



U.S. ENVIRONMENTAL PROTECTION AGENCY

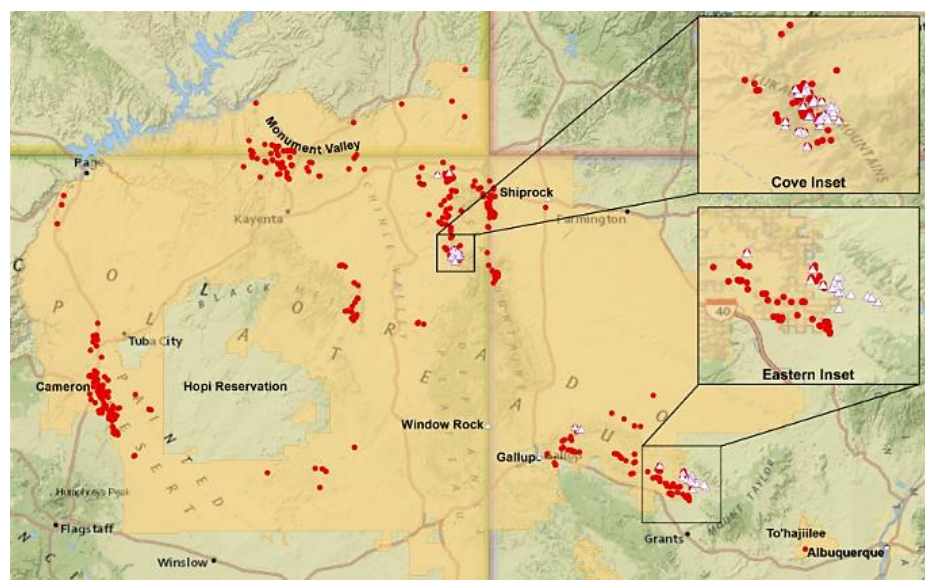
OFFICE OF INSPECTOR GENERAL

## *Cleaning up and revitalizing land*

# EPA Needs to Finish Prioritization and Resource Allocation Methodologies for Abandoned Uranium Mine Sites on or Near Navajo Lands

Report No. 18-P-0233

August 22, 2018



## Report Contributors:

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## Abbreviations

|        |   |
|--------|---|
| ASPECT | Airborne Spectral Photometric Environmental Collection Technology     |
| AUM    | Abandoned uranium mine  |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| EPA    | U.S. Environmental Protection Agency                                  |
| GAO    | U.S. Government Accountability Office                                 |

**Cover Image:** The map represents the Tronox Mines on or near Navajo Nation lands.  
(EPA-generated map)

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# At a Glance

## Why We Did This Review

We conducted this review to determine whether the U.S. Environmental Protection Agency (EPA) had a method for prioritizing cleanup of the approximately 50 abandoned uranium mine (AUM) sites on or near Navajo Nation lands covered under a special account established in 2015 totaling approximately \$1 billion; and whether the EPA has a resource allocation methodology for the special account funds that accounts for estimated cleanup cost, timeframe for cleanup, and scope of cleanup for the 50 sites.

Health effects from uranium exposure can include impacts to autoimmune and reproductive functions, high blood pressure, kidney or lung damage, and bone cancer.

### This report addresses the following:

- *Cleaning up and revitalizing land.*

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## ***EPA Needs to Finish Prioritization and Resource Allocation Methodologies for Abandoned Uranium Mine Sites on or Near Navajo Lands***

### What We Found

The EPA has taken steps to develop a prioritization methodology for cleaning up AUM sites on or near Navajo Nation lands that are part of a 2015 settlement with a chemical company, Tronox Incorporated. In conjunction with Tronox AUM cleanup stakeholders, the EPA has developed a system for identifying immediate risks and, where necessary, has taken the removal actions needed. The EPA has been following the National Contingency Plan for assigning risk to the sites and is gathering the data needed to complete prioritization for all Tronox AUM sites covered by the settlement. The EPA is tracking the estimated cleanup costs, timeframe for cleanup, and scope of cleanup for some of the Tronox AUM sites where work has already been conducted. After the prioritization methodology is developed, the EPA will be able to develop a resource allocation methodology for the Tronox AUM sites based on estimated cleanup costs, timeframe for cleanup and scope of cleanup.

**Site prioritization will aid EPA-initiated actions where there is imminent danger at numerous sites in the same area.**

Regions 6 and 9 have agreed on a timeline to complete the key activities necessary to finalize their prioritization methodology. It is critical that the EPA meet its milestones, including by the end of calendar year 2020, that EPA finalize the prioritization of Tronox AUM sites. Also, by the end of calendar year 2021, the EPA has agreed to complete development and implementation of the resource allocation methodology following the cost analysis of the preferred remedies. The regions' efforts will help result in the effective use of the Tronox special account and will help provide continued protection of human health and the environment.

