with EPA's definition for reporting in the national database. In some cases the lack of a federal counterpart or similar category may cause confusion because it is difficult to convey accurately what is happening at the State level. For example, a State may issue a civil administrative penalty that is a combination of an administrative order and an administrative penalty, and there is no national database code to reflect both in one action. Initial tracking dates for violations may be inconsistent between States and EPA because each agency may get the case at different times. The definition of when and how a system is back in compliance may be different, as well as the enforcement milestones along the way. Finally, the lack of standard EPA enforcement and compliance definitions across media causes problems in States that do have standardized definitions.

CRITERIA DIFFERENCES

Criteria Differences ranked fourth overall in simple citations, with 61 cites (8.8 percent). General criticisms centered on the inflexibility and limited nature of the national databases. Inspection counts do not always represent the full extent of activities, since inspections at non-permitted facilities or facilities lacking an EPA identification number are difficult to enter into the databases and States are not required to enter them.

The EPA and the States are also inconsistent with regard to how violations and enforcement are linked under AFS: it is not certain when violations should be lumped together under one action or during one time period (e.g. a month), or whether they should be counted individually. If several stack tests are conducted at the same facility on the same day, EPA will only accept one per day or per update cycle. The same situation is true for inspections in general. However, the rules change if the State counts inspections individually for different stack tests—the State will receive more credit this way than if they count the inspections by facility. Some States do not enter any stack test data into the national database, resulting in wide variations between States about what is reported and how it is counted. If there are violations regarding different pollutants, only one pollutant violation can be reported, resulting in arbitrary ranking on the part of the data entry person. Also, EPA considers a facility out of compliance from the time a violation is issued until a fine is paid or a settlement is reached -- even if the facility is actually back in compliance. One State said, "It is a metaphor for someone running a stop sign, after which time EPA would State that they are still breaking the law until the moment that the fine is paid. So they make the assumption that people, after being ticketed, are going to continue to run stop signs until their fine is paid, at which time they will cease such behavior." Other difficulties include non-matching Regional action types codes and national action types codes; if the codes do not match then activities are not counted. In addition, Regional data codes vary from Region to Region, rendering some data more compatible with the EPA Headquarters than other data. Finally, States wanting to pursue creative penalties in their air programs find that such information is difficult to enter.

For PCS, there is a problem regarding enforcement actions about facilities with general NPDES permits—they appear to be left out entirely. PCS also does not count inspections performed at non-permitted facilities. Methodologies may differ for doing Discharge Monitoring Reports (DMRs), and communication may be lacking in many instances. One State said when Compliance Inspections are performed, the Region will not enter the information into the database until follow-up reports are received. The Region does not count the inspection until the information is received, so if the State is late with its follow-up reports, then it may lose credit for that time period.

For RCRIS, there is a lack of knowledge regarding the criteria and methodology used by the EPA when it is determining types of enforcement actions and evaluations. Specifically, there is a lack of methodology regarding the appropriate type of inspection for Treatment, Storage and Disposal (TSD) facilities. The system pulls numbers for evaluation, but it does not count all complaints or inspections; the bare minimum of inspections is counted in the database. An example is that if the State conducts several inspections at a facility but only one is required during the year, only that one inspection is actually counted by the EPA. A State may inspect a commercial TSD facility four times a year, but the EPA only counts the minimum first inspection. In this same vein, different types of inspections have an EPA hierarchy: a TSD facility that also has an incinerator has two inspections conducted, but EPA only gives credit for one of the types (the incinerator inspection). Also if a State inspects a Hazardous Waste Transporter (HWT) and a Small Quantity Generator (SQG), the EPA ranks the SQG inspection higher even though the HWT inspection takes longer to perform. Also, handler status may change during the year and thus affect whether inspections are counted. An example of this is that if a facility was inspected when it was a Large Quantity Generator (LQG), but it became a SQG, the inspection done when it was an LQG does not get counted even though it was entered into RCRIS. To add to the confusion, the EPA Region and the EPA Headquarters may not even agree on the hierarchy of inspections that should be counted in RCRIS. Finally, the EPA may not have an accurate picture of the facility “universe” in RCRIS because facilities may move between categories from month to month. Since the EPA system is based on facilities notifying the EPA whenever they change regulatory status, the information in RCRIS is not up to date if facilities are not conscientious about notification. The methodology of identifying the correct universe of concern (e.g. where to do inspections) may also present another cause for data discrepancies, since the EPA may pull data from areas the State has not concentrated on due to methodological differences.

