U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF INSPECTOR GENERAL

Briefing Report

EPA Could Improve RCRAInfo Data Quality and System Development

Report No. 11-P-0096

February 7, 2011

Abbreviations

EPA	U.S. Environmental Protection Agency
OIG	Office of Inspector General
ORCR	Office of Resource Conservation and Recovery
RCRAInfo	Resource Conservation and Recovery Act Information System

At a Glance

Catalyst for Improving the Environment

Why We Did This Review

We sought to determine whether data within the Resource Conservation and Recovery Act Information System (RCRAInfo) complied with prescribed system edit and validation checks designed to control data entry. The Office of Inspector General contracted with Williams, Adley & Company, LLP, to conduct this review.

Background

RCRAInfo collects data from states and private companies to track the generation, shipment, and receipt of hazardous solid waste. This data is reported to the public in the Biennial Hazardous Waste Report and through the Envirofacts website. The EPA Office of Resource Conservation and Recovery, Information Collection and Analysis is responsible for development and ongoing support of RCRAInfo.

For further information, contact our Office of Congressional, Public Affairs and Management at (202) 566-2391.

The full report is at:
www.epa.gov/oig/reports/2011/20110207-11-P-0096.pdf

EPA Could Improve RCRAInfo Data Quality and System Development

What Williams, Adley & Company, LLP, Found

RCRAInfo data that tracks hazardous waste handlers and the shipment and receipt of hazardous waste contains errors and is missing source documentation. These conditions call into question the quality and reliability of data within the RCRAInfo system, as well as any resulting reporting. Further, RCRAInfo system owners did not follow the prescribed System Life Cycle Management testing procedures to test and validate the updated software and updated system. For example, the edit and validation checks did not work as intended, the data dictionary was not maintained, and system coding errors existed in the system.

Further, field work found instances of test data comingled with production data. Overall, the above conditions were caused by not having specific data quality procedures for RCRAInfo that align with the Agency's data quality policy, not following the System Life Cycle Management procedures for system development, and not adequately communicating with the states regarding the RCRAInfo test environment. EPA is responsible for maintaining the technology platform in a manner that supports data quality and integrity, as well as for oversight of the data quality program. As required by the EPA quality policy, EPA organizations must document and implement a quality program for environmental data that is intended for external distribution.

What Williams, Adley & Company, LLP, Recommends

Williams, Adley & Company, LLP, recommends the Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response, implement a procedure for regional personnel to notify a state when changes are made to handler records. The company also recommends that guidance and policy be provided on retaining source documentation, and that control procedures be implemented on updating documentation and on reviewing the production database for test data on a semiannual basis.

We met with Agency officials to discuss our findings and recommendations. The Agency provided responses, and we included those comments in the briefing report.

February 7, 2011

MEMORANDUM

SUBJECT: EPA Could Improve RCRAInfo Data Quality and System Development
Report No. 11-P-0096

FROM: Arthur A. Elkins, Jr.
Inspector General

TO: Suzanne Rudzinski, Acting Director
Office of Resource Conservation and Recovery
Office of Solid Waste and Emergency Response

Attached is the briefing report on the subject audit conducted by Williams, Adley &
Company, LLP (Williams Adley), on behalf of the Office of Inspector General (OIG) of
the U.S. Environmental Protection Agency (EPA). This report contains findings that
describe the problems Williams Adley identified and corrective actions recommended.
This report represents the conclusions of Williams Adley and does not necessarily
represent the final EPA position. Final determinations on matters in this report will be
made by EPA managers in accordance with established audit resolution procedures.

The estimated cost for performing this audit, which includes contract costs and OIG contract
management oversight, is $855,110.

Action Required

In accordance with EPA Manual 2750, you are required to provide a written response to
this report within 90 calendar days. You should include a corrective actions plan for
agreed-upon actions, including milestone dates. Your response will be posted on the
OIG's public website, along with our memorandum commenting on your response. Your
response should be provided as an Adobe PDF file that complies with the accessibility
requirements of section 508 of the Rehabilitation Act of 1973, as amended. The final
response should not contain data that you do not want to be released to the public; if your
response contains such data, you should identify the data for redaction or removal. We
have no objections to the further release of this report to the public. This report will be
available at http://www.epa.gov/oig.