### Recommendations and Planned Agency Corrective Actions

We recommend that the Region 6 and 9 Regional Administrators complete the necessary removal site evaluations and engineering evaluations/cost analyses; and fully develop and implement prioritization and resource allocation methodologies for the Tronox AUM sites on or near Navajo Nation lands. The agency agreed with the recommendations and corrective actions are pending.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

August 22, 2018

**MEMORANDUM**

**SUBJECT:** EPA Needs to Finish Prioritization and Resource Allocation Methodologies for Abandoned Uranium Mine Sites on or Near Navajo Lands  
Report No. 18-P-0233

**FROM:** Arthur A. Elkins Jr.

A handwritten signature in black ink, appearing to read "Arthur A. Elkins Jr.", is written over the printed name.

**TO:** Anne L. Idsal, Regional Administrator  
Region 6

Mike Stoker, Regional Administrator  
Region 9

This is our report on the subject audit conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency. The project number for this audit was OPE-FY17-0023. This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of the OIG 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.

**Action Required**

In accordance with EPA Manual 2750, your office provided acceptable corrective actions and milestone dates in response to OIG recommendations. All recommendations are resolved and no final response to this report is required. However, if you submit a response, 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.epa.gov/oig](http://www.epa.gov/oig).

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## Purpose

The purpose of this audit was to determine whether the U.S. Environmental Protection Agency (EPA) has a method for prioritizing cleanup of the 50 abandoned uranium mine (AUM) sites<sup>1</sup> on or near Navajo Nation lands covered under a special account established in 2015 totaling approximately \$1 billion; and whether the EPA has a resource allocation methodology for the special account funds that accounts for estimated cleanup costs, timeframe for cleanup, and scope of cleanup for the 50 sites.

## Background

The Navajo Nation covers over 27,000 square miles in portions of three states: Arizona, New Mexico and Utah. There has been widespread uranium mining on Navajo Nation lands, beginning in the early 1900s. Peak uranium mining occurred between the 1940s and 1960s in support of the U.S. government's defense programs. Substantial amounts of land throughout the Navajo Nation were disturbed by surface and underground mining. Most uranium mining activities on Navajo Nation lands ended in 1968. According to the EPA, mines were operational until the 1980s but the legacy of contamination from the AUMs continues.

### ***Tronox Settlement Agreement***



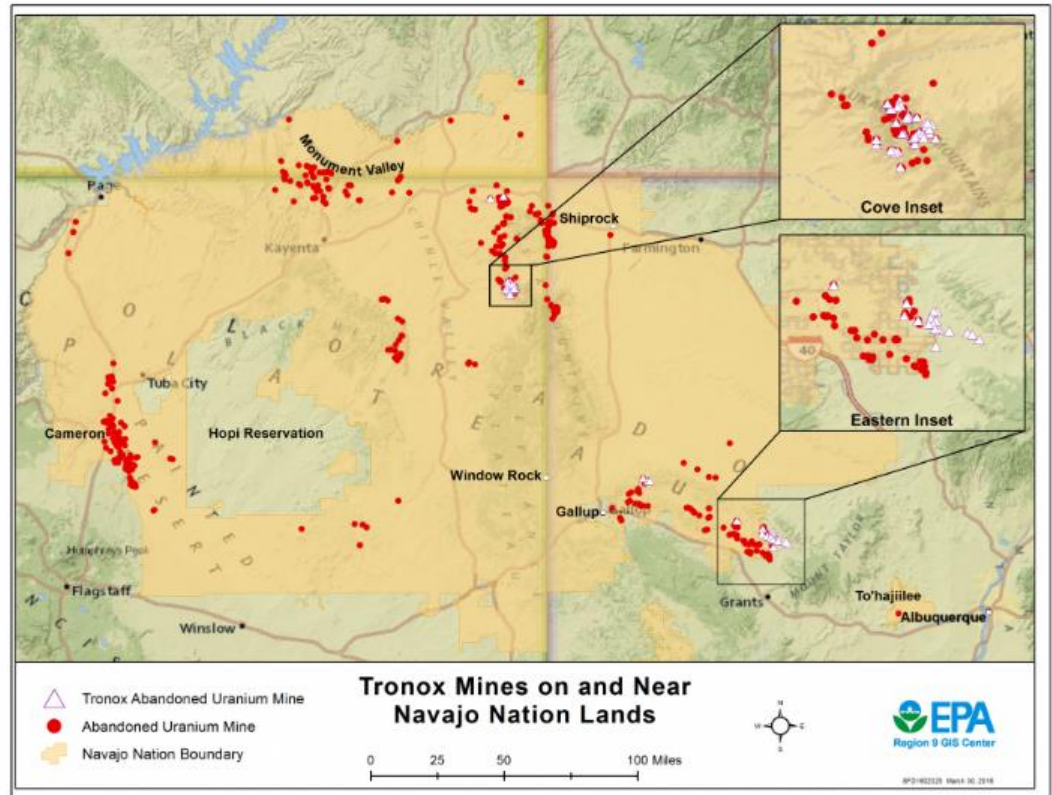
Tronox Mesa V Shaft in Arizona.  
(EPA photo)

