



# **Office of Inspector General**

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## **Audit Report**

### **WATER**

#### **Biosolids Management and Enforcement**

**2000-P-10**

**March 20, 2000**

**Inspector General Division  
Conducting the Audit**

**Regions covered**

**Program Offices Involved**

**Headquarters Audit Division  
Washington, D.C.**

**All**

**Office of Water  
Office of Enforcement and Compliance Assurance**



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
Washington, D.C. 20460

OFFICE OF  
THE INSPECTOR GENERAL

**MEMORANDUM**

**SUBJECT:** Biosolids Management and Enforcement  
Audit Report No. 2000-P-10

**FROM:** Michael Simmons  
Deputy Assistant Inspector General  
for Internal Audits (2421)

**TO:** J. Charles Fox  
Assistant Administrator for Water (4101)

Steven A. Herman  
Assistant Administrator  
for Enforcement and Compliance Assurance (2201A)

Our final audit report on Biosolids Management and Enforcement is attached. The objectives of our review were to determine whether (1) EPA oversight of biosolids land application can be more effective, and (2) the Government Performance and Results Act goal for biosolids is appropriate and readily reportable. Our report contains recommendations related to both objectives.

This audit report describes findings and corrective actions the Office of the Inspector General (OIG) recommends to improve biosolids management and enforcement. It represents the opinion of the OIG. Final determinations on matters in this audit report will be made by EPA managers in accordance with established EPA audit resolution procedures. Accordingly, the findings described in this audit report are not binding upon EPA in any enforcement proceeding brought by EPA or the Department of Justice.

**ACTION REQUIRED**

In accordance with EPA Order 2750, the Assistant Administrator for Water, as the primary Action Official, is required to provide a written response to the audit report within 90 days of the final audit report date. The response to the final report should

identify any completed or planned actions related to the report's recommendations. For corrective actions planned but not completed by the response date, reference to specific milestone dates will assist in deciding whether to close this report.

We have no objection to the further release of this report to the public. Should you or your staff have any questions, please contact John T. Walsh, Divisional Inspector General, Headquarters Audit Division, on (202) 260-5113.

Attachment

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# EXECUTIVE SUMMARY

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## INTRODUCTION

Domestic sewage sludge is the solid, semi-solid, or liquid by-product generated during the treatment of wastewater at municipal wastewater treatment plants. These sewage treatment plants are referred to as “publicly owned treatment works,” or POTWs. Domestic septage is the liquid or solid material removed from a septic tank, cesspool, portable toilet, type III marine sanitation device, or similar treatment works that receives only domestic septage. Sewage sludge includes domestic septage. The term “biosolids” refers to sewage sludge that has been treated and can be beneficially recycled. EPA encourages land application of biosolids rather than landfilling or incineration, and if applied properly, biosolids help condition soil and provide a beneficial use of waste. Land application means spraying or spreading the material on the surface of the land, injecting it below the surface, or incorporating it into the soil. Section 405(d) of the Clean Water Act required EPA to establish regulations for the use and disposal of sewage sludge. EPA issued the final rule, 40 CFR Part 503, Standards For The Use Or Disposal of Sewage Sludge, on February 19, 1993. The biosolids program is delegated to Texas, Oklahoma and Utah. In all other states, EPA is responsible for biosolids oversight.

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## OBJECTIVES

We conducted this review in response to an Office of Water (OW) request for an audit. The objectives of our audit were to determine whether (1) EPA oversight of biosolids land application can be more effective, and (2) the Government Performance and Results Act goal for biosolids is appropriate and readily reportable. In this audit we did not review the science and risk assessments related to Part 503.

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## RESULTS IN BRIEF

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EPA does not have an effective program for ensuring compliance with the land application requirements of Part 503. Accordingly, while EPA promotes land application, EPA cannot assure the public that current land application practices are protective of human health and the environment.

Under Part 503, about 3,700 of the nation's 16,000 POTWs must annually report to EPA regions: information describing the concentration of pollutants, the presence of pathogens (e.g., bacteria, viruses, parasites), and the sludge's attractiveness to vectors (e.g., rodents, flies, mosquitoes) that could transmit pathogenic organisms to humans. In FY1998, EPA reviewed only about 38% of the Part 503 reports submitted by POTWs. EPA performs few biosolids related inspections of POTW operations, virtually no inspections of land application sites, and few records inspections at POTWs or land applicers. EPA regions do not maintain data on the cumulative amounts of pollutants at land application sites, even though Part 503 requires maintaining this data. There is no regional oversight of septage land application. The biosolids program has been delegated to only three states, and there is virtually no federal oversight of state biosolids programs in nondelegated states. Therefore, EPA does not have sufficient information to determine compliance levels with the Part 503 regulatory requirements. This almost complete absence of a federal presence in the biosolids program results from the low priority given to biosolids management by EPA's Office of Water (OW), and the decision of EPA's Office of Enforcement and Compliance Assurance (OECA) not to commit enforcement resources to biosolids. This may result in increased risks to the environment and human health, and cause a loss of public confidence in the biosolids program.

EPA is required by the Government Performance and Results Act of 1993 (GPRA) to set long-term and annual goals, and to measure the results of its programs in annual reports to Congress. EPA

established a FY1999 annual performance goal that 50% of biosolids be beneficially reused. However, OW's Clean Water Action Plan does not reflect the priority to be given to biosolids land application even though OW has established a GPRA land application goal. EPA established this goal without defining "beneficial reuse." The goal also does not measure reductions in point source pollution, the subobjective under which the goal was established. Further, the goal was established without identifying the resources needed to achieve the goal, without clear guidance to the regions on what data to gather, and without describing verification and validation procedures. Consequently, EPA regions are measuring progress in different ways. Totaling these inconsistent measurements does not provide a meaningful picture of the national state of biosolids use and disposal practices, and is not a useful decision making tool for the biosolids program.

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**FINAL REPORT  
RECOMMENDATION**

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Although we believe our draft report recommendations best address the concerns raised in this report, recognizing the realities of competing priorities and limited resources, we provide revised recommendations for Chapter 2 of this report. These recommendations are preliminary steps which will improve the biosolids program.

We recommend that the Assistant Administrators for OW and OECA provide, by the end of fiscal 2001, an analysis of whether the Agency's proposed actions provide a sufficient basis for assessing compliance with Part 503 and assuring the public of the protectiveness of land application practices. Our suggested scope for this analysis, when completed, will provide a basis for determining additional steps that might be required to ensure that management of biosolids is protective of human health and the environment. We may conduct a follow-up review of biosolids land application practices which would focus on the effectiveness of the Agency's actions and the quality of its analysis.

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# ABBREVIATIONS

CPLR	Cumulative Pollutant Loading Rate
CWA	Clean Water Act
BDMS.	Biosolids Data Management System
EMS	Environmental Management System
FTE	Full Time Equivalent
GAO	General Accounting Office
GPRA	Government Performance and Results Act
MOA	Memorandum Of Agreement
NBP	National Biosolids Partnership
NPDES	National Pollutant Discharge Elimination System
OECA	Office of Enforcement and Compliance Assurance
ORD	Office of Research And Development
OW	Office of Water
PCS	Permits Compliance System
POTW	Publicly Owned Treatment Works

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# CHAPTER 1

## INTRODUCTION

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### Objectives

We conducted this review in response to the Office of Water's request for an audit. The objectives of our audit were to determine whether (1) EPA oversight of biosolids land application is effective, and (2) the Government Performance and Results Act goal for biosolids is appropriate and readily reportable.

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### Background

In 1977, Congress reauthorized the 1972 Federal Water Pollution Control Act as the Clean Water Act (CWA). The CWA prohibits discharging pollutants from a point source<sup>1</sup> into waters of the United States, except in accordance with a National Pollutant Discharge Elimination System (NPDES) permit. Facilities, including wastewater treatment plants, that discharge directly into waters of the United States must comply with NPDES permits while entities, such as industrial facilities, that contribute to the volume of wastewater treated by direct dischargers, must comply with pretreatment standards. The process that a wastewater facility uses to treat water so that it can be directly discharged results in the production of "residuals" or sewage sludge. CWA §405(d) required EPA to establish regulations for the use and disposal of sewage sludge. The final rule, 40 CFR Part 503, Standards For The Use Or Disposal Of Sewage Sludge, was issued on February 19, 1993.

Domestic sewage sludge is the solid, semi-solid, or liquid by-product generated during the treatment of wastewater at municipal wastewater treatment plants. These sewage treatment plants are referred to as "publicly owned treatment works," or POTWs. Domestic septage is the liquid or solid material removed from a septic tank, cesspool, portable toilet,

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<sup>1</sup>Point sources are discrete conveyances such as pipes or man-made ditches.

type III marine sanitation device, or similar treatment works that receive only domestic septage. Sewage sludge includes domestic septage. Sewage sludge can either be (1) used as a fertilizer or soil conditioner or (2) disposed of as waste in a landfill, through incineration, or by other methods.

EPA refers to sewage sludge that has been treated by removing water, killing pathogens (disease causing organisms such as bacteria, viruses, and parasites), and reducing sludge's attractiveness to vectors (e.g. rodents, flies, and mosquitoes) as biosolids. EPA estimates that POTWs generate 7.5 million dry metric tons of biosolids annually, and that 54% of biosolids is land applied. EPA encourages land application of biosolids over landfilling or incineration, and if applied properly, biosolids help condition soil and provide a beneficial use of waste.

Land application of biosolids means spraying or spreading of material on the surface of the land, injecting it below the surface, or incorporating it into the soil. The Code of Federal Regulations (40 CFR Part 503) establishes procedures to determine biosolids quality and land application methods. Part 503 requirements include general requirements, pollutant limits, management practices (e.g., length of time before crops may be harvested for consumption or before animals may graze in a field), operational standards, and requirements for the frequency of monitoring, recordkeeping, and reporting.

The stringency of the regulatory requirements associated with land application depends upon the quality of the biosolids. EPA refers to biosolids that meet the most stringent pollutant/pathogen/vector limits as exceptional quality (EQ) biosolids. Part 503 places no restrictions on land application of EQ biosolids. Biosolids that fail to meet any of the most stringent parameters are Non-EQ biosolids.