If you or your staff have any questions regarding this report, please contact Patricia H. Hill at 202-566-0894 or hill.patricia@epa.gov, or Rudolph M. Brevard at 202-566-0893 or brevard.rudy@epa.gov.

EPA Could Improve RCRAInfo Data Quality and System Development

Results of Review

Audit Methodology

- Documented the information flows and system controls over the Resource Conservation and Recovery Act Information System (RCRAInfo).

- Did testing from January 2007 through December 2008.

- Conducted data integrity testing to evaluate compliance with RCRAInfo business rules (data dictionary and validation checks).

- Conducted data quality testing in five locations (Virginia, California, Arizona, Hawaii, and Nevada) to verify accuracy of data entered into RCRAInfo.

- Tested 45 EPA handler IDs per state for Handler and Biennial Report data.

- Tested 25 EPA IDs for manifest data (5 manifests per state).

Data Quality Testing of Handler Data
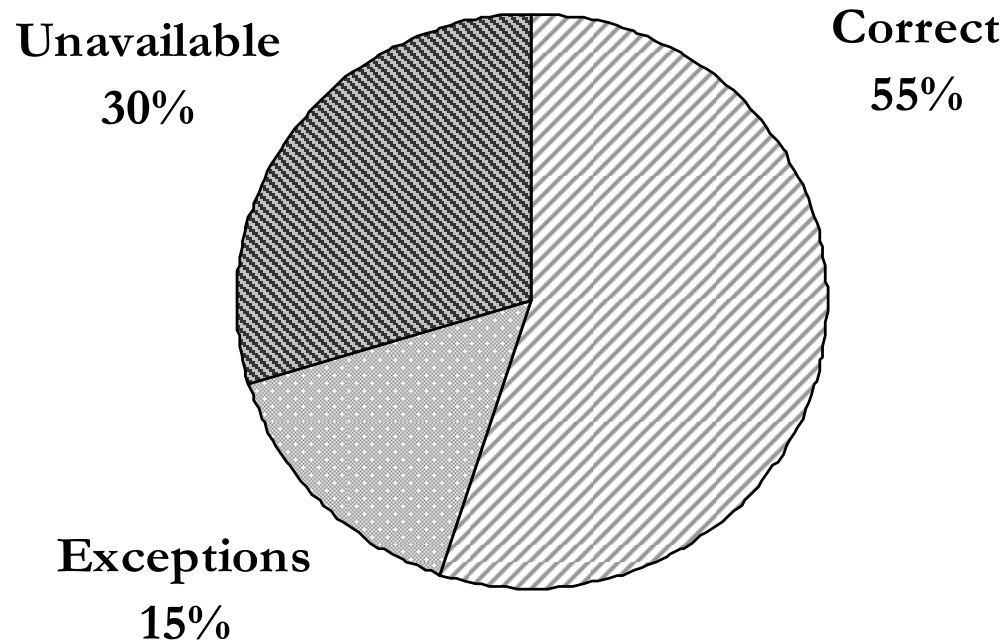
Forty-five percent of the handler data values in RCRAInfo either did not match the source documentation (data entry forms) or were not available for review.

Reasons for Data Quality Errors and Unavailable Supporting Documentation

- State environmental agency staff stated that data is sometimes altered at the regional level and the state environmental office is not always notified.

- State environmental staff stated that updates to RCRAInfo data is sometimes initiated by phone calls from generators or handlers due to emergencies at the facility or other time sensitive events. State environmental staff sometimes update RCRAInfo data but do not always update hardcopy files.

- EPA does not have a consistent policy for states to retain source documentation.

- State environmental staff do not consistently apply the established methodology for converting unit/weight/volume amounts on manifests for entry into RCRAInfo.