“...if the State conducts several inspections at a facility but only one is required during the year, only that one inspection is actually counted by the EPA.”

For SDWIS, a difference of scale may exist when EPA counts violations per chemical while a State counts violations per system (which includes many individual elements). This results in the State counting fewer violations than the EPA. Again, linking problems exist when the EPA and the State link enforcement actions to violations on different scales (e.g. the State says one enforcement action is tied to 74 violations, and EPA says there are 74 enforcement actions tied to 74 violations). Broader problems may exist if the States report violations per facility (with multiple contaminant violations contained within), because SDWIS requires violations to be entered by contaminant. If a facility neglects to monitor one time, the State would cite it for one monitoring violation, but the EPA would cite it once for each contaminant not monitored. Many times States have more stringent requirements than the EPA, but the State is supposed to report all violations to the EPA, even those that are not violations of the EPA’s rules. A facility in violation of a State chloroform rule is not necessarily also facing a federal violation if the State has more stringent sampling requirements, however, the EPA assumes with one violation that the entity is in violation for the whole quarter. States consider this a “guilty before proven innocent” approach in which EPA is not properly considering the fact that the State has more stringent drinking water standards.

DATA FLOW PROBLEMS AS SEEN BY THE EPA REGIONS

To better grasp the data flow processes and problems between the States and the EPA, ECOS selected five EPA Regions to interview regarding each of the four national databases (AIRS/AFS, PCS, RCRIS, and SDWIS). ECOS sought to interview EPA Staff Regions I, III, V, VIII and X, with 16 out of a possible 20 interviews actually conducted (Table 8). Specific interview goals included determining the role of the EPA Regional offices in the flow of data from the States to the EPA, the impact the Regions have on the flow itself, and what the Regions would perceive as the most significant reasons for data discrepancies. Sessions used the same Data Flow document that was used for the State interviews, followed by a discussion of Regional data flow issues. It was noted in the course of the interviews that many of the EPA Regional respondents had seen examples of most, if not all, of the reasons for discrepancies listed in the Data Flow research instrument (although only the most significant reasons were discussed).

**TABLE 8:
EPA Regions
Interviewed**

Region	Database Discussed			
	AFS	PCS	RCRIS	SDWIS
1	X		X	X
3	X	X	X	X
5			X	X
8		X		X
10	X	X	X	X

Data flow discussions clearly reflected what has been seen many times during this research project: there are many different ways States submit data to the national databases and there is no one way it is done for a particular database, State, or Region. A couple of key issues stood out in the data flow discussions. One is that the Regions do keep in close touch with the States, many having regularly scheduled telephone calls or visits. Discussions cover a full range of items including database submittals, error reports, SNC/HPV violator lists, and guidance issues.

Another key issue EPA Regions identified is that when a State submits data to the database directly, usually the State is required to make any necessary corrections to the data. Regions did not often change State data in the national database, or did so only for minor problems. If a Region did change State data, it was most often only after discussing it with the State. In instances where a Region made a correction first, the Region would then notify the State.

The frequency counts for reasons given for data discrepancy are presented in Table 9 in order of how often each reason was discussed (“Frequency Cited”) and the total number of times each was ranked either first, second or third (“Ranking Frequency”). The “Ranking Frequency” is not particularly meaningful in the aggregate, however, given the small number of those responding to the ranking question (9 of the 16) as well as the way in which they responded (some just ranked the most significant reason). Tallying the number of times a particular reason was discussed was more significant and resulted in a more accurate reflection of the reasons for data discrepancies that occur most often. Generally, the frequency of times that a reason was discussed is a reflection of the significance of that problem contributing to data discrepancies. In addition, the correlation between the total number of times a reason was ranked first, second and third and the number of times a reason was simply discussed was quite close.

**TABLE 9:
EPA Regional
Frequency of
Reasons for Data
Discrepancies
and Ranking
Frequency**

Reason	Frequency Cited	Ranking Frequency
Database Flaws	9	3
Other	9	1
Time Lags	8	4
Time and Resources	7	3
Guidance Interpretation	6	2
Definitions	6	2
Human Error by State	5	1
Data Queries or Generated Lists	5	2
Data Changed	4	1
Criteria Difference	3	1
Data Conversions	3	1
State Data Not Timely	3	1
State Did Not Submit Data	2	0

Besides “Other”, the top three reasons cited by EPA Regional staff are the Database Flaws, Time Lags, and Time and Resource problems for States. Interestingly, those three reasons also were ranked first, second or third in significance more frequently than the other reasons. Also, compare this response to that of the States, which listed Database Flaws and Time Lags as the first and third highest ranked reasons for data discrepancies, respectively.

