The EPA Needs to Improve the Verification of Land-Use Controls at Resource Conservation and Recovery Act Corrective Action Facilities

September 23, 2024 | Report No. 24-E-0066

OFFICE OF INSPECTOR GENERAL
U.S. ENVIRONMENTAL PROTECTION AGENCY

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Abbreviations

EPA	U.S. Environmental Protection Agency
OIG	Office of Inspector General
ORCR	Office of Resource Conservation and Recovery
RCRA	Resource Conservation and Recovery Act
U.S.C.	United States Code

Key Definitions

Land-use control	According to the EPA, this is "[a]ny restriction or control, including institutional controls and engineering controls, arising from the need to protect human health and the environment, such as the restriction of access or limitation of activities at a site that has residual contamination."
RCRA corrective action facility	Any site or facility that implements RCRA corrective actions, meaning that the facility cleans up hazardous materials such as waste, waste constituents, and contaminants that it released in the soil, groundwater, surface water, or air.

Cover Image

Removal of contaminated soil at a RCRA corrective action facility. (EPA photo)

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At a Glance

The EPA Needs to Improve the Verification of Land-Use Controls at Resource Conservation and Recovery Act Corrective Action Facilities

Why We Did This Evaluation

To accomplish this objective:

The U.S. Environmental Protection Agency Office of Inspector General conducted this evaluation to determine the extent to which the EPA verifies that Resource Conservation and Recovery Act corrective action land-use controls remain in place to prevent human exposure and groundwater contamination at facilities where contamination remains in place.

The Resource Conservation and Recovery Act of 1976, as amended, is the primary law governing the management of solid and hazardous waste. The 1984 Hazardous and Solid Waste Amendments to the Act expanded the EPA's authority to require corrective action at treatment, storage, and disposal facilities.

Resource Conservation and Recovery Act Corrective Action Program Goal 4 indicates that regions and states will have approaches in place by 2025 to ensure that key elements of long-term stewardship, such as overseeing and tracking controls, are implemented.

To support these EPA mission-related efforts:

- *Cleaning up and revitalizing land.*
- *Partnering with states and other stakeholders.*
- *Operating efficiently and effectively.*

To address this top EPA management challenge:

- *Safeguarding the use and disposal of chemicals.*

Address inquiries to our public affairs office at (202) 566-2391 or OIG.PublicAffairs@epa.gov.

List of OIG reports.

What We Found

The EPA does not have a national process in place to track or verify the status of land-use controls at Resource Conservation and Recovery Act corrective action facilities. Land-use controls are measures that the EPA and a facility take to control how contaminated land is used to protect human health and the environment. These controls can take both physical and nonphysical forms and can include engineering controls such as fences and non-engineering controls such as deed restrictions.

The EPA has not identified standard methods for long-term oversight of land-use controls at corrective action facilities. Additionally, the EPA regions vary in their progress toward attainment of Resource Conservation and Recovery Act Corrective Action Program Goal 4. Further, EPA information systems that can be used to access program information contain data issues, and the EPA is not using its information systems to track the status of land-use controls. Specifically, the systems contain illogical data and data discrepancies. Without adequate monitoring and tracking, the EPA cannot determine whether land-use controls operate as intended.

If land-use controls do not operate as intended, there is an increased risk that humans and the environment will be exposed to contaminants. Further, land-use control data issues can undermine public confidence and impair the EPA's analyses and decision-making.

Recommendations and Planned Agency Corrective Actions

We make eight recommendations to improve the verification of land-use controls at Resource Conservation and Recovery Act corrective action facilities. Our recommendations include reconciling existing discrepancies in publicly available land-use controls databases by implementing effective database business rules and developing oversight tools to annually monitor land-use control status at the national level.

The EPA agreed with our recommendations and provided appropriate corrective actions with completion dates. All recommendations are resolved with corrective actions pending.

OFFICE OF INSPECTOR GENERAL
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September 23, 2024

MEMORANDUM

SUBJECT: The EPA Needs to Improve the Verification of Land-Use Controls at Resource Conservation and Recovery Act Corrective Action Facilities
Report No. 24-E-0066

FROM: Sean W. O'Donnell, Inspector General

TO: Barry Breen, Principal Deputy Assistant Administrator
Office of Land and Emergency Management

This is our report on the subject evaluation conducted by the U.S. Environmental Protection Agency Office of Inspector General. The project number for this evaluation was OSRE-FY23-0100. This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

The Office of Land and Emergency Management is responsible for the issues discussed in this report.

In accordance with EPA Manual 2750, your office provided acceptable planned corrective actions and estimated milestone dates in response to OIG recommendations. All recommendations are resolved, and no final response to this report is required. If you submit a response, however, it will be posted on the OIG's 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 along with corresponding justification.

We will post this report to our website at www.epaoig.gov.

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Purpose

The U.S. Environmental Protection Agency Office of Inspector General initiated this evaluation to determine the extent to which the EPA verifies that Resource Conservation and Recovery Act corrective action land-use controls, later referred to simply as "land-use controls," remain in place to prevent human exposure and groundwater contamination at facilities where contamination remains in place.

Top management challenge addressed

This evaluation addresses the following top management challenge for the Agency, as identified in OIG Report No. 24-N-0008, *The EPA's Fiscal Year 2024 Top Management Challenges*, issued November 15, 2023:

- Safeguarding the use and disposal of chemicals.

Background

The Resource Conservation and Recovery Act and the Corrective Action Program

The Resource Conservation and Recovery Act of 1976, as amended, known as RCRA, is the primary law governing the management of solid and hazardous waste. In 1982, the EPA established the base RCRA program to manage hazardous waste. The 1984 Hazardous and Solid Waste Amendments to RCRA expanded the EPA's authority to require corrective action at facilities that treat, store, and dispose of hazardous waste. This means that these facilities must clean up hazardous materials they release in the soil, groundwater, surface water, and air. The EPA implements these requirements through its RCRA Corrective Action Program policies and guidance rather than regulations.

States and territories may obtain EPA authorization to administer the base RCRA program if the state program is equivalent to and at least as stringent as the federal program.[1] Once a state has been authorized for the base RCRA program, it may be required to update its program to reflect changes to the federal RCRA program and obtain EPA authorization to administer new components. For example, the EPA can authorize states to implement the RCRA Corrective Action Program after the states have revised their RCRA programs to include corrective action components that are equivalent to and as stringent as the EPA's. The EPA awards grants to authorized states to help them develop or implement the RCRA hazardous waste programs.

For the purposes of this report, we refer to any site that implements RCRA corrective actions as a RCRA corrective action facility. An EPA analysis from July 2023 found that approximately 31 million people, or roughly nine percent of the U.S. population, live within one mile of a RCRA corrective action facility, and approximately 118 million people, or roughly 35 percent of the U.S. population, live within three miles

[1] RCRA, 42 U.S.C. § 6903(31), defines states as "any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands." For the remainder of this report, we use the term "states" to refer to states and territories, as defined by RCRA.

of a RCRA corrective action facility. Improper storage of hazardous waste might cause spills, leaks, fires, and contamination of soil and drinking water. Without proper cleanup, hazardous materials in contaminated soil, sediments, groundwater, surface water, and air can adversely affect the health of people nearby.

What are RCRA corrective action facilities?