Most of the requirements governing land application under Part 503 affect preparers and appliers of bulk,<sup>2</sup> non-EQ biosolids. All POTWs must keep records for five years describing pollutant concentrations, how pathogen reduction requirements were met, and whether and how the biosolids's attractiveness to vectors was reduced. By February 19<sup>th</sup> of each year, approximately 3,700 POTWs must report this information to the permitting authority. Land appliers must keep records for five years describing site management practices, site restrictions, and if the preparer has not performed certain vector attraction reduction steps, the applier must perform and record them.

Although most states have established some type of biosolids management program, only Oklahoma, Texas, and Utah have received full or partial program delegation. Therefore, except in these three states, EPA remains the permitting authority responsible for the implementation of Part 503.

The Office of Water (OW), the Office of Enforcement and Compliance Assurance (OECA), and Office of Research and Development (ORD) hold the major responsibilities for the biosolids program. OW, as National Program Manager, is responsible for (1) development and periodic review of regulations, (2) issuance of permits, and (3) delegation of the program to states. OECA is responsible for reviewing annual report submissions, entering relevant data into the Permits Compliance System (PCS)<sup>3</sup>, inspecting facilities and land application sites, providing compliance assistance and undertaking enforcement actions. ORD is revising pathogen

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<sup>2</sup>The term "bulk sewage sludge" refers to sewage sludge (biosolids) applied in quantities greater than one metric ton, generally by commercial and municipal appliers to agricultural land, tree and turf farms, golf courses, parks, and reclamation sites.

<sup>3</sup>PCS is a national computerized information management system for NPDES data that tracks permit issuance, permit limits, monitoring data, and other data pertaining to facilities regulated under NPDES.

reduction and vector attraction reduction guidance; researching biosolids issues; providing technical support to EPA, states and industry; and through its Pathogen Equivalency Committee, determining if proposed pathogen reduction practices are equivalent to those included in Part 503.

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## Scope and Methodology

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OW's letter suggesting a review of EPA's oversight and management of the biosolids program highlighted the land application of biosolids and also referenced a June 1997 Cable News Network (CNN) investigative series which described the negative aspects of biosolids use. Therefore, our review of the biosolids program focused on implementation of Part 503 for land application and did not address any other disposal option. We did not review the science and risk assessments related to Part 503.

Our review was conducted from September 1998, through July 1999. We interviewed OW and OECA Headquarters representatives, collected biosolids information from all regions, and visited Regions 3, 4, 5, 6 and 8. We visited several major POTWs and contacted several state coordinators of biosolids programs. We attended the 19<sup>th</sup> Annual Pumper & Cleaner Environmental Expo, a septage industry conference and trade show, and the 1999 National Biosolids Conference, a conference for state and federal biosolids program officials.

Our audit work was performed in accordance with the Government Auditing Standards (1994 Revision) issued by the Comptroller General of the United States. We reviewed Federal Managers' Financial Integrity Act controls related to the audit objectives.

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## Prior Audit Coverage

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There are no prior OIG audits focusing on biosolids management. A 1990 General Accounting Office (GAO) report<sup>4</sup> identified potential problems for the implementation of a national biosolids program,

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<sup>4</sup>Water Pollution: Serious Problems Confront Emerging Municipal Sludge Management Program, GAO/RCED-90-57, March 5, 1990.

including the possibility of continued low state participation in the program, the probability of inadequate resources and the need for development of an effective enforcement program. GAO concluded that key prerequisites for meeting EPA's interim program goals which faced fundamental problems were "(1) strong participation in this voluntary program by states, (2) oversight by EPA regions of participating states and direct involvement where states do not participate, and (3) oversight of both regional and state activity by EPA headquarters". GAO also recommended the establishment of a strong enforcement program. These issues are still relevant. Therefore, Chapters 2 and 3 of this report discuss how implementation of GAO's recommendations could still help strengthen the current biosolids program.

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## CHAPTER 2

### Better Monitoring And Coordination Must Accompany Promotion Of Biosolids Land Application

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EPA has not taken necessary steps to reasonably ensure compliance with Part 503 requirements. EPA reviewed fewer than 40% of the approximately 3,700 Part 503 reports submitted by POTWs in FY 1998. EPA performs almost no sludge related inspections of POTW operations and virtually no inspections of land application sites. EPA regions do not maintain site records needed to ensure that applicators do not exceed cumulative pollutant limits. There is no regional oversight of septage land application. The biosolids program has been delegated to only three states, and there is virtually no federal oversight of state biosolids management programs in nondelegated states. Therefore, EPA does not have sufficient information to determine compliance levels with the Part 503 regulatory requirements. This almost complete absence of a federal presence in the biosolids program results from the low priority given to biosolids management by EPA's Office of Water (OW), and the decision of EPA's Office of Enforcement and Compliance Assurance (OECA) not to commit enforcement resources to biosolids. This may result in increased noncompliance with Part 503 requirements, which would increase risks to the environment and human health, and cause a loss of public confidence in the biosolids program.

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#### Most Part 503 Reports

#### Are Not Reviewed

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Part 503 requires submission of an annual report from appropriate POTWs but does not specify a standard report format. There is wide variation in both the reporting formats and the amount of information submitted. Since a number of states have developed standardized reporting formats for their biosolids management programs, POTWs in those states often duplicate the state form for federal reporting. Some

EPA regions require the use of Discharge Monitoring Report forms for Part 503 reporting.<sup>5</sup> Some POTWs, in addition to submitting specific information on pollutant levels and pathogen and vector reduction, send in copies of laboratory analyses of sludge samples. This can result in far more data submitted to EPA regions than Part 503 requires.

Report reviews can provide initial indications of non-compliance with certain Part 503 requirements, including metals concentrations and pathogen and vector attraction reduction requirements. Reviews may be followed by more information gathering, compliance assistance, or, in some cases, enforcement actions. Therefore, we contacted sludge coordinators in each region to learn about the Part 503 report review process. The extent of reviews varied by Region from tracking submission dates to reviewing calculations. For FY 1998, we asked how many annual reports EPA reviewed, and for estimates of how long report reviews took. Table 1 (see page 8) summarizes the responses, which ranged from no reports reviewed to all reports reviewed.

Information provided in an annual report may be entered into a data system for review, analysis, and tracking. Region 8 took the lead in developing a Biosolids Data Management System (BDMS). The system software stores general information on each facility, biosolids treatment provided, use/disposal methods, land application site information, cumulative load tracking, biosolids monitoring data, and information on pathogen and vector attraction reduction. Data needed to measure compliance with Part 503 can be entered by POTWs, states, or EPA regional staff. Presently, anyone can obtain the BDMS software via the Internet.<sup>6</sup> OW plans to allow the public to access the entire national database via

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<sup>5</sup>A Discharge Monitoring Report is the EPA national form for reporting self-monitoring results by permittees.

<sup>6</sup>The BDMS Internet Main Page is <http://www.biosolidsinfo.com/>.

the Internet, a step that OW hopes will promote increased public confidence in the biosolids program. If EPA is successful in getting POTWs and states to input information, EPA regional staff will be able to review the data more quickly.

<b>Table 1: FY 1998 EPA Review Of Part 503 Annual Reports</b>			
Region	No. of Reports	No. of Reports Reviewed by EPA	Estimated Time Required to Review Each Report
1	200	10 to 15	30 minutes to 1 hour
2	331	240	15 minutes to “days”
3	485	0	None
4	700	75	2 to 3 hours
5	700	42	A few minutes to a couple hours.
6	418	418	30-45 minutes
7	210	210 <sup>7</sup>	5 minutes to over an hour
8	130	130	30-40 minutes for data entry, then 1-2 hours for follow-up if necessary
9	320	280	5–15 minutes, plus follow up effort
10	166	0 <sup>8</sup>	Not applicable
Totals	3,660	1,405 - 1,410	

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**EPA Performs Few Biosolids Inspections And Takes Few Enforcement Actions**

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Table 2 shows the universe of 16,024 POTWs by region, enforcement FTEs, inspections, and enforcement actions reported to us by regional biosolids coordinators; the table does not show the number of land application sites or land appliers. EPA regional offices conduct few biosolids inspections and take few enforcement actions. The

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<sup>7</sup>Region 7 indicated that all reports will be reviewed, two-thirds have been reviewed to date.

<sup>8</sup>Region 10 indicated that Part 503 reports are reviewed by the states.

Region	POTWs <sup>9</sup>	Enforcement FTEs	Inspections	Enforcement Actions <sup>10</sup>
1	550	0.1	0	0
2	704	1.1	14	19
3	1,368	0.5	2	1
4	2,395	2.0	24	34
5	3,298	1.5	42	9
6	2,538	0.75	2 <sup>11</sup>	4
7	2,403	0.5	7	13
8	1,264	0	0	0
9	823	0.5	68 <sup>12</sup>	3
10	681	0.1	1	0
Totals	16,024	7.05	167	83

primary reason for this is lack of resources. There are only 18.25 FTE assigned to the biosolids program in the regions. Regional data provided to us indicate that only 7.05 FTE are allocated for inspections and enforcement, with the remainder assigned to permits, technical assistance, and other duties.

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<sup>9</sup>All data on FTEs, inspections and enforcements were provided to us by regional staff. The estimate of 16,024 POTWs was provided by OW Headquarters, based on the 1996 Clean Water Needs Survey.

<sup>10</sup>Enforcements include formal and informal actions.

<sup>11</sup>Region 6 reported that there were 95 FY1998 NPDES inspections including some aspect of biosolids management, but there were only 2 biosolids-specific inspections.

<sup>12</sup>Region 9's total of 68 inspections includes 50 inspections of biosolids preparers and 18 land application or surface disposal sites. Region 9 also reported that it issued 50 "compliance assurance actions – notices of failure to provide adequate monitoring or reporting."