During the 16 interviews, “Other” reasons for data discrepancies were cited nine times. While many of these reasons were distinct, a few were given more than once. One of the more frequently cited reasons Regions gave for data discrepancies was that States don’t use the national systems and, therefore, don’t pay attention to them and the quality of data in them. The reasons they gave to explain why States don’t use the national systems included:

- States often have their own database systems;
- The national systems don’t serve the needs of the States for tracking and overseeing their programs; and
- It is difficult for States to keep trained personnel to deal with the national systems.

Another “Other” reason often mentioned concerned problems at the Regional level, especially in those cases where the State sends the data to the Region for the Region to enter into the database. These problems appeared similar to some of those that States experienced when they do direct submittals of data to the database (e.g., paperwork got lost or misplaced; data were not entered in a timely fashion).

Other reasons mentioned included:

1. Regions and EPA Headquarters disagreeing over what States are required to do;
2. Regions allowing States to have specific codes that reflect the State’s activities but don’t translate well to the national database and, therefore, don’t get counted;
3. Problems with who “owns” the data that can lead to data being lost;
4. Data simply not getting entered into the database -- whether due to a State or a Regional problem; and
5. An emphasis by EPA on Significant Non-Compliance violations that has caused States to be hesitant to designate SNCs because it means more work for States, and not necessarily for what they believe is a State priority. (Part I of this report has a broader discussion on the differences between States and EPA regarding SNCs).

COMMENTS FROM STATES AND EPA

The following quotations are from the research instruments. They are printed as direct examples of the problems that States and EPA Regions are encountering in the national environmental database systems.

The States

AFS (the air database)

- AFS: “Here is a loose cannon in that the Region can enter data into the database also—this can lead to serious problems. The CEC enforcement lead was listed as the State enforcement lead, and the State didn’t know what the Region was talking about (not State program?).”
- AFS: “This database is user-unfriendly. It’s old (20-30 years) and obsolete (from the pre-DOS era, have to be a computer guru to understand). The instruction manual is four inches thick, and wouldn’t be surprised if EPA punch cards worked in it.”
- AFS: “The codes used must be made uniform—it’s what EPA draws from. Everything depends on the accuracy of the status of a facility. And yet the State has to pull teeth to get it corrected.”
- AFS: “State provides required data and more, but what does EPA do with it? There is not good feedback with the Region; State has an on-again, off-again relationship with the Region on reports and the need for some of the data. They argued heatedly over what is necessary: once the Region wanted a copy of every inspection report. Lately it’s been a “don’t ask, don’t tell” policy. It doesn’t mean the legitimacy of the data are a big issue, it’s how is the Region using this data.”
- AFS: “EPA adds a lot of additional information to the database, and it can be confusing when there are several people working on it at once (hard to track, etc.). EPA has wanted to use the database to track other items in fields that are not currently being used by the States—so EPA uses them informally. The State would like a more formal procedure for field use.”
- AFS: “They report only what is required to be reported into the national database, but it is only a small slice of the pie of what they do in enforcement. There are many reasons for not reporting more in AIRS: time, resources, the database is awful to use. Database is not something you would use you can put data in, but you can’t get things out of it. Also, EPA charges a CPU processing fee around \$800/hr, so if you forget and leave a report running [it is expensive]. Also, to download a printable report you go into TSD and go through a series of typed commands—could be DOS or even pre-DOS. The database is just outdated. Also, they don’t necessarily want all their data out in a national database; it’s better to have their own system serving their own purposes.”

PCS (the wastewater database)

- PCS: “EPA’s PCS support at Headquarters and Region is nonexistent. [If a] State calls and they don’t answer the phone, [and you] leave a message, [they] don’t call you back.”
- PCS: “1) Often State doesn’t get to see the numbers that are being given out to whomever before they are given out. 2) Sometimes the Region asks them to review a list and to do so in a short period of time, but it is too short a time frame for them to be able to make the corrections. May even indicate in discussions with EPA that the data are inaccurate, but unless the data are changed in PCS, EPA goes ahead and uses the incorrect data. The database is so difficult to use and time consuming. Would like

to have a functional, user-friendly database that would go a long way toward helping with data discrepancies.”