According to the EPA "Learn about Corrective Action" webpage, "RCRA [c]orrective [a]ction facilities vary significantly. They include current and former chemical manufacturing plants, oil refineries, lead smelters, wood preservers, steel mills, commercial landfills, federal facilities, and a variety of other types of entities." The "[s]ize, type and extent of contamination, media affected, environmental characteristics, and geology also differ greatly between facilities." Photos of locations where RCRA corrective action is being implemented are shown in Figure 1.

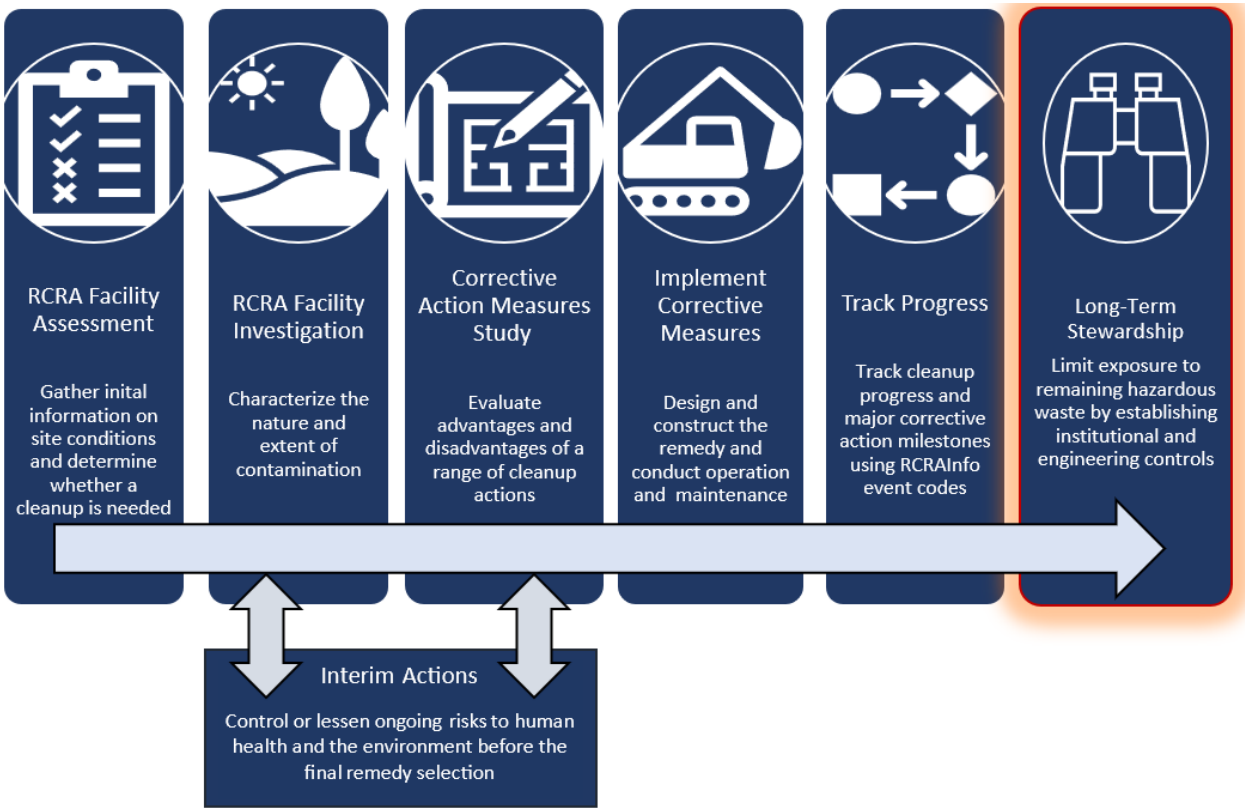
Figure 1: Photos of locations with implemented RCRA corrective actions

Top row from left to right: A steel facility, slag piles, a wastewater treatment system, and a grizzly bear by a monitoring well. *Bottom row from left to right*: People constructing a biowall, people collecting samples, a facility nearby waters of Lake Mead, and an intertidal marsh along San Francisco Bay.

Source: EPA photos.

Figure 2 shows the RCRA corrective action process. The EPA corrective action webpage states that "[f]acilities are generally brought into the RCRA corrective action process when: 1. there is an identified release of hazardous waste or hazardous constituents, or 2. when [the] EPA is considering a treatment, storage and disposal facility (TSDF) RCRA permit application." These facilities must obtain a RCRA permit to operate. The permit establishes the technical conditions and waste management activities that the facility can conduct, and the permit can include RCRA corrective action requirements. The facility works with the EPA, states, and territories to perform the corrective action or cleanup according to federal and state requirements.

Figure 2: OIG summary of a typical RCRA corrective action process



Note: Corrective action event codes are nationally defined values for specific corrective action steps that track RCRA corrective action facility cleanup progress in the EPA's RCRAInfo system. The highlighted "Long-Term Stewardship" step is the focus of this report.

Source: OIG summary of EPA information. (EPA OIG image)

Land-Use Controls at RCRA Corrective Action Facilities

Sometimes contaminants at a RCRA corrective action facility are left in place, and the EPA and the facility take measures to control how the contaminated land is used to protect human health and the environment. These land-use controls prevent exposure to the contaminants left in place, can take both physical and nonphysical forms, and can include engineering and institutional controls. Engineering controls are mechanisms, including physical barriers, designed to prevent human exposure by limiting direct contact with contaminated areas or controlling the migration of contaminants.[2] Examples of engineering controls include fences, groundwater pump-and-treat systems, and controls for soil and spillage such as contamination caps, covers, and impermeable liners. Institutional controls are non-engineered administrative and legal controls that minimize potential human exposure to contamination by limiting land or resource use.[3] Examples of institutional controls are easements, zoning restrictions, and restrictive covenants. Engineering and institutional controls function to protect

[2] Institutional And Engineering Controls Data, EPA, https://rcrapublic.epa.gov/rcrainfoweb/action/modules/cor/caindex (last visited Aug. 20, 2024).
[3] EPA, Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups (2000).