Since applicators have no reporting requirements, no information would be provided to EPA without a specific request or an on-site inspection. Only through actual inspections of land application sites would EPA gain information about compliance with Part 503 management requirements, such as use of buffer zones, avoidance of wetlands, recognition of harvesting restrictions and grazing restrictions.

Table 2 shows biosolids inspections and enforcement actions. The table shows that Region 4, with the highest number of enforcement FTEs (2), had the highest number of enforcement actions (34), while the regions with 0.1 or fewer enforcement FTE reported 0 enforcement actions. The table also shows that there is no correlation between the number of POTWs and the number of FTEs.

GAO expressed concern in 1990 about the lack of a strong biosolids enforcement program:

... [A] fundamental element of the sludge program will be strong enforcement by EPA regions and delegated states. Effective enforcement serves as a deterrent to violations and, when violations do occur, helps to ensure that appropriate corrective action is taken in a timely manner. Without effective enforcement, the consequences of violating permit limits and other program requirements are greatly diminished – making it much less likely that these requirements will be observed.... Among the essential elements of an enforcement program are (1) criteria that allow regulators to set enforcement priorities, (2) criteria that identify what type of enforcement actions are appropriate and when they should be taken,

and (3) effective oversight over EPA regional and state enforcement by headquarters.<sup>13</sup>

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**EPA Regions Do Not  
Maintain Needed  
Site Inventories**

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Part 503 Cumulative Pollutant Loading Rates (CPLRs) establish the maximum amount of an inorganic pollutant contained in biosolids that can be land applied. For example, the pollution concentration limit for Arsenic is 41 kilograms per hectare. Before biosolids subject to CPLRs are applied to land, the applier must contact the permitting authority for the state in which the biosolids will be applied,<sup>14</sup> to determine the cumulative amount of each pollutant applied to the site since July 20, 1993. CPLR biosolids may be applied to a site if no CPLR biosolids have been applied previously, or if CPLR biosolids have been applied and the cumulative amount of pollutants applied to the site is known to total less than the prescribed limits. If CPLR biosolids have been applied, but the cumulative amount of each pollutant is not known, then additional CPLR biosolids cannot be applied to the site.

Land appliers must indefinitely maintain records documenting compliance with CPLRs. These records must be readily accessible to state and EPA inspectors. Prior to the initial application of CPLR biosolids, the applier must provide written notice to the permitting authority. The permitting authority is required to maintain and provide access to the notice.

EPA regional offices do not maintain the records needed to inform potential land appliers of the cumulative amount of each pollutant applied to sites. Instead, regional personnel told us that they rely on the states to maintain such records. But there are no

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<sup>13</sup>Serious Problems Confront Emerging Municipal Sludge Management Program, GAO/RCED-90-57, B-236805, March 5, 1990, page 28-29.

<sup>14</sup>Except for Texas, Oklahoma and Utah, which have approved sludge management programs, the “permitting authority” is the EPA Regional Administrator.

formal agreements between regions and states pertaining to the maintenance or sharing of CPLR information. If EPA regions do not maintain needed site records, or ensure that states do so, land applicators may be deprived of legitimate land application sites.

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**EPA Regions Conduct  
No Oversight of Septage  
Land Application**

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Part 503 defines domestic sewage to include domestic septage, and therefore treated domestic septage is also considered to be biosolids. However, because the septage pumping industry is significantly different from POTWs and the Part 503 requirements differ for septage pumpers versus POTWs, septage oversight and enforcement issues are discussed separately from issues relating to biosolids generated by POTWs.

EPA estimates that 68 million Americans are served by on-site septic and other treatment facilities; that these facilities generate 12.4 billion gallons (1.6 million dry metric tons) of septage annually; that 67% of the septage pumped from septic tanks goes to POTWs for treatment and that 33% is land applied as septage or further treated by private haulers.

When domestic septage is applied to nonpublic contact sites (agricultural land, forest, or reclamation sites), the Part 503 treatment requirements for land application of septage are comparatively simpler than those for sewage sludge; the material is not tested for metals, and if incorporated during application, no additional treatment, such as liming, is necessary for compliance with Part 503. However, when domestic septage is handled other than by land application to nonpublic contact sites, the same requirements apply to both septage and sewage sludge. Under Part 503 there are no reporting requirements for septage land application.

Four billion gallons of septage are land applied each year. However, EPA regional offices conduct no oversight of septage land application. EPA does not regularly collect information on the amount of septage

generated or its method of disposal. EPA conducts virtually no inspections of septage haulers' records or land application practices.

In February 1999, 9,290 septage and sludge pumpers, tank cleaners and haulers representing 3,466 companies gathered in Nashville, Tennessee for the 19<sup>th</sup> Annual Pumper & Cleaner Environmental Expo. This event provides technical information to a significant number of the industry in one location. A pumper and owner of a septage treatment facility presented an educational session on how to comply with EPA's regulations governing land application of septage to an audience of over 500.

After the presentation, over 60 of the attendees accepted the speaker's invitation to meet for a discussion of the industry's difficulties in complying with EPA's requirements. Two OIG audit staff were present at the meeting. Participants described how local land application bans, or the unwillingness of POTWs to accept septage, caused some haulers to drive significant distances to dispose of their waste. These types of restrictions result in higher transportation costs, which are often passed on to the septic tank owner. Pumpers who want to comply with local, state and federal regulations governing land application bear financial burdens, including costs of lime stabilization; equipment cost for spreading or injecting septage; licensing fees; and in some locations, certification fees. Pumpers who comply with all requirements must factor in these costs when they set their fees.

Septage disposers who do not comply with Part 503 need not spend the same amount of money as their competitors who do comply. If a hauler uses low quality or no lime, incorporates septage into the land monthly rather than after each application, mixes septage with industrial waste and still disposes of it as septage, or even illegally dumps septage down a manhole or in a remote area, profit margins can increase dramatically. In this industry, as in other

industries, individuals complying with the regulations are at an economic disadvantage with those who do not comply and receive no enforcement penalties. The attendees who discussed these matters with us stated consistently that it was important to the health of their businesses for EPA to maintain an enforcement presence.

There are approximately 30,000 companies in the septage industry. Expo attendees told us that they have repeatedly asked for enforcement of Part 503 requirements. The editor of the industry publication (circulation 22,000) called the OIG to ask for information on enforcement cases specific to the industry. The editor wanted to publicize these cases as a deterrent to those in the industry not following Part 503 requirements. We asked several regional enforcement officials if they knew of any completed cases. The standard response was that states would be better able to provide this information.

At the Environmental Exposition we were given copies of a newspaper article, which reported exposure and prosecution (by a state) of a septage pumper who illegally dumped millions of gallons of waste. We arranged to have the OIG hotline number published in the industry newspaper. Procedures were established for taking these calls and for referring them. We first discussed referring them to OECA's Criminal Enforcement Division. However, the Director stated that these type of cases were not of federal interest. We then worked with regional enforcement personnel to address these complaints.

Many of the callers to the hotline were from within the industry. One complainant claimed to have a video of illegal dumping. Another offered to escort state officials to the illegal dump site. Several callers expressed frustration about their inability to get local, state, or federal officials to take any action. One region wrote the following to us:

It should be noted that while we are actively investigating this particular hotline request, the level of effort generally required to conduct such a follow-up is beyond the capability of the resources currently available. A more typical response to an issue of this nature would be our referral of the matter to local authorities and a follow-up call to those authorities within a month to six weeks to learn the outcome of any type of local action. Efforts to deal with non-compliant septage haulers need to be localized and immediate. In [several states in this region], our state environmental agency counterpart is not the state entity that has responsibility for regulating either the haulers or the local governmental units which may actually license the haulers.... We are working with our Office of Regional Counsel to develop some innovative uses of the legal authorities and tools currently available to us under the Clean Water Act regarding collecting penalties from non-responsive haulers and/or possibly enforcing against the county or state health departments that license septage haulers who may subsequently not be operating in compliance with Part 503.

Given that the septage industry includes many small, mobile haulers, we recognize that it may not be practical for EPA to maintain a “hands on” enforcement presence in each state. Working with the septage industry and the states by publicizing violations would provide a deterrent effect with a minor resource investment.

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**Delegation Of The  
Biosolids Program  
Has Not Progressed**

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States can (and many have) establish biosolids oversight programs without EPA delegation, but without delegation there is no requirement for states to share information with the EPA. Presently, only Texas, Utah and Oklahoma have EPA approved biosolids management programs. There are currently nine applications pending. One reason for the slow pace of delegation is EPA’s objection to state self-

audit laws, under which, in response to voluntarily disclosures of violations, states respond with compliance assistance rather than enforcement. Some states indicate that lack of additional funding for accepting delegation of the program is an obstacle to delegation.

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**Low Risk Means  
Low Resources**

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The almost complete absence of a federal presence in biosolids oversight and enforcement can be attributed to OW's assessment, and OECA's acceptance, of the relatively low risk to human health and the environment from biosolids. The inadequacy of resources and its effects were pointed out by GAO 10 years ago. In March 1990, GAO's report on EPA's interim implementation strategy<sup>15</sup> identified two problems that if not addressed could contribute to delays and inefficiencies in EPA's "Municipal Sludge Management Program." GAO stated that:

Among the potential obstacles ... are (1) continued questions over the sufficiency of resources to fully implement the program, (2) the need to develop an effective enforcement program to deter program violations and to bring about compliance when violations do occur....<sup>16</sup>

GAO elaborated on the lack of program resources by examining the effect of insufficient resources on state programs:

... [We] observed that insufficient resources were a contributing factor toward low state participation in the interim sludge program and

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<sup>15</sup>In 1989, EPA expected that final regulations governing pollutant concentration limits in sludge and acceptable management practices would not be issued until 1991. Under the "interim implementation strategy" EPA began immediately incorporating sludge conditions into NPDES permits.