On January 21, 2015, the EPA recovered approximately \$1 billion from a chemical company, Tronox Incorporated, in a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) settlement to address its liability for the activity of a predecessor company, Kerr McGee Corporation, which operated approximately 50 mines on or near Navajo Nation lands. The approximately \$1 billion in funds the EPA received for the cleanup at the about 50 Navajo area uranium mines has been deposited into an EPA Superfund special account. In accordance with CERCLA Section 122(b)(3), special accounts are site-specific, interest-bearing sub-accounts housed within the EPA's Hazardous Substance Superfund Trust Fund. Charges to a special account must be consistent

with the terms of the settlement pursuant to which the funds are received. Special account funds may be used for a wide range of site-specific CERCLA response actions.

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<sup>1</sup> Subsequent to our issuance of the notification memorandum, we found that there were over 50 mines included in the settlement.



Source: EPA Region 9.

Tronox special account funds, designated for specified uranium mine sites in or near Navajo Nation territory, can be used to support activities related to the assessment and cleanup at the approximately 50 mines and contamination caused by the mines. Examples of these activities include:

- Inform and involve the community in the CERCLA response.
- Investigate the nature and extent of the contamination in water, soil, sediment and air.
- Install fences to control access and display signs to warn people about dangerous areas.
- Protect cultural and biological resources in the mine areas.
- Construct access roads to the mines for cleanup operations.
- Close mine openings and address other physical hazards.
- Conduct removal and cleanup activities.

### ***Impacts on Human Health and Environment from Uranium Contamination***

Contact with uranium or radiation from AUMs can come from living in a home built with material from a mine or mill site, or from drinking contaminated water. Health effects from uranium exposure can include impacts to autoimmune and reproductive functions, high blood pressure, kidney or lung damage, and bone

cancer. For example, at high concentrations, uranium has a toxic, chemical effect, and people have developed kidney disease drinking highly contaminated water for long periods. In 2001, the Navajo Nation issued a health advisory recommending that people drink water from regulated safe drinking water sources that are tested routinely to ensure their safety.

Uranium contamination can also impact the environment. Mining practices at AUMs often disturbed the soils, thus making them less stable and more susceptible to erosion. Soils disturbed by mining are also likely to support less vegetation, or may support a new species mix due to changes in soil composition. In the air, uranium exists as dust. Very small dust-like particles of uranium fall onto surface water, plant surfaces and soil either by themselves or during rainfall.

### ***Initial Work to Assess Abandoned Uranium Mines***

In 2002, the EPA used its Hazard Ranking System<sup>2</sup> to initially assess the AUM sites based on a limited subset of the locational-distance criteria in the Hazard Ranking System. It does not include the complete set of criteria and factors built into the full Hazard Ranking System model. The scoring is not intended to identify actual risks, but rather to identify and prioritize areas for future investigation and response decisions. The EPA conducted its work using the



An EPA contractor and college interns collecting water and sediment samples in the Arizona Cove Wash in April 2017. (EPA photo)

National Contingency Plan as its criteria. The National Contingency Plan provides the framework for the EPA to address cleanup at the AUM sites, take actions at sites where there is imminent danger, and gather the data needed to complete prioritization of all Tronox sites.

In June 2005, the Navajo AUM Project<sup>3</sup> initiated a series of reports to document preliminary scoring results for AUMs in the six AUM regions in the Navajo Nation. For the first 5 years, the agencies involved focused on collecting data; identifying the most imminent risks; and addressing contaminated structures, water supplies, mills, dumps and mines

with the highest levels of radiation. During that time, more information was discovered about the scope of the problem and the work needed to be performed. A second 5-year plan, completed in 2013, outlined a multi-agency and multidisciplinary approach to assessing the sites to aid in the coordination of addressing cleanup activities at the sites.