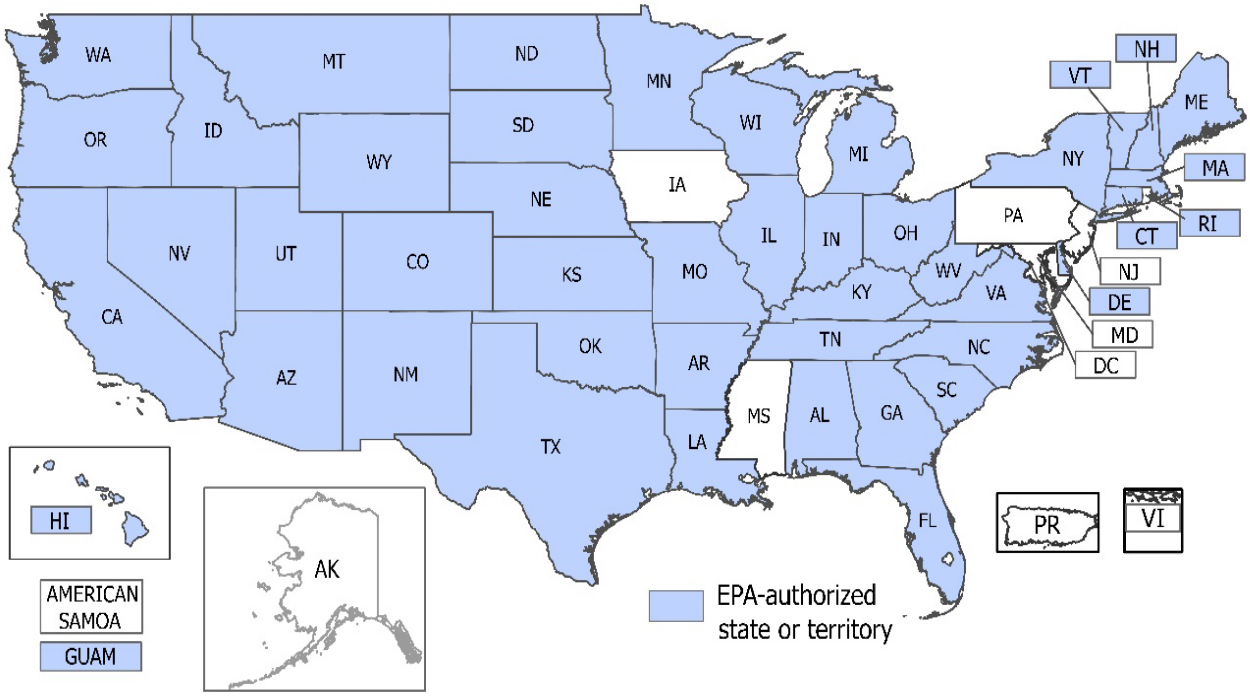
the public, and the facility must operate and monitor these land-use controls for as long as the risks at the facility are present.

The EPA's Role in the RCRA Corrective Action Program

At the national level, the EPA is responsible for overseeing the RCRA Corrective Action Program; this includes developing goals, monitoring progress toward those goals, and providing guidance and technical assistance. At the regional level, the EPA is responsible for implementing the RCRA Corrective Action Program for states that are not authorized to implement the base RCRA program, as well as for those that are authorized to implement the base RCRA program but are not authorized to implement the RCRA Corrective Action Program. Additionally, at the regional level, the EPA is responsible for overseeing and working with authorized states' RCRA Corrective Action Programs to ensure that the programs adhere to national standards.

As of December 2023, the EPA had authorized 50 states to implement the base RCRA program. Further, the EPA had authorized 45 states to implement the RCRA Corrective Action Program, as shown in Figure 3.

Figure 3: The states with EPA authorization to implement the RCRA Corrective Action Program



Note: Alaska and Iowa are not authorized to implement any component of the base RCRA program.
Source: OIG analysis of EPA information on state authorization. (EPA OIG image)

EPA Information Systems

The EPA has multiple information systems that can be used to access RCRA Corrective Action Program information. These systems include RCRAInfo, RCRAInfo Web, Enforcement Compliance History Online, and Cleanups in My Community. Table 1 describes these systems.

Table 1: RCRA program information systems

Information system name	Description	Access
RCRAInfo	Information system in which the EPA and EPA-authorized states enter, access, and track RCRA information, including RCRA corrective action facility cleanup progress.	EPA and authorized states
RCRAInfo Web	Public website that allows users to access and download selected RCRAInfo data such as institutional and engineering controls for RCRA corrective action facilities.	Public
Enforcement Compliance History Online	Public website that provides information on compliance inspections, violations, enforcement actions, penalties assessed, and other information for multiple EPA programs. This system uses data from RCRAInfo for RCRA corrective action facilities.	Public
Cleanups in My Community	Web application that provides maps and lists of hazardous waste cleanup locations and allows users to drill down to access details. This system uses data from RCRAInfo for RCRA corrective action facilities.	Public

Source: OIG summary of EPA RCRA program information systems. (EPA OIG table)

Using RCRAInfo, the EPA can track RCRA corrective action facility cleanup progress through nationally defined event codes for specific corrective action steps. State and regional staff can enter these event codes, in addition to other codes that they can define for their own purposes, with associated completion dates in RCRAInfo to document their cleanup progress. Sample event codes include those for creating and terminating engineering and institutional controls, as well as those related to human exposure and groundwater contamination. Information from RCRAInfo is shared to the public through RCRAInfo Web, Enforcement Compliance History Online, and Cleanups in My Community.

RCRA Corrective Action Program Goals for 2030

In September 2020, the EPA Office of Resource Conservation and Recovery, or ORCR, issued the *RCRA Corrective Action Program Vision/Mission/Goals for 2030* fact sheet. The mission statement highlights the program goal:

> [The] EPA, states, and tribal partners work together to ensure that owners and operators of hazardous waste treatment, storage, and disposal facilities conduct effective and efficient cleanups to protect human health and the environment, support continued use, and make land ready for reuse including, if necessary, placement of controls to protect communities into the future.

Highlights from the 2030 goals for the RCRA Corrective Action Program, including the long-term stewardship goal addressed in this report, are as follows:

1. "Through 2030, the RCRA Corrective Action Program will ensure that RCRA cleanups are initiated and completed efficiently and expeditiously."

2. "By 2030, the RCRA Corrective Action Program will eliminate or control adverse impacts beyond facility boundaries at RCRA Corrective Action facilities wherever practicable and the program will focus attention on cleanups that will not meet this target."

3. "By 2030, the RCRA Corrective Action Program will ensure or confirm that land within facility boundaries at RCRA Corrective Action facilities will be safe for continued use or reasonably foreseeable new uses wherever practicable and the program will focus attention on cleanups that will not meet this target."

4. **"By 2025, the RCRA Corrective Action Program will identify the key elements of effective Long Term Stewardship for Corrective Action cleanups, and regions and states will have approaches in place to ensure implementation of the key elements."** (Emphasis added.)

5. "By 2022, program procedures will be in place to regularly adjust the universe of facilities in the cleanup pipeline to reflect current program priorities."

Elements of Long-Term Stewardship for Corrective Action

The EPA uses the phrase "long-term stewardship" in reference to RCRA corrective action facilities, including those with engineering and institutional controls, that require long-term management of contamination to protect human health and the environment. In June 2022, the ORCR issued a memorandum, *Key Elements of Effective Long-Term Stewardship for RCRA Corrective Action*, to all EPA regions to address the first part of Goal 4, which is referenced in the previous section. The memorandum defined nine key elements of long-term stewardship. According to the memorandum, the key elements are not requirements but factors for the EPA and authorized states "to consider when establishing and implementing processes to address long-term stewardship at RCRA corrective action facilities." We focused on three key elements relevant to our evaluation objective. We summarize these elements in Table 2.