<sup>16</sup>Serious Problems Confront Emerging Municipal Sludge Management Program, GAO/RCED-90-57, B-236805, March 5, 1990, page 25.

toward incomplete implementation of program requirements by EPA regions. Likewise, a major factor affecting the success of the permanent sludge program will be the extent to which states participate – and the sufficiency of EPA’s resources if they do not... [B]ased on past experiences of other environmental programs, as well as the types of problems affecting the interim sludge program... there is cause for concern as to whether EPA will have sufficient resources to fully implement a national sludge program.<sup>17</sup>

Seven years later, little had changed. Speaking to the July 8 – 10, 1997, 3<sup>rd</sup> Annual OECA National Conference, the then OW Assistant Administrator said:

I have this other problem of ensuring that [biosolids are] actually meeting [Part 503] standards, and if not, we will do something about it.... And yet, when I do risk assessments, or any kind of work at an Agency-level on what our priorities are, there will always be a low risk because we have studied biosolids for the last 25 years. So, it always gets cut in the budget.... [If] we think that the environmentally preferable thing is to not burn [biosolids] or put them in landfills, but to beneficially recycle them into the environment, we’ll have to think of this other concept of being able to provide the assurances that [it] is safe.... We’re diligent in deterring those that don’t do the right thing in a National sense.... Why isn’t this an important part of the enforcement, deterrence, and compliance assurance aspect of our job? I think it is.

The former OW Assistant Administrator indicated that EPA’s lack of information caused a loss of public

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<sup>17</sup>Ibid.

confidence in the biosolids program. He requested that OECA provide an increased biosolids presence. His April 29, 1998, memorandum to OECA stated:

The low risk associated with using biosolids previously caused us to divest many of the resources assigned to biosolids oversight and management in OW, OECA, and the regions. While some resource reduction is prudent for lower risk situations, at least some among the public perceive that risks from biosolids use and disposal are high, that biosolids qualities are poor, that inspections and enforcement are small to nonexistent, and that EPA has limited knowledge about what is going on.... Even though risks associated with biosolids recycling are low, the lack of adequate information to provide better understanding among the public is causing high-level concern and rejection of beneficial reuse. Such rejection can impair the ability of wastewater treatment facilities to adequately treat wastewater causing noncompliance not only with respect to biosolids management but also with respect to water quality.

The current OW Assistant Administrator echoed his predecessor's call for a stronger biosolids enforcement presence. On December 9, 1998, the current OW Assistant Administrator indicated to OECA that he considers biosolids to be OW's number three priority, in part because:

Key to the success of beneficial reuse of biosolids is ensuring that the biosolids program has credibility with the public.... In addition to the public concern, there are several indications that neither the Agency nor the States is making a sufficient effort to assure that wastewater treatment facilities are complying with the regulations. To insure that the benefits of beneficial reuse of biosolids are maximized, overseeing the quality of the

biosolids being land applied and assuring that the regulations governing land application are properly enforced needs to be a priority.<sup>18</sup>

OECA Headquarters commits few resources to biosolids enforcement, a decision referred to as “disinvestment.” OECA explains that there are more regulated communities than can be adequately overseen with its available resources. Rather than spread its limited resources so broadly that only token efforts can be made in several areas, OECA decided to concentrate its efforts in a few areas other than biosolids, where it feels it can make a large impact. OECA considers biosolids to be relatively low risk, and notes that biosolids are not mentioned in OW’s Clean Water Action Plan<sup>19</sup> and are not a Memoranda of Agreement (MOA) priority.<sup>20</sup>

EPA promotes biosolids as beneficial material when used properly (in accordance with Part 503), while having no ability to ensure/enforce proper biosolids use. If biosolids are not used properly, certain risks increase. Contaminated or improperly handled biosolids can result in pollutants re-entering the environment. There can be adverse effects on surface and ground water, wetlands, and on human health. Contaminants can leach into existing or potential potable water sources. Biosolids containing high levels of pathogenic organisms can contaminate soil, water, crops, livestock, fish and shellfish.

A loss of public confidence in the biosolids program can lead to restrictive local ordinances and bans on

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<sup>18</sup>Memorandum from the OW Assistant Administrator, to the Principal Deputy Assistant Administrator, OECA, December 9, 1998, Subject: OW’s Review of FY2000/2001OECA MOA Draft Priorities.

<sup>19</sup>The Clean Water Action Plan describes EPA’s approach to providing “fishable and swimmable” waters to all Americans.

<sup>20</sup>MOAs, negotiated between OECA and each EPA region, outline enforcement and compliance assurance activities, priorities and programs that will be implemented to achieve program goals.

land application. In December 1998, a trade journal reported that in over half the states, more than 50 percent of biosolids are beneficially used, with the practice increasing in 30 states. At the same time, 18 states reported that local restrictions or outright bans have been adopted. The effects of such restrictions include increased hauling distances or a need to find land application sites in other jurisdictions.

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## **EPA Efforts To Improve Biosolids Management**

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EPA has undertaken initiatives aimed at improving biosolids management. In 1997, EPA, the Association of Metropolitan Sewerage Agencies, and the Water Environment Federation formed the National Biosolids Partnership (NBP) to promote sound biosolids management practices. NBP, funded by a \$900,000 congressional earmark in EPA's FY 1999 budget, promotes voluntary adoption by POTWs of an Environmental Management System (EMS). EMS includes a set of good management practices, a program of independent third-party verification, and citizen input which NBP believes will result in compliance with all applicable regulations and foster public acceptance of biosolids beneficial use. But EMS, at an implementation cost of up to \$20,000 per POTW, may be too expensive for many of the roughly 12,000 small POTWs, nor is it likely to have any impact on the 4 billion gallons of septage that is land applied. EMS, which hopefully will raise compliance for large POTWs, is not a substitute for an adequate enforcement program.

BDMS (discussed on page 7) is a new system that has not yet been widely adopted. We talked to regional and state personnel who indicated that while they think that BDMS is a good system, they lack the staff to perform data entry. OW hopes that POTWs will be willing to perform data entry and electronic submission of Part 503 annual reports to states and EPA. Although BDMS could be modified to track enforcement data, it is not used for this purpose. Currently, OECA records enforcement actions in PCS. EPA is upgrading PCS, with implementation expected to take place in 2003. OW and OECA have

not determined whether BDMS will be absorbed into PCS, or function as a separate system.

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**Opportunities To Improve Biosolids Management**

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EPA regions can increase public confidence in the biosolids program by maintaining a minimal federal enforcement presence in exchange for sufficient state information to manage the program and provide effective oversight. Depending on what information states collect for their own purposes, sufficient information may simply mean providing the EPA region with the same data states use internally to assess risk and set priorities. In these cases, there would be no new data collection and reporting burden.

Where regions are unable to draw informed conclusions about the level of compliance from available data, regions should plan to allocate sufficient resources to gain that knowledge. Absent state delegation, the EPA Regional Administrator is the permitting authority. If EPA cannot reach conclusions from state data, EPA would need to develop alternative means of ensuring that biosolids generators and land appliers comply with Part 503. We fully appreciate the resource constraints that all parties face. Information sharing is the least resource intensive step that the states and EPA can take to meet their oversight responsibility and accomplish land application goals.

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**Draft Recommendations**

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The Assistant Administrators for OW and OECA provided written comments on the draft report, which appear as Appendix A. Although we believe our draft report recommendations best address the concerns raised in this report, recognizing the realities of competing priorities and limited resources, we offer revised recommendations which are preliminary steps to improve the biosolids program.

**Draft Report**

We recommend that the Assistant Administrator for

**Recommendation 2-1**

Water work with regions and states to develop and implement measures to determine compliance with Part 503.

Agency Response

OW responded that OECA would address issues relating to the level of compliance. OECA indicated that although no OECA resources are specifically identified for biosolids enforcement, OECA would review, on a case by case basis, any information referred to it relating to violations of laws criminally enforced by the Agency

**Draft Report  
Recommendation 2-2**

We recommend that the Assistant Administrator for Water instruct regions to maintain, or formally encourage that states maintain, Cumulative Pollutant Loading Rate data.

Agency Response

OW does not plan to implement this recommendation, stating that most of the biosolids that are land applied are of such quality that CPLR tracking is not necessary. OW supports the development of the BDMS which will enable wastewater utilities, States, Regions, and others to store and monitor biosolids data including site-specific CPLR information.

**Draft Report  
Recommendation 2-3**

We recommend that the Assistant Administrator for Water encourage delegation of the biosolids program.

Agency Response

OW does not expect to devote significant resources to encouraging the Regions to delegate the biosolids program to the States. OW feels its efforts would be better spent in improving communication between the States and Regions, documenting State efforts devoted to the regulation and oversight of biosolids use and disposal practices, and working with State and local agencies to increase the use of environmental management systems.

**Draft Report  
Recommendation 2-4**

We recommend that the Assistant Administrator for Enforcement and Compliance Assurance implement GAO's 1990 recommendation to establish an effective enforcement program. As GAO explained:

To improve the prospects for an effective permanent sludge program, we recommend that the Administrator, EPA, take measures to ensure that a strong enforcement component is in place.... Among the key elements that should be included are (1) criteria for significant noncompliance so that enforcement priorities can be determined, (2) criteria for timely and appropriate enforcement so that the type and timing of enforcement is known to both regulators and POTWs, and (3) effective oversight of EPA regional and state enforcement efforts by headquarters.

**Draft Report  
Recommendation 2-5**

We recommended that the Assistant Administrator for Enforcement and Compliance Assurance Work with the septage industry and state and local governments so that septage haulers who violate Part 503 receive appropriate penalties, and publicize this information for its deterrent effect.

Agency Response to Draft  
Recommendations 2-4 & 2-5

OECA believes that it would be unwise to divert scarce resources from the higher risk priorities identified in the Clean Water Action Plan to carry out the specific recommendations of the IG with respect to biosolids. However, OECA will continue to respond to limited Regional requests for assistance in biosolids enforcement, and is developing detailed audit protocols (i.e., a series of review steps) for the NPDES program, which will cover the biosolids program in detail.