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<sup>2</sup> The Hazard Ranking System is the principal mechanism that the EPA uses to place uncontrolled waste sites on the National Priorities List. It is a numerically based screening system that uses information from initial, limited investigations to assess the relative potential of sites to pose a threat to human health or the environment.

<sup>3</sup> The primary purpose of the Navajo AUM Project is to identify AUMs, potential exposures, and recommend methods to reduce exposure from AUMs on the Navajo Nation. The agencies involved are the EPA, Bureau of Indian Affairs, Nuclear Regulatory Commission, Department of Energy, and Indian Health Service.



## Prior Report

In May 2014, the U.S. Government Accountability Office (GAO) issued a report titled *Uranium Contamination: Overall Scope, Time Frame, and Cost Information Is Needed for Contamination Cleanup on the Navajo Reservation* ([GAO-14-323](#)). The report focused on findings related to the 2008 5-year plan. The report indicated that six of the plan's eight objectives were met. The GAO concluded that federal agencies had not identified the full scope of remaining work, timeframes or costs to fully address uranium contamination on or near Navajo lands. The GAO made four recommendations, including that the EPA Administrator; Secretaries of Energy, Interior, and Health and Human Services; and Chairman of the Nuclear Regulatory Commission develop a coordinated outreach strategy to include in the 2014 5-year plan and take action to incorporate key practices in their collaborative effort (including defining and agreeing on the agencies' respective roles and responsibilities). The federal agencies agreed with the recommendation and incorporated key practices in the 2014 5-year plan.

## Responsible Offices

EPA Region 6 (which covers New Mexico) and Region 9 (which covers Arizona) are responsible for addressing actions related to the cleanup of the Tronox Settlement-funded abandoned uranium mine sites, with Region 9 acting as the lead regional contact to Navajo Nation. None of the sites in our review were in Utah, so we did not include Region 8 in our review. At headquarters, the Office of Land and Emergency Management, Office of Enforcement and Compliance Assurance, Office of the Chief Financial Officer, and Office of International and Tribal Affairs have roles in the oversight of the AUM mines and EPA special account funds.

## Scope and Methodology

We conducted our audit from December 2017 to June 2018. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

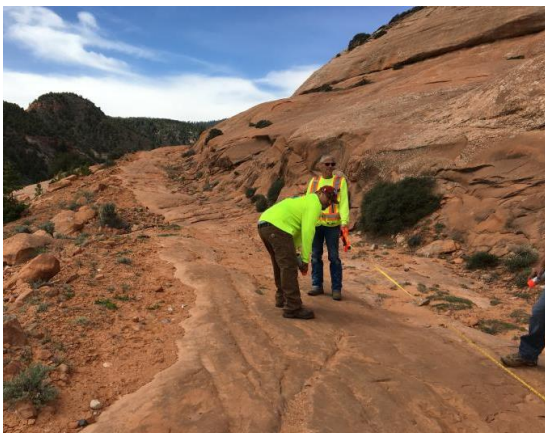
We analyzed documentation on AUMs and special accounts from EPA websites and those provided by Regions 6 and 9, such as the 5-year plans, Tronox AUM Proposed Mine Evaluation Risk Factors, Tronox Settlement Agreement, Tronox financial reports, and funding memos. We interviewed Regions 6 and 9 management and staff to understand the EPA's process for prioritizing Tronox Settlement-funded AUM sites and to determine the resource allocation methodology used for these sites. We interviewed members of the Navajo Nation to gain a stakeholder perspective.

## Results

The EPA does not yet have a prioritization methodology for cleaning up the Tronox AUM sites on or near Navajo Nation lands, but is developing one. In conjunction with stakeholders<sup>4</sup> involved in AUM cleanups, the EPA has developed a system for identifying immediate risks and, where necessary, has taken the removal actions needed. The EPA has been following the National Contingency Plan for assigning risk to the sites and is gathering the data needed to complete prioritization for all Tronox sites. The EPA is tracking the estimated cleanup costs, timeframe for cleanup, and scope of cleanup for the Tronox AUM sites where cleanup work has already been conducted. After the prioritization methodology is developed, the EPA will be able to develop a resource allocation methodology for the Tronox AUM sites based on estimated cleanup costs, timeframe for cleanup and scope of cleanup.