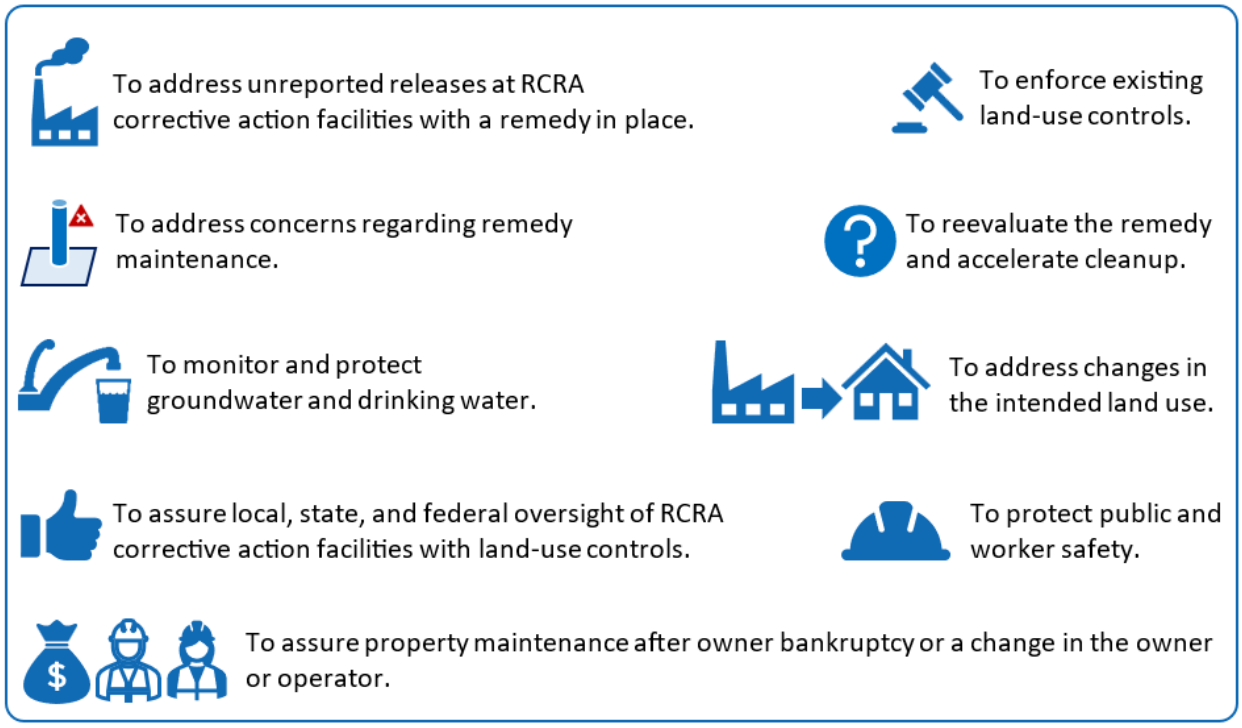
Table 2: OIG summary of three of the nine key elements of effective long-term stewardship

Element 2 Information about the controls	Element 3 Oversight of the controls	Element 4 Tracking of the controls
The EPA and authorized states "should have internal practices to assure that accurate and updated information" regarding land-use controls, including any issues with the controls, "is readily available" to program managers involved in overseeing RCRA corrective action remedies.	At facilities where the corrective action cleanup remedy relies on land-use controls, the EPA and authorized states should perform "periodic oversight and monitoring [of facilities] to verify the continued effectiveness" of land-use controls.	The EPA and authorized states should track significant events related to land-use controls "as necessary to enable effective oversight," typically beginning with implementation of the controls and continuing "until the controls are no longer needed."

Source: OIG summary of three key elements from the EPA's *Key Elements of Effective Long-Term Stewardship for RCRA Corrective Action* memorandum. (EPA OIG table)

Long-term stewardship is essential because, over time, issues may arise that affect the operation or effectiveness of controls needed to protect human health and the environment. For example, a tree may fall on a fence, a land-use control, intended to keep people out of a facility. With the fence down, people can access the facility, meaning that the land-use control does not operate as intended, or is nonoperational. When the EPA and authorized states are monitoring a facility and identify a failure or potential failure of a control, they can require the facility to take steps to ensure that the control performs as required. For example, they can require a facility to repair a damaged fence, making the land-use control operational again. Figure 4 provides reasons for long-term stewardship, and Figures 5 and 6 provide examples of operational and nonoperational land-use controls.

Figure 4: Reasons for long-term stewardship



Source: OIG summary of EPA presentation, *Long Term Stewardship RCRA Corrective Action*, dated March 7, 2018. (EPA OIG image)

Figure 5: Examples of fencing land-use controls

Note: The image on the left shows an intact fence with a warning notice, an operational land-use control. The image on the right shows a damaged fence, a nonoperational land-use control.

Source: EPA photos (top left image with OIG alteration to obscure identifying information on warning notice).

Figure 6: Examples of groundwater monitoring wells

Note: The image on the left shows a monitoring well with a cap and lock, an operational control. The images in the middle and on the right show a well without a cap or lock and a well with no lock, respectively—two nonoperational controls.

Source: EPA photos.

Responsible Offices

The ORCR, within the Office of Land and Emergency Management, is primarily responsible for implementing the EPA's resource conservation, recovery, and waste management goals under RCRA. The ORCR's principal responsibility is to build a national waste management program, implemented through EPA regional offices and authorized state programs. The ORCR Cleanup Programs Branch is responsible for developing and directing the national implementation of the RCRA Corrective Action Program. The Cleanup Programs Branch is responsible for creating training initiatives to assist the regions and states in implementing the RCRA Corrective Action Program; providing technical assistance

to regions and states; and developing national regulations, policies, and guidance to support RCRA cleanup activities. The ORCR Information Collection and Analysis Branch is responsible for the collection and analysis of data related to the EPA's implementation of RCRA. The branch is responsible for the design, development, analysis, and maintenance of the national RCRAInfo information system.

Each of the ten EPA regions has a RCRA corrective action office. The regional RCRA corrective action offices assist and monitor authorized states' RCRA Corrective Action Programs and implement programs in states that are not authorized for corrective action.

The EPA RCRA Corrective Action Program had a fiscal year 2023 enacted budget of $40,512,000.

Scope and Methodology

We conducted this evaluation from September 2023 to June 2024 in accordance with the *Quality Standards for Inspection and Evaluation* published in December 2020 by the Council of the Inspectors General on Integrity and Efficiency. Those standards require that we perform the evaluation to obtain sufficient and appropriate evidence to support our findings.

We interviewed ORCR program and RCRAInfo staff and RCRA Corrective Action Program managers in all ten EPA regions. To understand variations of approaches throughout the different regions, we interviewed EPA regional staff about mechanisms they use to verify the continuing effectiveness of land-use controls, actions they take if a control is found to be nonoperational, their approach to long-term stewardship, guidance from EPA headquarters, and authorized states' approaches to data collection and management of RCRA corrective action facilities in long-term stewardship.

We analyzed land-use control data from the EPA's publicly accessible "RCRAInfo Web" website, internal land-use control information from RCRAInfo, and inspection information from Enforcement Compliance History Online. We also evaluated the information on RCRA corrective action facilities from Cleanups in My Community. Additionally, we visited one RCRA facility and viewed two others in the Seattle, Washington area, and we spoke with Washington state program staff about their approach to managing land-use controls. Further, we reviewed the EPA's *Open Government Plan 5.0* and the ORCR's 2016 memorandum *Financial Assurance Data Quality and the Importance of Maintaining Data in the RCRAInfo National Database* to understand the expectations for data in the EPA's information systems and public websites.

To obtain an understanding of the EPA's long-term goals for the RCRA Corrective Action Program, we reviewed the EPA's *Key Elements of Effective Long-Term Stewardship for RCRA Corrective Action* in the *2030 Vision/Mission/Goals for the RCRA Corrective Action Program* memorandum issued in 2020. We focused on Goal 4 and Elements 2, 3, and 4 of the nine key elements of effective long-term stewardship.