**Final Recommendations**

We recommend that the Assistant Administrators for the Offices of Water and Enforcement and Compliance Assurance provide, by the end of fiscal 2001, an analysis of whether the Agency's proposed actions provide a sufficient basis for assessing compliance with Part 503 and assuring the public of the protectiveness of land application practices. That evaluation should include a scope of work and the basis for conclusions for each of the following actions proposed by the Agency:

1. Continued participation in the National Biosolids Partnership, including the development and adoption of environmental management systems;
2. Use of the Biosolids Data Management System or comparable system to store and monitor biosolids data, including site-specific information on the Cumulative Pollutant Loading Rate;
3. Improved communications between the regions and states;
4. Maintaining documentation of state activities for regulating and overseeing biosolids use and disposal practices;
5. Development of audit protocols to assist regions, states , and the regulated community in assessing compliance with biosolids regulations.

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# CHAPTER 3

## Biosolids Goals and Performance Measures Are Not Useful Management Tools

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The Government Performance and Results Act of 1993 (GPRA) requires EPA to set long-term and annual goals, and to measure the results of its programs in annual reports to Congress.<sup>21</sup> EPA established a FY1999 annual performance goal that 50% of biosolids be beneficially reused. However, EPA established this goal without defining “beneficial reuse.” The goal also does not directly measure reductions in point source pollution, the subobjective under which it was established. Further, the goal was established without identifying the resources needed to achieve the goal, without clear guidance to the regions on what data to gather, and without describing verification and validation procedures. Consequently, EPA regions are measuring progress in different ways. Totaling these inconsistent measurements does not provide a meaningful picture of the national state of biosolids use and disposal practices, and is not a useful decision making tool for the biosolids program.

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### Beneficial Reuse Is Not Defined

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OW did not define “beneficial reuse” when it created its biosolids goal. Beneficial reuse could refer to any recycling of biosolids such as land application or incorporation into another material (e.g., for construction). EPA issued a definition of “beneficial use” which predates Part 503. Under that definition:

“Beneficial use” means any application of sludge to land specifically designed to take advantage of the nutrient and other characteristics of this material to improve soil

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<sup>21</sup>The first Annual Performance Report is due March 31, 2000.

fertility or structure and thereby further some natural resource management objective.<sup>22</sup>

For GPRA reporting purposes, EPA regions are reporting biosolids that are land applied. Therefore, although OW has not defined beneficial reuse, the remainder of this discussion equates beneficial reuse with land application.

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**The Biosolids Goal Does Not Contribute To Reducing Point Source Pollution**

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GPRA requires an annual performance plan covering each program activity set forth in an agency's budget. The plan must include performance goals; describe the operational processes and resources required to meet the performance goals; establish performance indicators to be used in measuring or assessing the relevant outputs, service levels, and outcomes of each program activity; provide a basis for comparing actual program results with the established performance goals; and describe the means used to verify and validate measured values.

EPA has established the following long-term GPRA goals and objectives:

- Goal 2: Clean and Safe Water
  - Objective 3: Reduce Loadings and Air Deposition
    - Subobjective 3.1: By 2005, annual point source loadings from Combined Sewer Overflows, POTWs, and industrial sources will be reduced by 30% from 1992 levels.

To achieve subobjective 3.1, EPA established a FY1999 annual performance goal that 50% of biosolids are beneficially reused, and two performance measures, (1) the number of POTWs that are beneficially reusing all or part of their biosolids and (2) where data exists, the percent of biosolids generated that are beneficially reused. As explained in the 1999 Annual Plan Request to the Office of Management and Budget (the 1999 Plan):

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<sup>22</sup>Interagency Policy on Beneficial Use of Municipal Sewage Sludge on Federal Land, 56 FR 33186, July 18, 1991.

For 1999, the program has established a performance goal that 50% of biosolids will be beneficially reused. Efforts in this area will lead to a reduction in pollutant discharges by effectively managing the residuals of the wastewater treatment process and ensuring that a valuable resource is used effectively.

Sewage sludge is removed from wastewater during treatment prior to discharge by the POTW. Reductions in point source pollution occur when wastewater is treated, not when biosolids are used or disposed. Therefore, although the amount or quality of the sludge removed from the wastewater reduces point source pollution, the manner of final disposal of the biosolids does not affect the quality of the water discharged from the pipe. In fact, if biosolids land application is not done in accordance with Part 503, the result can be runoff of biosolids into surface waters. In that case, point source pollution is simply exchanged for nonpoint source pollution.<sup>23</sup>

Additionally, measuring the number of POTWs that are beneficially reusing all or part of their biosolids is only a surrogate measure of the percent of biosolids beneficially reused. Neither the percentage of biosolids beneficially reused, nor the number of POTWs beneficially reusing biosolids, provides indications of whether point source pollution is decreasing. The fact that EPA has not adequately defined the universe of biosolids to resolve issues of whether Regions should only count biosolids reported in annual reports or estimate biosolids production and use in the Region, including the amount landfilled, as well as septage, only serves to compound the difficulty in establishing the percentage of biosolids beneficially reused.

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<sup>23</sup>The term nonpoint source pollution refers to pollution attributed to runoff and whose original source cannot be determined. If misapplied biosolids run off the land and into water, this would be an instance of nonpoint source pollution.

Finally, EPA has no control over the annual performance goal it selected for the biosolids program. Part 503 explicitly states, “[t]his part does not require the selection of a sewage sludge use or disposal practice. The determination of the manner in which sewage sludge is used or disposed is a local determination.” Factors that may affect the selection of a use or disposal option include transportation costs, landfill tipping fees compared to the cost of land application, land application conditions (including weather and soil characteristics), the availability of land application sites and incineration facilities, as well as state biosolids regulations, county ordinances and bans. Therefore, changes in biosolids program efforts will not necessarily be reflected by any change (positive or negative) in the percentage of biosolids land applied.

Goals for the biosolids program that would encourage a more holistic view of wastewater management and provide greater feedback for the functioning of the NPDES and pretreatment programs could involve information regarding the percentage of sludge that is EQ for metals (prior to any re-mixing) or the quantity of metals removed from wastewater. These measures would more directly measure reductions in point source pollution and more accurately characterize possible nonpoint source pollution from noncompliance with Part 503 management practices. Cleaner sludge should not result in more polluted effluent, since NPDES permit limits should continue to ensure the quality of the effluent is maintained.

Although the 50% reuse goal does not directly measure point source pollution reduction and EPA does not have control over its achievement, the goal could have value to EPA as a measure of pollution prevention. For example, EPA’s goal of reducing the volume of municipal solid waste being landfilled is a pollution prevention measure. The volume of sewage sludge recycled instead of landfilled could assist in measuring EPA’s progress toward pollution prevention.

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**Resource Needs  
Should Be Identified**

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Resources needed to accomplish the 50% beneficial reuse goal are not described in the 1999 Plan. The Plan states that the NPDES program includes NPDES permits, the pre-treatment program for non-domestic wastewater dischargers into municipal sanitary sewers, and biosolids management controls. In January 1999, an OW official explained that:

[O]ur decision to reinvest in biosolids was relatively recent - about a year and a half....  
[W]e decided to reinvest in biosolids after the FY99 budget had gone forward, so no resources were expressly included in the 99 budget for biosolids. We received money from the [Assistant Administrator] in 1998 to get underway and we built the program around that money....

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**The Midyear Progress  
Report For Biosolids  
Has Limitations**

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OW Headquarters requires EPA regions to report the percentage of biosolids land applied. Midyear (April 1999) regional reports ranged from 33% in Region 5 to 80% in Region 7. The arithmetic average of all 10 regions indicates that 53% of biosolids are beneficially reused nationwide. But interpretation of these figures must recognize that:

(1) the regions do not have accurate measures of biosolids land application or disposal options. For example, no regional estimates include septage, even though the Part 503 definition of domestic sewage sludge includes domestic septage; and

(2) given the differences among regions in the number of POTWs and total biosolids generated, an arithmetic average of regional percentages is not an accurate picture of the national percentage of land applied biosolids.

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**Biosolids Data  
Verification  
Is Not Practical**

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Biosolids data verification is hampered by the lack of a central location for biosolids data. While OW's Biosolids Data Management System (BDMS, described on page 7 of this report) can capture

biosolids production, use and disposal information, Chapter 2 explained that at present BDMS is not widely used, but EPA is promoting the database although its use is not required. According to OW, BDMS could be used to track enforcement data, but currently is not used for that purpose. The relationship between BDMS and PCS has not been clarified, and PCS modernization is expected to take years. So EPA may be years away from having a single automated repository for biosolids production, use and disposal, and enforcement data. It is unlikely that EPA will be able to store or verify data on the amount of biosolids produced, and biosolids use and disposal practices, for over 16,000 POTWs (or even just the 3,660 reporters) without an automated information system.

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**Recommendations**

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If EPA continues to measure the current goal of beneficial reuse of biosolids, we recommend that the Assistant Administrator for Water:

- 3-1 Define “beneficial reuse;”
- 3-2 Provide guidance to the regions concerning what data should be collected and where collected data should reside.
- 3-3 Establish procedures to verify collected data.

**Agency Response**

OW will provide additional guidance to the Regions and States as to what “beneficial use” means. By April 2000, OW will provide additional guidance to the Regions and States as to how data is to be collected, assessed, and reported to Headquarters.

**OIG Evaluation**

The proposed corrective actions will address recommendations 3-1, 3-2 and 3-3 and no further action is required.

We recommend that the Assistant Administrator for Water:

3-4 Allocate the resources necessary to determine progress toward the established goal.

Agency Response

OW's budget does not specifically identify resources for biosolids. However, the Office of Science and Technology continues its regulation development activities, and OW will continue to support biosolids with approximately two FTEs, minimal contract and grant funds, and with Congressional earmark funds.

OIG Evaluation

The Agency's response is insufficient. GPRA requires that EPA specify what goals it will accomplish and how the goals will be accomplished. To establish a goal of 50% beneficial use, and not to identify the resources needed to accomplish the goal, does not reflect compliance with GPRA. As long as it has a GPRA goal, OW should identify needed resources.