### ***EPA Is Developing a Prioritization Methodology for Tronox AUM Sites***

The EPA does not have a formal prioritization methodology for the cleanup of the Tronox AUM sites. According to EPA officials, they have been gathering the



EPA Region 9 staff in Arizona Cove and Red Valley areas in August 2017 working to determine most accessible roads to conduct removal site evaluations. (EPA photo)

necessary data and following the steps outlined in the National Contingency Plan to assess and eventually prioritize the Tronox sites. The EPA has implemented a “worst first” approach while proceeding through the development of the cleanup process. Prior to the Tronox settlement, the EPA used Airborne Spectral Photometric Environmental Collection Technology (ASPECT)<sup>5</sup> to gather information about contamination of the large affected area. The EPA was able to identify sites that were of higher risk to human health and the environment. The EPA initiated actions at sites where there was imminent danger.

In an effort to aide in prioritization prior to the Tronox settlement agreement, the EPA has been identifying site risk factors and grouping mines to create a site ranking. The first procedure the agency used for prioritizing the Tronox mines was the Mine Category Assessment Protocol,<sup>6</sup> which according to the EPA, integrated information from prior scans by EPA and its contractors as well as the ASPECT over-flights and included criteria such as proximity, potential

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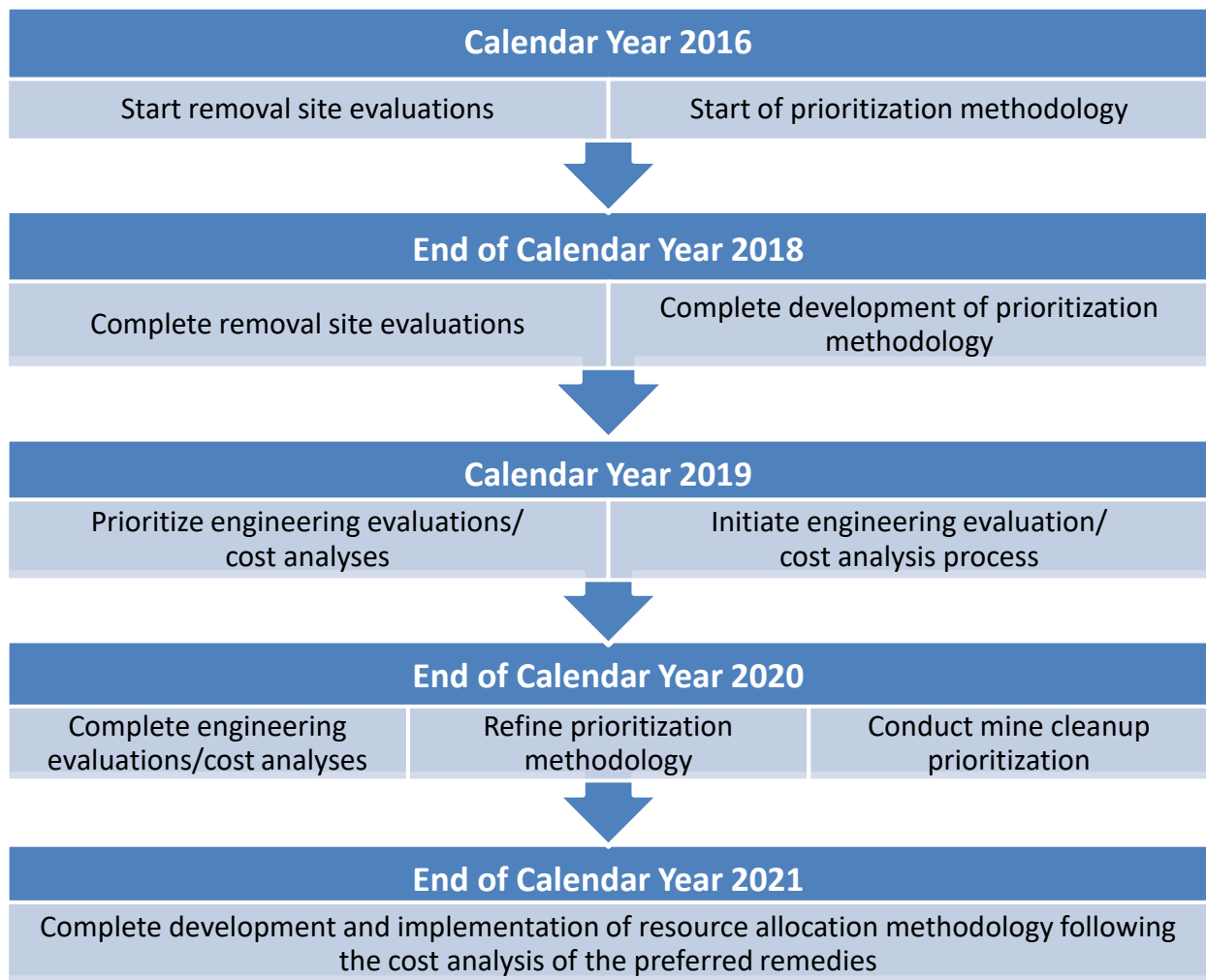
<sup>4</sup> Stakeholders include the Navajo Nation; states of Arizona and New Mexico; other federal agencies that are part of a national federal abandoned uranium mines cleanup group, such as the EPA, Department of the Interior and Department of Energy; and the public.