- PCS: “EPA maintains PCS for their own purposes. We have trouble translating PCS for any State data purposes.”
- PCS: “Even though they don’t experience significant data discrepancies, it is quite an effort to keep everything running well. They have worked very hard and have set up a relationship with their Region to make this work as well as it does.”
- PCS: “There is about a threeyear learning curve with this database, even if you come from a programming background. It helps that we go to workgroups and have monthly status calls.”
- PCS: “EPA needs to design a generic database that States can feed into. Would be nice if EPA had a system that was able to be contributed to by many States. Standardization would be great.”
- PCS: “When reports are published on State NPDES program performance, EPA is not evaluated for the programs they run within the State separately. Therefore, if EPA has incomplete data, poor program management of permits, the State for which EPA runs that system looks bad since there is no distinction between permits controlled by EPA vs. the States. [The State] has several Indian Reservations. We [the State] do not issue the permits nor do the data entry for any of the facilities located on Indian Lands. Our EPA Region has been trying to develop a general permit for some of these facilities, so in the meantime, many of the permits have expired and been administratively extended—in other words, they are backlogged. Nationally, there has been a recent focus on the backlog of permits in the States and a lot of ‘report cards’ have been published. The numbers for these EPA facilities have been reflected in our performance. I think that EPA needs to have a few ‘report cards’ of their own done, so that things are put into perspective. Essentially, EPA performance numbers should not be included with the States. And it is a fairly easy thing to separate when it comes to PCS data retrivals, so I don’t know why that hasn’t been considered in the past. “
- PCS: “PCS [was] down for a couple of months then after two or so weeks back online: EPA was going to do a data pull, but how could anybody have [all their] data in database by then? Demonstrates EPA’s lack of understanding of complexity/difficulty of dealing with database. PCS is overly complicated database. As a consequence of that at State level, with budget constraints, hiring qualified people and keeping them, lots of training and on job training. EPA’s training not always available or good.”
- PCS: “EPA’s total focus on ‘majors’ not the same as [the State’s], because the State feels that it is important not only to consider the numbers in regulating facilities and determining their status, but also aspects such as the receiving environment and ‘feeder’ industries to the facility such as metal platers (which would emphasize the need to test for dissolved metals in the receiving sewage treatment plant), etc. States are only judged by ‘majors,’ but some of EPA’s ‘minors’ may actually be more environmentally significant to regulate. The Clean Water Act says that the States will have primary responsibility over delegated programs, and that EPA should provide technical services and financial aid, placing an emphasis on minimizing paperwork and reducing duplicative efforts. This is not universally so today.”

RCRIS (the hazardous waste database)

- RCRIS: “States often kept out of loop of guidance interpretation and how it affects existing and new data codes. It would be helpful to have conference calls between EPA headquarters and the States for communication efficiency and to answer questions from the States about guidance.”

- RCRIS: “1) There should be the ability for the State to have State selection logic versus national selection logic. EPA’s universe list of facilities that need inspections doesn’t make sense to [the State]. 2) National program needs to pay attention to work load impact such as releasing information to the public and releasing it via the Web. 3) Enforcement information is disconnected between OECA [EPA Office of Enforcement and Compliance Assurance] and the program itself. 4) Want to be able to customize reports.”

SDWIS (the drinking water database)

- SDWIS: “State doesn’t just follow EPA’s prioritizing of cases by SNCs. Just because EPA determines something is a SNC, doesn’t mean it is a priority for the State.”
- SDWIS: “Guidance and regulations don’t always match, and program-level vs. OECA personnel don’t always interpret things the same way. Most of the problems are related to the Lead and Copper Rule. EPA takes guidance and turns it into regulations, they seem to forget that guidance is not synonymous with regulation.”
- SDWIS: “Why do SDWIS/Fed and SDWIS/State have to be so different? Why not use same set of consultants, same set of administrators, same set of criteria?”
- SDWIS: “1) Inspections are very important in their program as is the Source Water Protection program. Spend a lot of time on these. Put this info in annual report to EPA, but no interest from EPA’s national report. Also, spend a lot of time on prevention-type activities—educating water systems—and get no credit. 2) SDWIS is an exception database, not a results oriented one, yet EPA tries to use it for evaluating results. 3) EPA is starting to ask for monitoring data on different contaminants, but which are not required by federal law to be monitored. State happens to monitor these contaminants for own purposes, but it becomes time consuming to have to report it to EPA. 4) Would be helpful if EPA trained Regional staff better because while they try to be helpful in finding answers, they aren’t as knowledgeable as EPA could have them be.”
- SDWIS: “The State believes it would be helpful to see what other States are dealing with, including who is doing what specifically, not just on an aggregate basis.”