In addition, to obtain an understanding of the EPA's compliance monitoring, long-term stewardship standards, and approach to engineering and institutional controls, we reviewed EPA guidance

documents on institutional controls, the EPA's *Compliance Monitoring Strategy for the Resource Conservation and Recovery Act Subtitle C Core Prog*ram, and the EPA's *RCRA Orientation Manual 201*4.

Prior Report

The OIG previously reported on RCRA facilities in OIG Report No. 21-P-0114, *EPA Does Not Consistently Monitor Hazardous Waste Units Closed with Waste in Place or Track and Report on Facilities That Fall Under the Two Responsible Programs*, published March 29, 2021. The report found that the EPA did not inspect about half of the nonoperating RCRA facilities with units closed with waste in place within the three-year time frame established by the EPA's enforcement policy. The report also identified overlap and discrepancies among facilities identified in both the RCRA Corrective Action and Superfund programs. The report made six recommendations, which are all completed.

Results

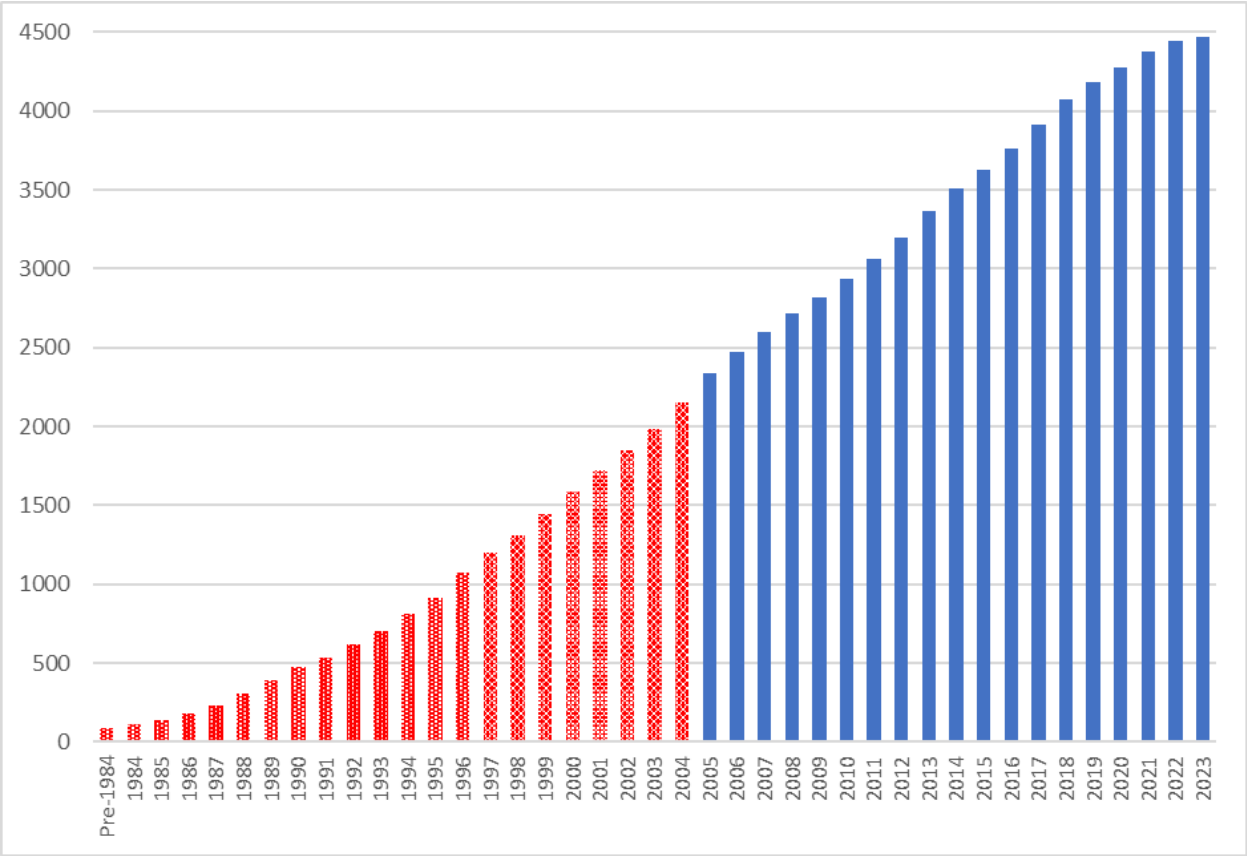
The EPA does not have a national process in place to track or verify the operational status of land-use controls at RCRA corrective action facilities. The EPA does not use RCRAInfo to track the status of land-use controls and has not identified standard methods for long-term oversight of these controls at corrective action facilities. RCRA Corrective Action Program Goal 4 indicates that regions and states will have approaches in place by 2025 to ensure that key elements of long-term stewardship, such as overseeing and tracking controls, are implemented. The EPA regions vary in their progress toward attainment of RCRA Corrective Action Program Goal 4. Additionally, there are land-use control data discrepancies across the EPA's information systems. These discrepancies can undermine public confidence in land-use control information and can impair EPA analyses and decision-making. Without tracking, the EPA has limited information on whether land-use controls remain effective. If land-use controls do not operate as intended, there is an increased risk that humans and the environment will be exposed to contaminants from a facility.

The EPA Does Not Track or Verify the Status of Land-Use Controls Nationally

The EPA does not have a national process in place to track or verify the status of land-use controls at RCRA corrective action facilities. RCRA Corrective Action Program Goal 4, identified in the *EPA RCRA Corrective Action Program Vision/Mission/Goals for 2030* fact sheet, indicates that regions and states will have approaches in place by 2025 to ensure that key elements of long-term stewardship, such as overseeing and tracking controls, are implemented. While the EPA does not have a national process, eight regions have their own processes to track land-use controls, but the processes vary. In addition, the EPA has limited knowledge of how authorized states track land-use controls.

Using RCRAInfo, we identified 4,470 land-use controls at 1,761 facilities as of September 30, 2023. About half of these land-use controls had been in place for more than 20 years, as shown in Figure 7.

Figure 7: The number of land-use controls by calendar year



Note: The red bars with a pattern represent land-use controls that have been in place more than 20 years. These represent 48 percent, or about half, of the total land-use controls. Pre-1984 data represent illogical data issues, discussed later in this report, as these controls would have been in place before the RCRA Corrective Action Program was established in 1984.

Source: OIG analysis of EPA data. (EPA OIG chart)

The number of land-use controls and the length of time many of the controls have existed without documented verification in RCRAInfo of their operational status illustrate a need for land-use control oversight. Over time, some land-use controls may become ineffective at preventing human exposure to and environmental contamination from hazardous materials at a RCRA corrective action facility. For example, engineered controls may become damaged through weather events or human activity. Additionally, institutional controls may be forgotten over time or may need to be updated based on changes to how land is used in the area. If the EPA and states monitor the status of land-use controls, they can identify issues like these and correct them.