<sup>5</sup> ASPECT gamma survey collected data on uranium radioactivity levels in survey areas surrounding the AUMs.

<sup>6</sup> The Mine Category Assessment Protocol is used to develop a ranking system for prioritizing Removal Site Evaluations (see next footnote for definition).

human exposure and other risk factors. Following the protocol, the EPA is currently conducting the removal site evaluation<sup>7</sup> at the Tronox sites, after which the engineering evaluation/cost analysis<sup>8</sup> will be developed. Figure 1 provides a timeline of key activities during the next 4 years.

**Figure 1: Timeline for completion of prioritization and resource allocation methodologies**



Source: OIG image derived from EPA Region 9 data.

The prioritization methodology in development is being created with input from the Tronox stakeholders<sup>9</sup> and the Federal AUM Workgroup. Throughout its efforts in assessing the AUM sites and developing its plan for cleaning up the sites, the EPA has consulted with the Navajo Nation, consistent with EPA's 2011

<sup>7</sup> Removal site evaluations identify the source and nature of the release, evaluate the magnitude of the threat, and determine necessity of removal actions.

<sup>8</sup> Engineering evaluation/cost analyses analyze the ability to implement, and the cost and effectiveness, of various cleanup actions based on removal site evaluation data.

<sup>9</sup> Stakeholders include the Navajo Nation; state of New Mexico; and other federal agencies that are part of a national federal abandoned uranium mines cleanup group, such as the Department of the Interior and Department of Energy.

Policy on Consultation and Coordination with Indian Tribes. The EPA indicated it does not envision the final prioritization methodology being a list of sites in a numerical order but rather groupings of sites prioritized by highest to lowest risk.

***EPA Will Not Have a Resource Allocation Methodology for All Tronox Special Account Funds Until Prioritization Methodology Is Complete***

The EPA has not completed a resource allocation methodology for all of the Tronox AUM sites that accounts for estimated cleanup costs, timeframe for cleanup, and scope of cleanup. EPA officials said that they will not be able to fully develop this resource allocation methodology until the site prioritization is complete. However, the EPA is currently tracking the estimated cleanup costs, timeframe for cleanup, and scope of cleanup for the Tronox AUM sites where cleanup work has already been completed.

Regions 6 and 9 established a series of sub-accounts for individual sites/projects within the overall umbrella account that will be used to address the Navajo Area Uranium Mines. In April 2017, the EPA developed a “Tronox Navajo Area Uranium Mines Project Implementation Plan, Accounting Strategy” to manage, track, plan and communicate the use of the funds. EPA Region 6 uses a special account structure similar to EPA Region 9 to address the Tronox Navajo AUM sites in New Mexico. The accounts are tracked in the regions and headquarters through the Compass database and the Superfund Cost Recovery Package Imaging and On-Line System (known as “SCORPIOS”). The data obtained in those systems is presented in the EPA’s quarterly and annual reports.

The EPA (Regions 6 and 9), Navajo Nation, and New Mexico meet several times a year to discuss prioritizing response actions and the funding of projects at each Tronox AUM site. The parties develop a coordinated prioritized project list along with estimated funding requirements for the following calendar year. Individual project lists are tracked in an annual “Approval and Annual Funding Projections for Implementation of Tronox Settlement Memo.” Once projects are approved, a special account name/number is created for that project to track expenditures. Special account funds have been and will continue to be used for future cleanup actions needed to address sites that pose an imminent and substantial endangerment.

According to the EPA, the prioritization methodology is being developed to address all of the Tronox AUM sites. The EPA believes that prioritizations will be determined when the engineering evaluations/cost analyses are complete. The goals of the engineering evaluations/cost analyses are to identify the objectives of the cleanup and analyze the various alternatives that may be used to satisfy the objectives for cost effectiveness, and their ability to be implemented. Therefore, the EPA cannot provide a complete resource allocation methodology for all of the Tronox sites until completion of removal site evaluation and engineering evaluations/cost analyses.

## **Conclusion**

The agency has taken appropriate steps to assess sites, take removal actions when needed, and gather the data necessary to complete its assessments and develop its prioritization methodology. Regions 6 and 9 have agreed on a timeline to complete the key activities necessary to finalize their prioritization methodology. It is critical that the EPA meet its milestones and finalize the prioritization of Tronox AUM sites to use the Tronox special account effectively and provide continued protection of human health and the environment.