If OW elects to review and redefine goals for the biosolids program, we recommend that the Assistant Administrator for Water:

3-5 Select annual performance goals and indicators for the biosolids program that reflect the goal of reducing point source or nonpoint source pollution, such as percentage of EQ sludge, adoption of best management practices, or the quantity of metals removed from wastewater or compliance rates with Part 503 management practices.

3-6 Identify the actions and investments needed to accomplish the revised goals.

Agency Response

For at least the next year or two, OW will continue to use beneficial use of biosolids as a goal and measure under GPRA. OW will initiate discussions with Regional offices and States to see if there is a better measure for assessing the success of the biosolids program. The first opportunity to do this will be the next annual meeting for Regional and State biosolids coordinators scheduled for June 26-29, 2000.

## OIG Evaluation

As noted under Recommendation 3-4, GPRA requires that along with goals, OW should identify the resources needed to achieve its goals, and the data to be collected to measure progress. OW expressed concern “that there is considerable advance work needed to develop and implement a new performance measure.” Providing a date by which OW expects to complete its assessment of whether to amend its biosolids performance goal will address this recommendation.

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# APPENDIX A

## Agency Response to the Draft Report

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February 24, 2000

### MEMORANDUM

SUBJECT: Draft Audit Report on Biosolids Management and Enforcement  
(No. 99P-000301)

FROM: J. Charles Fox /s/  
Assistant Administrator

TO: Michael Simmons  
Deputy Assistant Inspector General  
for Internal Audits

Thank you for the opportunity to comment on your draft report on biosolids management and enforcement. We appreciate your staff's effort to give us a careful review of the topic. I will first present some general observations and then I will address your specific recommendations.

### GENERAL OBSERVATIONS

- OW was responsible for developing and issuing 40 CFR Part 503 as it exists today, and it has activities underway to develop necessary modifications to that rule. OW will continue to work with EPA Regions and States to implement biosolids requirements, including through National Pollutant Discharge Elimination System (NPDES) permits where appropriate. As you are aware, 40 CFR Part 503 was designed to be self-implementing, meaning that those subject to the rule are required to comply whether or not a permit is issued.
- OECA's letter, which is attached (Attachment 1), addresses the area of determining the level of compliance.
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- A program for regulation, compliance oversight, and enforcement of biosolids use and disposal exists in every State. The regulations of most States are equivalent to, or more restrictive than, 40 CFR Part 503. Even though EPA has delegated the biosolids program to only three States, programs are in place in the non-delegated States that provide additional oversight.
- In addition to developing required modifications to 40 CFR Part 503, OW's primary activity related to biosolids has been promoting more effective biosolids management and encouraging beneficial use consistent with the Agency's *Policy on Municipal Sludge Management* issued in 1984 and with section 405(g)(1) of the Clean Water Act. For this reason, OW proposed an annual performance measure related to beneficial use of biosolids and developed the Biosolids Data Management System (BDMS) to help track use and disposal practices, especially beneficial use. The annual performance measure issue is discussed further below and in Attachment No. 2.
- To complement our internal activities to promote more effective biosolids management, the Office of Wastewater Management is also working closely with the Water Environment Federation (WEF) and the Association of Metropolitan Sewerage Agencies (AMSA) through the National Biosolids Partnership (NBP). The primary focus of this voluntary alliance is to develop a biosolids environmental management systems (EMS) program and facilitate the the adoption of EMSs by publicly owned treatment works for their biosolids activities.
- Environmental management systems were first adopted by private industry, but are now being used more widely by public organizations. Consistent with EPA's overall policy on EMSs, my office is managing projects to encourage public agencies to adopt EMSs, in addition to our work with the NBP. EMSs provide organizations with a structured process and procedures for assessing the full range of environmental impacts of their operations, both regulated and unregulated, and for reducing those impacts over time. In addition, they can enable organizations to identify more efficient ways to reduce environmental impacts through pollution prevention. Finally, adoption of an EMS, especially by public entities, requires an organization to communicate with local stakeholders and address issues raised by these stakeholders that are not necessarily regulated, like odor and noise.
- Adoption of EMSs will support EPA's biosolids program goals by:
  - 1) helping organizations implement biosolids programs that comply with our Part 503 regulations and any other State requirements;

- 2) encouraging adoption of best management practices by these organizations that support beneficial reuse and protection of overall water quality; and
- 3) facilitating better communications with local stakeholders and addressing issues they are concerned about.

### **RESPONSE TO OIG RECOMMENDATIONS:**

The report recommends that the Assistant Administrator for Water “work with the regions and states to develop and implement measures to determine compliance with Part 503, instruct regions to maintain, or ensure that states maintain, Cumulative Pollutant Loading Rate [CPLR] data, and encourage delegation of the biosolids program.”

#### *Response:*

- OECA’s response addresses issues relating to the level of compliance with 40 CFR Part 503.
- Although the regulations and associated guidance documents imply that the permitting authority (i.e. the appropriate EPA Regional Office or authorized State agency) is a repository for data on the cumulative loads of pollutants applied to specific land parcels since February 19, 1993, the regulations do not actually require CPLR data to be reported until 90 percent of the maximum cumulative limit of any one pollutant has been reached. It should be noted that most of the biosolids that are land applied are of such quality that CPLR tracking is not necessary.
- OW’s Office of Wastewater Management (OWM) has supported the development of the BDMS which will enable wastewater utilities, States, Regions, and others to store and monitor biosolids data including site-specific CPLR information.
- OW does not expect to devote significant effort to encouraging the Regions to delegate the biosolids program to the States. At the present time, there is little incentive for the States to seek delegation, and some States see impediments to delegation, e.g. the effect of State self-audit statutes, and issues related to the Endangered Species Act and the National Environmental Policy Act. At the present time, we feel that OW’s efforts would be better spent in improving communications between the States and Regions, documenting State efforts devoted to the regulation and oversight of biosolids use and disposal practices, and working with

State and local agencies to increase the use of environmental management systems.

The report recommends that the Assistant Administrator for Enforcement and Compliance Assurance: (1) “[i]mplement GAO’s 1990 recommendation to establish an effective enforcement program” and (2) “[w]ork with the septage industry and state and local governments so that septage haulers who violate Part 503 receive appropriate penalties, and publicize this information for its deterrent effect.”

*Response:*

- Please see OECA’s specific comments in Attachment No. 1.

The report discusses the annual performance measure related to beneficial use of biosolids established pursuant to the Government Performance and Results Act (GPRA), points out a number of deficiencies in the manner in which the goal was established, and states that it “does not provide a meaningful picture of the national state of biosolids use and disposal practices, and is not a useful decision making tool for the biosolids program.” The report suggests that there might be better measures available to address “reductions in point source pollution and more accurately characterize possible nonpoint source pollution from non compliance with Part 503 management practices.” The report concludes:

If EPA continues to measure the current goal of beneficial use of biosolids, we recommend that the Assistant Administrator for Water: define “beneficial reuse,” provide guidance to the regions concerning what data should be collected and where collected data should reside, establish procedures to verify collected data, allocate resources necessary to determine progress toward the established goal. [and]

If OW elects to review and redefine goals for the biosolids program, we recommend that the Assistant Administrator for Water: select annual performance goals and indicators for the biosolids program that reflect the goal of reducing point source or nonpoint source pollution, such as percentage of EQ sludge, adoption of best management practices, or the quantity of metals removed from wastewater or compliance rates with Part 503 management practices [and] identify the actions and investments needed to accomplish the revised goals.

*Response:*

- A discussion as to why and how this measure was established under Goal 2 rather than Goal 4 which addresses pollution prevention is included in Attachment No. 2.

- For at least the next year or two, OW will continue to use beneficial use of biosolids as a goal and measure under GPRA. We will initiate discussions with our Regional offices and States to see if there is a better measure for assessing the success of our biosolids program. The first opportunity for doing this will be the next annual meeting for Regional and State biosolids coordinators scheduled for June 26-29, 2000, in Cincinnati. I hope you can appreciate that there is considerable advance work needed to develop and implement a new performance measure. In the interim, we will provide additional guidance to the Regions and States as to what we mean by beneficial use in this context and on how data is to be collected, assessed, and reported to Headquarters. We have already drafted such guidance and plan to include it in the next annual program guidance which will be circulated for comment soon with the final version to follow in April 2000.
- OWM has devoted considerable resources to development of the BDMS and is encouraging Regions, States and others to use that system for collection, storage, and analysis of biosolids information. We have also encouraged OECA to incorporate BDMS into the Modernized Permits Compliance System. Many States and Regions have begun to use BDMS, and some Regions are encouraging POTWs and others to use the system as the means of providing the Part 503 annual report for 1999 that is due in February 2000 or are providing a reporting form that will make Regional entry of data into BDMS much easier. OWM will continue to support BDMS to the extent resources allow. If States, Regions, and wastewater utilities use the BDMS or a compatible system, we will be in a position to determine current use and disposal practices, the amount of biosolids being beneficially used, biosolids quality (e.g. the amount meeting Table 3 of the regulations), and the status of compliance with the Part 503 rule.
- OW's budget does not specifically identify resources for biosolids. However, the Office of Science and Technology continues its regulation development activities, and OWM has been able to, and will continue to, support a biosolids program with approximately two FTEs, with minimal discretionary contract and grant funds, and with Congressional earmark funds. John Walker of OWM leads a cross-office Biosolids Program Implementation Team (BPIT) to coordinate and facilitate the Agency's limited biosolids resources.

I have also included, in Attachment 2, some suggested editorial changes to the report.

Thank you again for the opportunity to comment on the draft report. Should you wish to discuss them with me, please give me a call. Your staff may also wish to talk directly with Michael B. Cook, Director, Office of Wastewater Management (260-5850), or John Walker of the Municipal Technology Branch, Municipal Support Division (260-7283). For any questions related to our work with the NBP on its EMS program or other EMS related issues, please contact Jim Horne (260-5802).