The EPA Regions Vary in Progress Toward the Long-Term Stewardship Goal

According to RCRA Corrective Action Program Goal 4, by 2025, "regions and states will have approaches in place to ensure implementation of the key elements [of effective long-term stewardship]." The ORCR is responsible for monitoring progress toward this goal, yet ORCR staff had limited knowledge of regional and state progress in implementing the key elements of long-term stewardship. Without

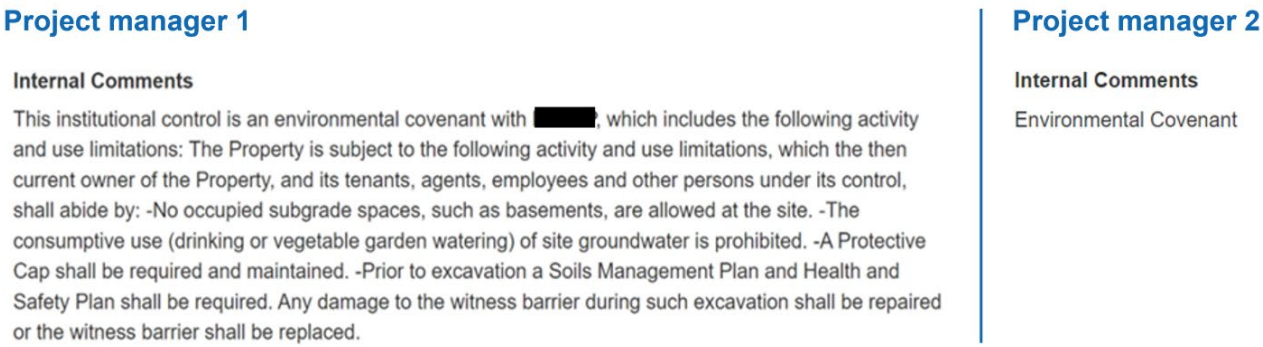
information on each region and state's implementation of the key elements of long-term stewardship, the ORCR cannot monitor progress towards this goal.

The EPA regions were at various stages of implementing the key elements of long-term stewardship. Six regions said they felt confident that they and the states within their region were already implementing the key elements, while four regions did not know whether their states had the key elements of long-term stewardship in place. Additionally, the EPA's memorandum on key elements of long-term stewardship received mixed opinions from regional staff. Six regions said that they felt the memorandum was sufficient for regions and states to get started, but three regions said that they would like to see more guidance and policy come from the national level rather than each region figuring it out for themselves. Finally, one region suggested that the EPA could designate a lead region for long-term stewardship to create models for others to use.[4]

The EPA Is Not Fully Using RCRAInfo for Information Regarding Engineering and Institutional Controls

As previously noted, RCRAInfo has event codes to track the creation and termination of land-use controls, along with comment fields that can be used to enter information about land-use controls. However, these fields are not used consistently and sometimes lack enough information about the controls to verify that the controls are still in place, as illustrated by the two examples in Figure 8. The project manager in the example on the left included significant detail about the controls, whereas the project manager in the example on the right simply noted the existence of a covenant with no corresponding detail.

Figure 8: Examples of comments on institutional controls in RCRAInfo



Source: OIG-redacted image of two different RCRAInfo comment fields. (EPA OIG image)

[4] According to the EPA's "Lead Region Process" webpage, the EPA formed its Lead Region System in 1984 to ensure that Agency decision-making "considers and reflects regional perspectives." In the long-term stewardship scenario, the EPA would work with the lead region to "communicate significant actions, rollouts, and programmatic activities" across all ten regions.

The EPA identified the second key element of an effective long-term stewardship program as having "internal practices to assure that accurate and updated information" about land-use controls readily available to program managers. Two regions said that regional and state staff sometimes do not enter land-use controls information into RCRAInfo. These two regions said that the states may have this information outside of RCRAInfo. One of these regions noted that sometimes regional and state staff enter the information in different places within RCRAInfo, such as in the "Remedy Construction" section instead of in the "Corrective Action" section. The two regions said that they are correcting these issues, but the lack of consistent information means that the ORCR does not have complete or easily retrievable information on land-use controls at RCRA corrective action facilities.

If the EPA regions and authorized states used RCRAInfo consistently and kept the land-use controls data up to date, the information would be readily available to the ORCR, federal and state staff, and the public. This would allow the regions and states to use an existing system to meet the second key element of long-term stewardship and would provide the ORCR with the data needed for effective program oversight.

The EPA Has Not Identified Standard Methods for Long-Term Facility Oversight

The ORCR has not identified standard methods that the regions and states can use to verify that land-use controls remain in place or defined how often the regions and states should verify the controls. Seven regions conduct long-term stewardship assessments of facilities with land-use controls. Four regions said that typical EPA RCRA enforcement inspections generally do not include verifying land-use controls. Examples of the oversight methods that the states use to verify land-use controls include annual site visits or inspections and facility-reported information.

The third key element of effective long-term stewardship is EPA regions and authorized states performing long-term oversight, monitoring, and maintenance of facilities with land-use controls in place. The ORCR could provide guidance on the methods that the regions and states should use to verify land-use controls, whether through document reviews, on-site activities, or other long-term stewardship assessments. This could include identifying effective methods that some regions already have in place so that other regions can learn from them. Minimum standards for how often regions and authorized states should verify land-use controls would create national consistency for the RCRA Corrective Action Program while allowing for more frequent assessment as needed.

The EPA Is Not Fully Using RCRAInfo to Track Land-Use Control Status

The ORCR has not established national methods to track the status of land-use controls. RCRAInfo has nationally defined event codes to track the creation and the termination of land-use controls but lacks nationally defined event codes to track follow-up activities, such as ongoing monitoring and status of land-use controls.

The fourth key element of long-term stewardship is tracking and recordkeeping of land-use controls. Regions generally rely on authorized states to track land-use control status. Seven of the ten EPA regions

had knowledge of the methods that their states used to track land-use controls, while the other regions were unaware of how their states tracked land-use controls. Some regions track land-use controls because the regions directly implement the RCRA Corrective Action Program for their states that are not authorized to implement the program. For example, Regions 3 and 7 track land-use controls for three and one states, respectively, because the states do not have EPA authorization to implement the RCRA Corrective Action Program.

Region 7 has an internal system to track land-use controls for Iowa, and Region 3 developed a system that uses RCRAInfo to track land-use control status for three of its six states using Region 3-defined event codes. The region defined three codes: pass, need minor maintenance, or further evaluation needed, as shown in Table 3. The use of these codes allows the region to track when the control was last verified and what the status was. If the project manager selects "need minor maintenance" or "further evaluation needed," the land-use control is tracked until the issue is resolved and the event code is changed to "pass." Region 3 staff said that having the data in RCRAInfo helped them prioritize facilities with land-use controls for review at the beginning of each year.

Table 3: Region 3's land-use control status event codes

Event code	Description
CAS88P(X)	Long-Term Stewardship – Pass. "This event signifies that a Long Term Stewardship assessment [was] completed and determined that all [land-use controls] are in place, maintained and operated in the manner envisioned when EPA/State selected the remedy, and with current policies and practices."
CAS88N(X)	Long-Term Stewardship – Need Minor Maintenance. "This event signifies that a Long Term Stewardship assessment was performed and additional information or changes in operation, maintenance of the [land-use controls] are needed to make a CAS88PX determination."
CAS88F(X)	Long-Term Stewardship – Further Evaluation Needed. "This event signifies that a Long Term Stewardship assessment was performed and that selected [land-use controls] **are not** in place, operated or maintained, or other issues are identified that suggest that the integrity and/or the protectiveness of the selected remedy (or elements of the selected remedy) is questionable, therefore a comprehensive remedy compliance assessment is required." (Emphasis in original.)