The EPA Regions

Regional staff often had additional comments regarding data flows, data discrepancies, use of data, and other issues. These comments included the following:

- RCRIS: “RCRIS doesn’t meet States’ needs. EPA not good about using the database in ways that are useful to States. The priority of State inspectors is to get their job done so need to use a database for tracking. Nobody is really going to miss one or two inspections in the national RCRIS database. EPA HQ is pulling data and publicizing it at a moment’s notice. [Our] EPA Region...is trying to pull data out of RCRIS in a different manner that would be helpful to States for such things as ECOS core performance measures, things that can be measured repeatedly and consistently. Put EPA and State data on equal footing, what each State has done and what EPA has done.”
- SDWIS: “1) The States have superior systems to SDWIS/Fed and if EPA didn’t tie grant money to each State having to feed SDWIS/Fed, States wouldn’t use it and for good reason. 2) Need to have a strengthened relationship between program staff and data staff for EPA HQ, EPA Regions, and States, especially when new rules are being promulgated. Can’t wait until the last minute.”

In addition to the EPA Region quotes, their comments can be summarized into several issues:

- The need for better communications between States, Regions and EPA Headquarters;
- Using the databases to better serve the needs of the States;
- The national systems are better used for looking at trends and overseeing States' activities than for representing a completely accurate count of activities; and
- Data are not being used or explained well as to what it really represents, and this leads to misinterpretation and misuse.

Working Toward a Solution: The National Environmental Information Exchange Network

WHAT IS THE EXCHANGE NETWORK?

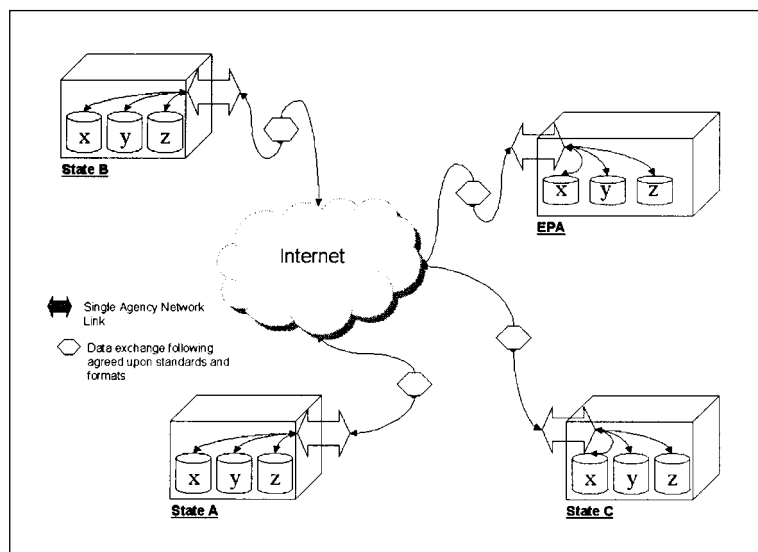
The National Environmental Information Exchange Network (Exchange Network) represents a fundamental change in the way environmental data will be exchanged among partner organizations. It proposes a solution to the data flow problems that currently exist between States and EPA involving old and cumbersome legacy systems. This solution utilizes the technologies and approaches that created e-commerce to exchange environmental data. The vision for the Exchange Network was developed jointly by the States and EPA under the direction of the State/EPA Information Management Workgroup (IMWG), a group of senior managers from the States and EPA formed in 1998 to serve as the main forum for information management collaboration.

As stated in the IMWG's Vision and Operating Principles, "The States and EPA are committed to a partnership to build locally and nationally accessible, cohesive and coherent environmental information systems that will ensure that both the public and regulators have access to the information needed to document environmental performance, understand environmental conditions, and make sound decisions that ensure environmental protection."