#### Attachments

cc: Sylvia Lowrance, OECA  
Eric Shaeffer, ORE/OECA  
Michael Stahl, OC/OECA  
Leo D'Amico, OCEFT/OECA  
Sue Priftis, OC/OECA  
Beth Cavalier, ORE/OECA  
Kevin Guarino, OCEFT/OECA

Greg Marion, ARMSS/OECA  
Chuck Sutfin, PD/OWM/OW  
Geoff Grubbs, OW/OST  
Alan Rubin, OW/OST  
Jim Horne, OWM  
Regional Administrators, Regions I-X  
Biosolids Coordinators, Regions 1-X

MEMORANDUM

SUBJECT: OECA's Response to Draft IG Report on Biosolids

FROM: Sylvia K. Lowrance /s/  
Principle Deputy Assistant Administrator,  
Office of Enforcement and Compliance Assurance

TO: Jonathan C. Fox  
Assistant Administrator,  
Office of Water

Attached you will find OECA's response to the Biosolids Management and Enforcement Draft Audit Report (No. 99P-000301.) The report was reviewed by OECA staff and managers in our civil and criminal enforcement programs, and by our compliance assurance program. We look forward to receiving a copy of the consolidated Agency response to this audit report.

If you have any questions about OECA's response or if you need additional information, please contact Greg Marion, OECA's IG/GAO Liaison. Greg can be reached at 564-2446.

Attachments

cc: Eric Schaeffer, Director, ORE  
Michael Stahl, Acting Director, OC  
Leo D'Amico, Acting Director, OCEFT  
Sue Priftis, OC  
Beth Cavalier, ORE  
Kevin Guarino, OCEFT  
Greg Marion, ARMSS

OECA Response to Draft IG's Report on Biosolids  
Draft Audit Report No. 99P-000301

1. OECA Comments on Draft Findings

The draft IG's report characterizes OECA's position on biosolids enforcement resources as follows: "OECA Headquarters does not commit any resources to biosolids enforcement, a decision referred to as 'disinvestment.' OECA explains that there are more regulated communities than can be adequately overseen with its available resources. Rather than spread its limited resources so broadly that only token efforts can be made in several areas, OECA decided to concentrate its efforts in a few areas other than biosolids, where it feels it can make a large impact. OECA considers biosolids to be relatively low risk, and notes that biosolids are not mentioned in OW's Clean Water Action Plan and are not a Memoranda of Agreement (MOA) priority." Draft IG report at page 14.

Although the cited quotation is basically correct, OECA wishes to amplify the first quoted sentence above ("OECA Headquarters does not commit any resources to biosolids enforcement, a decision referred to as 'disinvestment.'"). It is true that no OECA resources are specifically identified for biosolids enforcement. Given the current budget climate and the reductions that have been sustained in the enforcement program, OECA chooses to devote resources to those areas that represent a higher risk. The attached charts demonstrate the vast size of the regulated universe as compared to the available resources.

However, OECA certainly recognizes that biosolids are part of the core NPDES program and has responded to limited requests for Headquarters assistance from the Regions on biosolids issues and cases (often administrative). The Regions and states may focus on biosolids as part of the base program as they determine is appropriate. OECA has left biosolids enforcement to be determined on a Region by Region basis without an OECA national strategy for the reasons correctly stated above by the draft IG's report.

The disposal and use of biosolids is subject to permits issued under the National Pollution Discharge Elimination System, 33 U.S.C. §1342. Regulations pertaining to biosolids disposal are found at 40 CFR part 503. Biosolids disposal cases are enforced criminally pursuant to 33 U.S.C. §1319(c)(1)(A) and (c)(2)(A). The criminal provisions of the Federal Water Pollution Control Act provide criminal sanctions for the negligent or knowing violation of 33 U.S.C. §1345, relating to the disposal or use of sewage sludge and 33 U.S.C. §1342, relating to violations of National Discharge Elimination System permits.

OECA's Office of Criminal Enforcement, Forensic and Training, Criminal Investigation Division, will review, on a case by case basis, any information relating to violations of laws criminally enforced by the Agency. All allegations of violations of biosolids disposal regulations, as well as any other criminal provision enforced by the Agency will be evaluated using the OCEFT policy memorandum entitled "The Exercise of Investigative Discretion." The prior regulatory history of a potential subject will also be considered. Another factor in determining OCEFT's involvement in a biosolids disposal case would be the potential for violations of the Resource Conservation and Recovery Act in situations where the chemical composition of a biosolid would meet the regulatory definition of a RCRA hazardous waste.

All referrals by the Office of Water and the EPA Regional Offices, relating to alleged violations of the program, will be reviewed by our Area Offices for potential criminal enforcement.

2. OECA Response to Draft IG Recommendations

The draft IG s report (at page 16) recommends that OECA (1) publish national criteria for biosolids significant non-compliance, (2) publish national biosolids criteria for timely and appropriate enforcement, (3) provide effective oversight of EPA Regional and State biosolids enforcement efforts, and (4) work with the septage industry and state and local governments so that septage haulers who violate Part 503 receive appropriate penalties, and publicize this information for its deterrent effect.

OECA does not dispute the value of the above recommendations. However, OECA feels compelled to allocate resources on the basis of relative risk, which drives the establishment of enforcement priorities under the Clean Water Act. As explained during the IG interviews with OECA personnel, enforcement priorities under the Clean Water Act are set out in the FY 2000/2001 OECA Memorandum of Agreement (MOA) Guidance (MOA Guidance) and in the Clean Water Action Plan. The priorities are developed on the basis of risk in consultation with the Regions. The current Clean Water Act enforcement priorities in the MOA Guidance relate to wet weather areas: the Combined Sewer Overflow (CSO) Policy, the Sanitary Sewer Overflow (SSO) Enforcement Management System, the National Concentrated Animal Feeding Operations (CAFOs) Sector Strategy (including the CAFO Implementation Plan), and Storm Water regulations. These Clean Water Act enforcement priorities address areas posing greater environmental risk than biosolids.

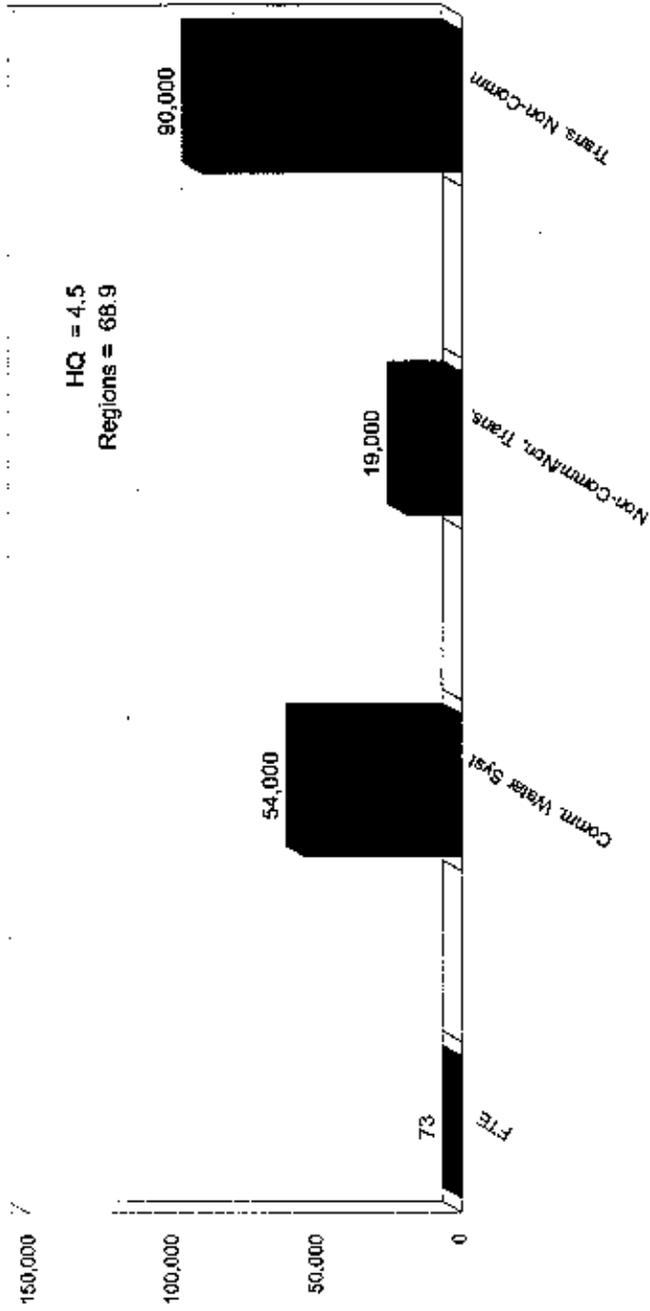
The draft IG report itself acknowledges that resources are based on priorities. The executive summary of the draft report states that We recognize that there may be higher priority needs for OW and OECA resources. OECA has no additional staff resources for FY 2000. In fact, the draft report acknowledges appreciation of the resource constraints that all parties face. Draft IG report at page 16. To do the biosolids enforcement work recommended by the draft IG report would mean diverting staff from the Clean Water Act enforcement priorities described above. Because the priorities are, in the opinion of OECA, addressing areas of higher risk than biosolids, OECA does not respectfully believe it should divert Clean Water Act enforcement resources away from high risk priority areas to biosolids.

However, OECA will continue to respond to limited Regional requests for assistance in biosolids enforcement as part of the core program. In addition, OECA s Office of Compliance is currently developing detailed audit protocols for the NPDES program. These protocols will cover the biosolids program in detail, and may be used by EPA Regional and state personnel, as well as the regulated community to assist them in determining compliance with the biosolids regulations. OECA expects to complete these audit protocols by spring of 2000.

OECA s compliance assistance center, the Local Government Environmental Assistance Network ([www.lgean.org](http://www.lgean.org)) is a resource available to all local governments to assist them with compliance with the biosolids regulations, as well as other regulations. OECA has made this resource available to the Office of Water to assist them in their outreach efforts.