Source: OIG summary of the *EPA Region 3 Defined Values for Corrective Action Event Codes*. (EPA OIG table)

The ORCR said that before defining the tracking requirements, it needs to have a long-term stewardship program in place. The ORCR is in the program construction phase, so it had not yet defined data elements. Regional RCRA Corrective Action Program managers explained how the program has evolved over time. The managers said that early on the program focused on selecting and implementing remedies and meeting initial milestones. The workload and focus have changed because more facilities have a remedy in place and are in the long-term stewardship phase. Because of the early focus on implementing remedies, the EPA did not initially emphasize long-term stewardship as it now does in RCRA Corrective Action Program Goal 4.

If the ORCR modified RCRAInfo to include nationally defined event codes on land-use control activities and statuses, this could assist the regions and states in meeting the fourth key element of long-term stewardship and make the land-use control information available to federal, state, and public stakeholders.

EPA Information Systems Contain Data Issues

RCRAInfo and Cleanups in My Community contain land-use controls data issues that could mislead the public. According to the EPA's 2018 *Open Government Plan 5.0*:

> Data is central to implementing the Agency's mission. It is used in every facet of Agency operations including developing and enforcing regulations, conducting studies on environmental issues, and publishing information to inform the public about EPA activities.

Data discrepancies can undermine public confidence in land-use control information and can impair the EPA's analyses and decision-making.

Issues with RCRAInfo Data on Land-Use Controls

We identified four issues with illogical data in RCRAInfo. These include facilities identified as needing controls but without any controls listed; facilities identified as not needing any controls but with controls listed; land-use control dates that are before the establishment of the RCRA Corrective Action Program in 1984, including some in the 1960s and 1970s and one in 1935; and land-use controls established after the completion of RCRA corrective action for the facility. Table 4 describes these issues.

Table 4: RCRAInfo data issues

Data issue	Description
Illogical land-use control dates	The RCRAInfo dates for 86, or about 2 percent, of the 4,470 land-use controls are illogical because they are before the establishment of the RCRA Corrective Action Program in 1984.
Performance standards attained; controls required	There are 1,131 RCRA corrective action facilities that have attained performance standards with land-use controls required. However, 168 of these, or about 15 percent, have no controls identified in RCRAInfo.
Performance standards attained; no controls	There are 160 RCRA corrective action facilities that have attained performance standards with no land-use controls required. However, 13 of these, or about 8 percent, have land-use controls identified in RCRAInfo.
Land-use controls issued after performance standards attained or RCRA corrective action terminated	RCRAInfo has 184 instances of land-use controls implemented after performance standards have been attained or RCRA corrective action has been terminated.

Source: OIG analysis of EPA RCRAInfo data. (EPA OIG table)

In 2016, the ORCR highlighted the importance of data accuracy and the EPA's oversight responsibility regarding the RCRA Program in a memorandum, *Financial Assurance Data Quality and the Importance of Maintaining Data in the RCRAInfo Database,* that stated:

> Although the responsibility for maintaining the accuracy of data in RCRAInfo primarily resides with states authorized to implement the RCRA program, it is EPA's responsibility to ensure national oversight of the program. Our data are increasingly being relied on by many stakeholders for a wide variety of purposes. It is our obligation as a national program to ensure that data collected, stored, and reported are of the utmost quality in order to support sound analyses and decisions.

Information systems such as RCRAInfo use business rules to ensure the correctness of all data submitted. If an individual enters data that does not meet a business rule, the individual will receive an error message that prevents them from submitting the data. People often encounter these rules in information systems and online applications. An example of a business rule is that a person cannot enter a travel departure date prior to an arrival date.

While the EPA defines some business rules for RCRAInfo corrective action, these are generally limited to defining which data elements must be entered and the allowed values for those data elements—for example, requiring an individual to enter a date and requiring the individual to format the date in numeric format. However, other business rules do not exist, which allows for events to be entered out of their logical sequence. RCRAInfo documentation states that the application enforces business rules to ensure the correctness of all data entered. However, the RCRAInfo business rules defined for RCRA corrective action only address the presence of minimum information that must be entered. There are no RCRAInfo business rules to address the data discrepancies that we identified.

Issues with Other Public Information on Land-Use Controls

As noted in the "Background" section of this report, the EPA uses RCRAInfo Web and Cleanups in My Community to communicate information about RCRA corrective action facilities to the public. However, not all RCRA corrective action facilities with land-use controls that are found in RCRAInfo Web are found in Cleanups in My Community. This appears to be due to differing criteria for listing facilities in the two information systems. Cleanups in My Community indicates that it contains only RCRA corrective action facilities that are on the EPA progress track,[5] while RCRAInfo Web contains any RCRA corrective action facility that has at least one land-use control in RCRAInfo. Of the 1,771 facilities with land-use controls, 169, or about 10 percent, cannot be found in the Cleanups in My Community progress track information.

[5] According to the EPA, the 2030 Goal 5 created a dynamic "progress track" of corrective action facilities to which facilities could be added or subtracted as needed. As of January 2024, there are 3,961 facilities on the EPA's progress track of RCRA corrective action facilities.

Additionally, there are inconsistencies in how RCRAInfo information is displayed in Cleanups in My Community. One format indicates that the RCRAInfo data are refreshed nightly and includes a standard description of environmental indicators, performance measures, and land-use controls, while another does not include that information. Without a nightly automated refresh of RCRAInfo data, the information for some of the facilities may be out of date. Further, without a standard format of environmental indicators, performance measures, and land-use controls, the information may not be consistent.

Since the public may use both RCRAInfo Web and Cleanups in My Community to access RCRA corrective action facility information, illogical data and data discrepancies could potentially cause confusion for the public and result in a lack of public trust in the EPA's data. The public should be able to find consistent, current, and accurate information about land-use controls in Agency information systems.

Conclusions

Lack of oversight and monitoring of land-use controls increases risks to human health and the environment. Without comprehensive and consistent national-level tracking of the status of land-use controls, the EPA has limited information on whether land-use controls remain effective. Additionally, without this information, the EPA is unable to determine whether it is achieving its mission to protect human health and the environment at RCRA corrective action facilities. Moreover, community members may not have accurate and up-to-date information on land-use controls at contaminated facilities near them via the EPA's information systems, potentially affecting their exposure to contaminants if the controls do not operate as intended.

Recommendations

We recommend that the assistant administrator for Land and Emergency Management:

1. Provide guidance to EPA regions and authorized states on methods that they can use to verify land-use control status, such as reporting or on-site assessments.

2. Define the minimum frequency for region and state verification that land-use controls remain operational—for example, verification every one, three, or five years.

3. Update RCRAInfo to capture data on the operational status of land-use controls. This could be achieved by establishing national event codes for land-use control activities in RCRAInfo—for example, using Region 3's event codes as nationally defined event codes.

4. Provide training to help regions and authorized states input and maintain land-use control data in RCRAInfo.

5. Implement mechanisms to monitor land-use control status at the national level, such as annual reports from RCRAInfo that identify land-use controls that have not been verified at the minimum frequency to ensure they remain operational.