The Exchange Network concept is outlined in a Network Blueprint document developed by a team of senior State and EPA information technology and policy managers and published in October 2000. The basic premise of the Exchange Network involves the exchange of information between "nodes," a collection of specific technical and policy components that a participating partner agency manages for providing and receiving information on the Exchange Network. Each State and EPA will maintain its own node and act as a steward of its data. EPA's node, commonly referred to as Central Data Exchange (CDX), will receive, authenticate and route information to the appropriate EPA program systems. The concept of data stewardship as a primary component of the Exchange Network will result in better data because of the increased accountability it places on participating partner agencies.

Once nodes are established by participating Exchange Network agencies, information is exchanged between the nodes, using common data standards and standardized data exchange templates (DETs) to package shared data using common Internet-based protocols. This eliminates any confusion over data definitions. The actual exchange of data are governed by Trading Partner Agreements (TPAs) that are established and agreed upon between the partner agencies. These will include items such as what data are to be exchanged, the exchange format, the frequency of exchanges and other related issues. TPAs specify exactly what is required for a reliable, accurate and timely exchange of environmental data. The core of the Exchange Network is not technology, but a commitment to change the way data are exchanged.

**FIGURE 1:
Exchange
Network
Concept**



EXCHANGE NETWORK BENEFITS

The Exchange Network will bring clear and measurable benefits:

- A common approach to environmental information exchange that is managed by individual agencies and not a collection of stovepipe systems and approaches.
- A transition from traditional information exchange approaches to a data-centric approach focused on data quality.
- A foundation for improved public access to place-specific data by means of data integration through common data standards.
- Greater ability to respond to public and legislative trends that are driving all public data onto the Internet.
- The ability to separate data exchanges from system design, enabling States and EPA to re-engineer systems on their own timetables while the flow of information continues - thereby giving agencies more control of their own data.
- Dramatically reduces reporting workload.
- Active Data Retrieval (ADR) technologies will allow EPA to retrieve information from some business areas as frequently as it needs.

The Exchange Network provides a logical and technically feasible solution that will simplify and clarify data exchange roles and responsibilities, not only related to enforcement but in all areas where States and the EPA exchange information. It will revolutionize the exchange of environmental data between States and EPA. Keep in mind that the transition to this new approach of exchanging environmental data will not occur all at once or immediately. Existing flows of information and Network flows will co-exist for several years.

THE EXCHANGE NETWORK ADDRESSES DATA DISCREPANCIES

Data discrepancies were reported for each of the national systems examined by the research instrument. Clearly there is a need to address the reasons why differences in data exist at the State and federal levels. When the Exchange Network is fully operational it should address many of the problems currently being experienced by States and EPA regarding

enforcement and all other information areas. The following describes how the Exchange Network may address such items.

- *Differences in Definitions, i.e. differences between EPA's and a State's definitions and categories, should be lowered with the use of common data standards that are developed and approved by the Environmental Data Standards Council, a group consisting of four State, four EPA and two Tribal representatives formed in 1999 to identify and develop data standards (including data exchange standards for enforcement and compliance).*
- *Guidance Interpretation, i.e. problems with interpretation of EPA guidance for use of data systems, including frequent coding changes or a lack of guidance, will not be necessary as State agencies will no longer be required to enter data into individual systems.*
- *Database Flaws, i.e. difficulties in using the national database and/or database has design flaws, should be substantially reduced to the extent that States participate in the Exchange Network.*
- *Data Conversions, i.e. problems with transferring or converting data in a State database or tracking system for submittal to an EPA national database, should be greatly simplified. Again, data will be maintained and stored on a State node and exchanged using standards-based DET.*
- *Time and Resources, i.e. problems relating to time and resources that are required to maintain the State database or tracking system and/or the EPA national database, will be focused on building and maintaining a State's Exchange Network's internal infrastructure and node to avoid multiple entries of the same information into State and national systems.*
- *Human Error, i.e. problems with data entry, misfiling of reports, or QA/QC, is associated with any system but should be reduced with the Exchange Network. Single data entry, and the use of and managing data locally result in more accurate data that is available more quickly.*

THE ENVIRONMENTAL COUNCIL OF THE STATES

The Environmental Council of the States (ECOS) is the national, non-partisan, non-profit association of state and territorial environmental agencies and their leaders.

OUR MISSION:

To improve the environment of the United States, the Environmental Council of States will:

- Champion the role of States in environmental management; and
- Provide for the exchange of ideas, views, and experiences among States; and
- Foster cooperation and coordination in environmental management; and
- Articulate state positions to Congress, federal agencies, and the public on environmental issues.



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