## **Recommendations**

We recommend that the EPA Regional Administrators, Regions 6 and 9:

1. Complete the necessary removal site evaluations and engineering evaluations/cost analyses.
2. Fully develop and implement prioritization and resource allocation methodologies for the Tronox abandoned uranium mine sites on or near Navajo Nation lands.

## **Agency Response and OIG Evaluation**

EPA Regions 6 and 9 agreed with the report's recommendations and offered technical comments in a response dated July 16, 2018. On July 30, 2018, the agency provided a revised email response to further address Recommendation 2. We revised the report as appropriate, based on the technical comments. In response to the recommendations, the regions provided acceptable corrective actions and planned completion dates, with corrective actions pending. Appendix A contains the agency's response to the discussion document, including the revised response.

# **Status of Recommendations and Potential Monetary Benefits**

## RECOMMENDATIONS

| Rec. No. | Page No. | Subject  | Status <sup>1</sup> | Action Official                             | Planned Completion Date | Potential Monetary Benefits (in \$000s) |
|----------|----------|--|---------------------|---|-------------------------|---|
| 1        | 8        | Complete the necessary removal site evaluations and engineering evaluations/cost analyses.   | R                   | Regional Administrators,<br>Regions 6 and 9 | 12/31/20                |   |
| 2        | 8        | Fully develop and implement prioritization and resource allocation methodologies for the Tronox abandoned uranium mine sites on or near Navajo Nation lands. | R                   | Regional Administrators,<br>Regions 6 and 9 | 12/31/21                |   |

<sup>1</sup> C = Corrective action completed.

R = Recommendation resolved with corrective action pending.

U = Recommendation unresolved with resolution efforts in progress.

## Agency Response to Discussion Document



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY


REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS TX 75202-2733


REGION IX  
75 HAWTHORNE STREET  
SAN FRANCISCO, CA 94105

JUL 16 2018

### MEMORANDUM

**SUBJECT:** Response to Office of Inspector General Discussion Document, "EPA Is Developing a Methodology to Prioritize Cleaning Up Abandoned Uranium Mine Sites on or Near Navajo Nation Lands," (Assignment # OPE-FY17-0023) dated June 15, 2018

**FROM:**  Anne Idsal  
Regional Administrator  
Region 6

 Michael Stoker  
Regional Administrator  
Region 9

**TO:** Kevin Christensen  
Assistant Inspector General  
Office of Audit and Evaluation  
Office of Inspector General

Thank you for the opportunity to respond to the issues and recommendations in the subject audit report. Following is a summary of the United States Environmental Protection Agency, Region 6 and 9's overall position, along with our position on the two report recommendations. For the report recommendations, we provide corrective actions and estimated completion dates to the extent possible. We also provide Region 6 and 9's detailed comments with respect to certain factual matters covered in the discussion document and a copy of comments from EPA's Office of Site Remediation Enforcement.

I. AGENCY’S OVERALL POSITION

The U.S. Environmental Protection Agency, Regions 6 and 9, agree with the recommendations in the report.

II. AGENCY’S RESPONSE TO REPORT RECOMMENDATIONS

Agreements

| No. | Recommendation   | High-level Intended Corrective Actions  | Estimated Completion |
|-----|--|---|----------------------|
| 1.  | Complete the necessary removal site evaluations and engineering evaluations/cost analyses.   | 1.1 Complete removal site evaluations (RSEs).   | December 31, 2018    |
|     |  | 1.2 Complete engineering evaluations/cost analyses.   | December 31, 2020    |
| 2.  | Fully develop and implement prioritization and resource allocation methodologies for the Tronox abandoned uranium mine sites on or near Navajo Nation lands. | 1.1 Complete development of prioritization methodology.   | December 31, 2018    |
|     |  | 1.2 Refine prioritization methodology.  | December 31, 2020    |
|     |  | 1.3 Conduct mine cleanup prioritization.  | December 31, 2020    |
|     |  | 1.4 Complete development and implementation of resource allocation methodology following the cost analysis of the preferred remedies. | December 31, 2021    |

**OIG Note:** On July 30, 2018, action officials for Regions 6 and 9 provided a revised response to report Recommendation 2 by providing the above milestone highlighted in blue text and annotated as corrective action 1.4 with the corresponding estimated completion date.

Note: Regions 6 and 9 intend to follow through with our commitments and timeline (as we detailed above). However, completion dates are subject to available resources (staffing). As the OIG found (see <https://www.epa.gov/office-inspector-general/report-epas-distribution-superfund-human-resources-does-not-support-current>), both Regions 6 and 9 are operating at a structural deficit with regard to FTE. This lack of adequate resources could affect the actual completion dates.