6. Implement business rules to address the identified issues with illogical RCRA Corrective Action Program data in RCRAInfo.

7. Implement a standard format for all regions to use when entering data into Cleanups in My Community.

8. Address the discrepancies between the RCRA corrective action facilities listed in RCRAInfo Web and those listed in Cleanups in My Community.

Agency Response and OIG Assessment

Appendix A includes the Office of Land and Emergency Management's August 15, 2024 response to our draft report. The office also provided technical comments, which we considered as we finalized this report. The Office of Land and Emergency Management concurred with our recommendations and proposed acceptable corrective actions with planned completion dates. All recommendations are resolved with corrective actions pending.

In its response, the Agency noted that the RCRA Corrective Action Program has a Long-Term Stewardship Workgroup with ORCR and regional membership that is working on RCRA Corrective Action Program Goal 4. The Agency stated that the recommendations in this report will inform the workgroup's outputs and the program's work over the next year and a half. According to the Agency, the workgroup will develop corrective actions for Recommendations 1–3; the ORCR will address the RCRAInfo issues identified in Recommendations 4–6 and 8; and Regions 2 and 3 will address Recommendation 7. Where the Agency notes that they plan to use "approaches" to meet our recommendations, we will follow up to ensure that these suffice in lieu of our requested actions.

Status of Recommendations

Rec. No.	Page No.	Recommendation	Status*	Action Official	Planned Completion Date
1	17	Provide guidance to EPA regions and authorized states on methods that they can use to verify land-use control status, such as reporting or on-site assessments.	R	Assistant Administrator for Land and Emergency Management	12/31/25
2	17	Define the minimum frequency for region and state verification that land-use controls remain operational—for example, verification every one, three, or five years.	R	Assistant Administrator for Land and Emergency Management	12/31/25
3	17	Update RCRAInfo to capture data on the operational status of land-use controls. This could be achieved by establishing national event codes for land-use control activities in RCRAInfo—for example, using Region 3's event codes as nationally defined event codes.	R	Assistant Administrator for Land and Emergency Management	12/31/25
4	17	Provide training to help regions and authorized states input and maintain land-use control data in RCRAInfo.	R	Assistant Administrator for Land and Emergency Management	6/30/26
5	17	Implement mechanisms to monitor land-use control status at the national level, such as annual reports from RCRAInfo that identify land-use controls that have not been verified at the minimum frequency to ensure they remain operational.	R	Assistant Administrator for Land and Emergency Management	6/30/26
6	18	Implement business rules to address the identified issues with illogical RCRA Corrective Action Program data in RCRAInfo.	R	Assistant Administrator for Land and Emergency Management	12/31/24
7	18	Implement a standard format for all regions to use when entering data into Cleanups in My Community.	R	Assistant Administrator for Land and Emergency Management	12/31/24
8	18	Address the discrepancies between the RCRA corrective action facilities listed in RCRAInfo Web and those listed in Cleanups in My Community.	R	Assistant Administrator for Land and Emergency Management	12/31/24

* C = Corrective action completed.
R = Recommendation resolved with corrective action pending.
U = Recommendation unresolved with resolution efforts in progress.

Agency Response to Draft Report

OFFICE OF LAND AND EMERGENCY MANAGEMENT
WASHINGTON, D.C. 20460

August 15, 2024

MEMORANDUM

SUBJECT: Response to Office of Inspector General Draft Project No. OSRE-FY23-0100 "The EPA Needs to Improve the Verification of Land-Use Controls at Resource Conservation and Recovery Act Corrective Action Facilities," dated July 16, 2024

FROM: Barry N. Breen, Principal Deputy Assistant Administrator

TO: Sean O'Donnell, Inspector General
Office of Inspector General

Thank you for the opportunity to respond to the issues and recommendations in the subject evaluation report. Following is a summary of the agency's overall position, along with its position on each of the report recommendations. We have provided high-level intended corrective actions and estimated completion dates for the report recommendations.

AGENCY'S OVERALL POSITION

The Office of Land and Emergency Management generally agrees with the findings and recommendations in the OIG Evaluation Report. Technical comments on the report are offered in the attachment *Draft Report Technical Comments*.

The RCRA Corrective Action Program has an ongoing Long-Term Stewardship Workgroup with Office of Resource Conservation and Recovery and regional membership that is working on the Program's 2030 Goal 4: "*By 2025, the RCRA Corrective Action Program will identify the key elements of effective Long Term Stewardship for Corrective Action cleanups, and regions and states will have approaches in place to ensure implementation of the key elements*." The recommendations in the OIG Evaluation will inform the Workgroup's outputs and the Program's work over the next year and a half.

AGENCY'S RESPONSE TO REPORT RECOMMENDATIONS

Agreements

No.	Recommendation	High-Level Intended Corrective Action(s)	Estimated Completion by Quarter and FY
1.	Provide guidance to EPA regions and authorized states on methods that they can use to verify land-use control status, such as reporting or on-site assessments.	The 2030 Goal 4 Long-Term Stewardship Workgroup will develop guidance to be issued by ORCR.	1st Quarter FY26
2.	Define the minimum frequency for region and state verification that land-use controls remain operational—for example, verification every one, three, or five years.	The 2030 Goal 4 Long-Term Stewardship Workgroup will develop an approach for guidance to be issued by ORCR.	1st Quarter FY26
3.	Update RCRAInfo to capture data on the operational status of land-use controls. This could be achieved by establishing national event codes for land-use control activities in RCRAInfo—for example, using Region 3's event codes as nationally defined event codes.	The 2030 Goal 4 Long-Term Stewardship Workgroup will develop an approach to be implemented in RCRAInfo.	1st Quarter FY26
4.	Provide training to help regions and authorized states input and maintain land-use control data in RCRAInfo.	ORCR will develop and deliver training.	3rd Quarter FY26

5.	Implement mechanisms to monitor land-use control status at the national level, such as annual reports from RCRAInfo that identify land-use controls that have not been verified at the minimum frequency to ensure they remain operational.	ORCR will develop an approach to monitor the status of land-use controls at the national level using RCRAInfo.	3rd Quarter FY26
6.	Implement business rules to address the identified issues with illogical RCRA Corrective Action Program data in RCRAInfo.	ORCR will implement business rules to address the issues identified in the report.	1st Quarter FY25
7.	Implement a standard format for all regions to use when entering data into Cleanups in My Community.	Region 2 will utilize the automated template so that updated data is provided. Region 3 will update their pages using the automated template which provides updated data. All other regions are currently using the standard template, so they will not need to update their pages.	1st Quarter FY25
8.	Address the discrepancies between the RCRA corrective action facilities listed in the RCRAInfo Web and those listed in Cleanups in My Community.	ORCR will resolve identified discrepancies.	1st Quarter FY25

CONTACT INFORMATION

If there are questions regarding this response, please have your staff contact the OLEM Audit follow-up coordinator, Kecia Thornton at Thornton.Kecia@epa.gov or (202) 566-1913.

ATTACHMENT

Draft Report Technical Comments

cc: Cliff Villa
Rick Kessler
Carolyn Hoskinson
LCRD Corrective Action Branch Managers, Regions 1-10

Appendix B

Distribution

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