OIG Recommendations

Director, Office of Resource Conservation and Recovery (ORCR), Office of Solid Waste and Emergency Response, should:

1. Implement a procedure for regional personnel to notify a state when changes are made to handler records.

2. Conduct training for data entry personnel regarding the proper procedures for documenting updates to RCRAInfo.

3. Provide guidance and policy from the program level regarding retaining source documentation.

4. Provide additional guidance to states to facilitate accurate conversion of hazardous waste amounts as required for input into RCRAInfo.

EPA's Responses to the Findings

1. ORCR stated that during the 2009 biennial report cycle, the states, not the regions, loaded the biennial report data directly into RCRAInfo.

2. ORCR stated that it planned and budgeted for increases in state/regional training for years where there is no national conference. The importance of this training will be stressed during the conferences.

3. ORCR stated that the conversion of weights and measures will be stressed during the national conferences and expanded training.

4. ORCR stated that it will stress the importance of identifying critical documents needed to support program needs and establish retention guidelines.

RCRAInfo System Development Practices Need Improvement

- The data dictionary was not updated to reflect changes in RCRAInfo business rules.

- System code errors existed in the application software.

- Test data existed in the production database.

- The test environment was not used consistently.

Reasons For System Life Cycle Management Procedure Issues

- EPA personnel did not ensure that RCRAInfo version 4 system documentation accurately depicted the system's actual design.
- System testing did not detect system code errors in RCRAInfo

- The program office did not enforce use of test environment for testing purposes.
- No formal process is in place to identify test data in the production database.

OIG Recommendations

Director, Office of Resource Conservation and Recovery (ORCR),
Office of Solid Waste and Emergency Response, should:

5. Implement a control procedure to enforce that business rule changes are updated in the RCRAInfo system documentation.

6. Implement a control procedure to enforce that RCRAInfo coding changes are tested prior to placement into production.

7. Notify states to use the test environment for all testing instead of the production environment.

8. Implement a procedure to review the production database for test data on a semiannual basis.

EPA's Responses to the Findings

5. ORCR stated it currently has a process in place and has been working with states to correct orphan data. Software will be developed as each module is released and will be run monthly to detect orphan data.

6. ORCR stated that application software does go through extensive testing by internal developers, independent contractors, and the user community before it is released into production.

7. ORCR stated that it stresses to the user community that only preproduction data should be used for testing or data entry training. ORCR will again stress the importance of using the test environment for test data.

8. ORCR stated that it is in the process of developing a tool for the purpose of verifying test data. Once developed, this tool will be run monthly to identify any test data in production.

Status of Recommendations and Potential Monetary Benefits

		RECOMMENDATIONS				POTENTIAL MONETARY BENEFITS (in $000s)	
Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Claimed Amount	Agreed To Amount
1	5	Implement a procedure for regional personnel to notify a state when changes are made to handler records.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			
2	5	Conduct training for data entry personnel regarding the proper procedures for documenting updates to RCRAInfo.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			
3	5	Provide guidance and policy from the program level regarding retaining source documentation.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			
4	5	Provide additional guidance to states to facilitate accurate conversion of hazardous waste amounts as required for input into RCRAInfo.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			
5	9	Implement a control procedure to enforce that business rule changes are updated in the RCRAInfo system documentation.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			
6	9	Implement a control procedure to enforce that RCRAInfo coding changes are tested prior to placement into production.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			
7	9	Notify states to use the test environment for all testing instead of the production environment.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			
8	9	Implement a procedure to review the production database for test data on a semiannual basis.	O	Director, Office of Resource Conservation and Recovery, Office of Solid Waste and Emergency Response			

[1] O = recommendation is open with agreed-to corrective actions pending
C = recommendation is closed with all agreed-to actions completed
U = recommendation is undecided with resolution efforts in progress

Distribution

Office of the Administrator
Assistant Administrator for Solid Waste and Emergency Response
Acting Director, Office of Resource Conservation and Recovery, Office of Solid Waste and
       Emergency Response
Agency Followup Official (the CFO)
Agency Followup Coordinator
General Counsel
Associate Administrator for Congressional and Intergovernmental Affairs
Associate Administrator for External Affairs and Environmental Information
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