"Enforcing Our Environmental Laws"

## Drinking Water (Resources vs. Universe)

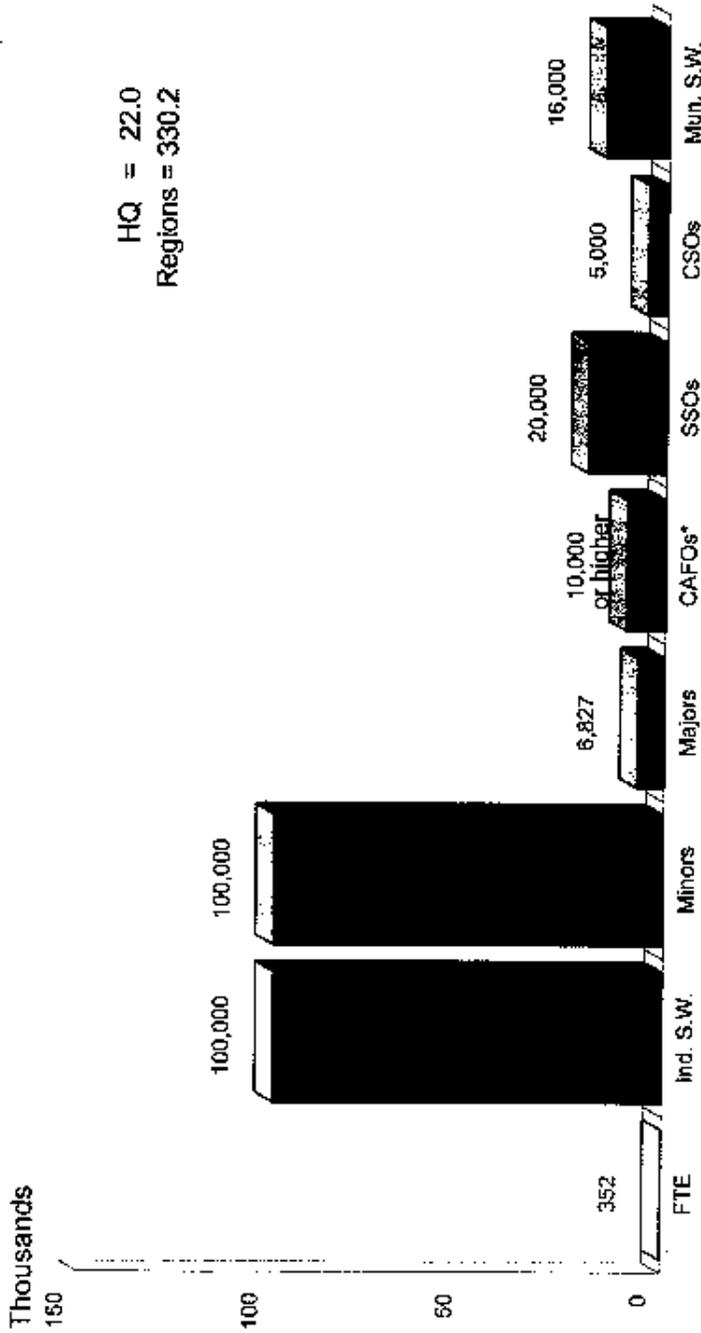


"Non-Comm" means "Non-Community." "Trans" means "Transient."  
FTEs include both compliance and enforcement resources. Based on FY 97 data and 96 Compliance Report

"Enforcing Our Environmental Laws"

**Water Quality Compliance (Resources vs. Universe)**

This chart covers CWA Enforcement (with the exception of Sections 311 and 404).



\*Based on the latest Dept. of Agriculture census, this number could range between 10,000 and 12,000. FTEs include both compliance and enforcement resources. Based on FY 97 data

**Attachment No. 2**  
**OW's Comments and Suggestions for Editorial Changes to**  
**the OIG Report on Biosolids Management & Enforcement**

1. The report needs to include an explanation as to how and why the biosolids measure was included under Goal 2 where it doesn't seem to fit. We offer the following explanation for your consideration. When goals and measures for use under the Strategic Plan developed in response to the Government Performance and Results Act (GPRA) were first being developed, OW proposed a goal/measure related to beneficial use of biosolids because it would support one of OW/OWM's significant activities, and it would serve to reinforce the Agency's Policy on Municipal Sludge Management published in the *Federal Register* on June 12, 1984. Since the goal/measure related to beneficial use of biosolids seemed to more directly support the pollution reduction objectives of Goal 4 of the Strategic Plan, it was originally placed under that Goal. Later on, the biosolids goal/measure was moved to Goal 2 to avoid mingling budgets of two offices (OW & OSWER) under one goal.
2. Most Regions know what data they should collect under the 503 reporting process. Some provide specific guidance and or forms/formats to POTWs and others are required to report. For the 1999 report, due on February 19, 2000, some regions are strongly suggesting the use of BDMS for tracking and reporting or providing a reporting form that will make entry of data into BDMS much easier. BDMS has been designed to: (a) accommodate direct data entry by POTWs, other generators, and land applicers, (b) allow tracking of the quality/quantity of biosolids on a field-by-field basis, (c) allow easy analysis of the data, (d) permit data and reports to be submitted to the permitting agency (State or Region) electronically. We will continue to encourage our Regional Offices, the States, and the regulated community to use the BDMS and, to the extent resources allow, will support its upkeep and maintenance until it can be incorporated into GEMS, the successor to the present PCS.
3. Page i:
  1. First paragraph: First sentence should be revised as follows: ~~Domestic~~ Sewage sludge is the solid, semi-solid, or liquid by-product generated during the treatment of wastewater ~~at municipal wastewater treatment plants~~ **domestic sewage at municipal wastewater treatment plants in a treatment works**. *The suggested change is more in line with the regulations. The important point is that the regulations apply to privately owned as well as publicly owned treatment facilities treating domestic sewage.*
  2. First paragraph: If you accept the suggested change to the first sentence, you can delete second sentence.
  3. First paragraph: Revise the 6<sup>th</sup> sentence as follows: EPA encourages ~~land application~~ **beneficial use of biosolids, and land application is one of the most common forms of**

**beneficial use.** rather than landfilling or incineration, and if applied properly, biosolids help condition the soil and provide a beneficial use of waste.

4. First paragraph: Revise the 7<sup>th</sup> sentence as follows: Land application means spraying or spreading the material on the surface of the land, injecting it below the surface, or incorporating it into the soil **so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.** *Soil conditioning or fertilization of crops/vegetation is an essential element of land application.*
  5. Delete the entire 1<sup>st</sup> paragraph in the section entitled “Results in Brief.” The second sentence of this paragraph is particularly troublesome in that it might give the uninformed reader the impression that land application practices in accordance with the regulations are not protective of human health and the environment. The real issue, as you correctly state in the following paragraph and in the first paragraph on Page 5 is that EPA and State regulatory agencies cannot provide documentation to determine compliance levels with the Part 503 requirements.
4. Page ii:
1. Paragraph that continues from previous page: Add the following sentence to the end of the paragraph: OECA will, however, support the biosolids efforts/initiatives of the Regional offices and will evaluate all referrals it receives for potential criminal enforcement.
5. Page 1:
1. 1<sup>st</sup> paragraph in Background section: The first sentence or two must be modified. As currently written, it implies that discharge permits were first required by the 1977 Amendments. Actually, NPDES permits were required by the 1972 Act. You might want to delete the first sentence entirely and explain in a footnote that the CWA refers to the Federal Water Pollution Control Act as amended in 1972, 1977, etc.
  2. 2<sup>nd</sup> paragraph in Background section: Revise first sentence or two to convey the correct idea that sewage sludge results from the treatment of domestic sewage in *any* treatment work, whether publicly or privately owned.
  3. 3<sup>rd</sup> paragraph in Background section: Total production of biosolids is approximately 7.5 million dry metric tons/year. It is incorrect to imply that all of it originates from POTWs. Also, the official policy of EPA is to encourage “beneficial use,” not “land application.” (See 1984 Policy Statement.)

6. Page 2:

1. 1<sup>st</sup> paragraph: The “definition” of land application provided is incomplete. Revise as follows: “. . . into the soil **so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.**”
2. 2<sup>nd</sup> paragraph: Revise first sentence as follows: “. . . quality of the biosolids **and the crops grown on or in the soil.**”
3. 3<sup>rd</sup> paragraph: Record-keeping requirements are not limited to POTWs as the 2<sup>nd</sup> sentence implies.

7. Page 5:

1. 1<sup>st</sup> paragraph: You need to modify the paragraph slightly because POTWs are not the *only* facilities required to report to the permitting agency. Significant generators and land appliers must also report.
2. 1<sup>st</sup> paragraph: Add the following sentence to the end of the paragraph: OECA will, however, support the biosolids efforts/initiatives of the Regional offices and will evaluate all referrals it receives for potential criminal enforcement.

8. Page 6:

1. Please revise the chart to show that Region 2 reviewed 277 reports and that Region 8 reviewed 273 reports.

9. Page 7:

1. 2<sup>nd</sup> full paragraph: It’s true that most land appliers of sewage sludge are not required to submit reports to the permitting authority, but all are required to maintain records and have the records available virtually on demand.

10. Pages 7 & 8:

1. We recommend you add some words to emphasize that some POTWs (e.g. lagoons and small package plants) do not produce sludge/biosolids on a regular basis **and** that there are facilities other than POTWs subject to the regulations.

11. Page 10:

1. 1<sup>st</sup> paragraph: We suggest you revise the last sentence to read that septage haulers are required to keep records even though they may not need to submit reports to the permitting authority.

12. Page 15:

1. First paragraph: You might want to note that Congress has provided another \$900,000 for the National Biosolids Partnership in FY 2000.

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# APPENDIX B

## Distribution

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### Office of the Inspector General

Inspector General  
Assistant Inspector General for Audit  
Divisional Inspectors General

### EPA Headquarters Offices

Agency Followup Official (2710)  
Agency Followup Coordinator (2724)  
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Associate General Counsel, Water Law Office (2355)  
Audit Liaisons:  
    Office of Enforcement and Compliance Assurance  
    Office of Water

### EPA Regional Offices

Regional Administrators  
Regional Audit Liaisons  
Biosolids Coordinators