## Disagreements

The U.S. Environmental Protection Agency, Regions 6 and 9, have no disagreements.

### III. DETAILED COMMENTS FROM REGIONS 6 AND 9

1. On Page 1, first paragraph, the draft indicates “On January 21, 2015, the EPA recovered almost \$1 billion from Tronox Incorporated.” To clarify the settlement history, there have been two separate settlements in the Tronox Bankruptcy that provided funding for the “Navajo Area Uranium Mines” (“NAUM”) (collectively “the Settlements”). The first settlement was with Tronox, Incorporated and provided approximately \$12 million. The second settlement was with Anadarko Petroleum Corporation, resolved fraudulent conveyance claims against Kerr-Mc-Gee Corporation and provided approximately \$890 million. Each of the Settlements also provided separate funding for the Quivira Mine Site, the largest of the Tronox uranium mines on the Navajo Nation (approximately \$1.2 million and \$89 million respectively). In total, the two settlements provided approximately \$990 million to address uranium mine sites formerly operated by Kerr McGee Corporation on and near the Navajo Nation.
2. On Page 1, Charles Huskon No. 7 Mine (EPA photo). This is not a Tronox mine. Attached please find a photo of the Tronox Mesa V Shaft and waste pile for possible use in the report.
3. On Page 1, first paragraph, the draft indicates “50 abandoned uranium mine sites.” There are currently 54 NAUMs funded by the Settlements. As noted above, funding for the Quivira Mine Site is completely separate and cannot be prioritized *vis a vis* the other NAUM sites.
4. On page 1, the second paragraph should reflect that the mines were operational until the 1980s.
5. On page 2, the second sentence should clarify that “Tronox Special Account funds [designated for specified uranium mine sites in or near Navajo Nation territory] can be used to support activities related to the assessment and cleanup at the approximately 54 mines and contamination caused by the mines.”
6. On Page 2, Tronox Settlement Agreements bullet #2, because contaminants other than radiation will be evaluated, we recommend the following change to bullet #2:
  - *Investigate the nature and extent of the contamination in water, soil, sediment and air.*
7. On Page 2, second paragraph, it should be noted that of the 54 NAUM sites covered by the funding in the Tronox Settlements, 20 are near the Navajo Nation on private land within New Mexico.

8. On Page 2, Impacts on Human Health and Environment from Uranium Contamination, the Regions recommend changing “unregulated water” to “contaminated water” for clarification.
9. On Page 5, first paragraph, the draft indicates “In conjunction with AUM cleanup stakeholders, the EPA has developed a system for identifying immediate risks and, where necessary, has taken the removal actions needed.” For clarification, it should read “In conjunction with stakeholders involved in AUM cleanups nationwide, the EPA has developed a system for identifying immediate risks and, where necessary, has taken the removal actions needed.”
10. On Page 5, EPA photo caption states “EPA Region 9 staff assessing Tronox mines in the Cove and Red Valley areas in August 2017 to determine most assessable roads to conduct removal site evaluations”. The caption should read “The EPA Region 9 staff is assessing Tronox mine roads in the Cove and Red Valley areas in August 2017 to determine most accessible roads to conduct removal site evaluations”.....
11. On Page 5, third paragraph – first sentence should include that ASPECT was used for prioritization:
 

*In an effort to aide in prioritization prior to the Tronox settlement agreement, the EPA has been identifying site risk factors and grouping mines to create a site ranking. The first procedure the agency used for prioritizing the Tronox mines was the Mine Category Assessment Protocol,<sup>5</sup> which integrated information from prior scans by EPA and its contractors as well as the ASPECT over-flights and included criteria such as.....*
12. On Page 6, second paragraph, Federal Uranium Mines Commission should be replaced with Federal AUM Workgroup.
13. On Page 7, third paragraph – the first sentence should include acknowledge that the prioritization methodology is being developed through collaboration and outreach to Navajo Nation and the State of New Mexico.
14. General Footnote Comment – stakeholders should include the public.

## *Distribution*

The Administrator  
Deputy Administrator  
Chief of Staff  
Special Advisor, Office of the Administrator  
Assistant Administrator for Enforcement and Compliance Assurance  
Assistant Administrator for Land and Emergency Management  
Assistant Administrator for International and Tribal Affairs  
Agency Follow-Up Official (the CFO)  
Agency Follow-Up Coordinator  
General Counsel  
Associate Administrator for Congressional and Intergovernmental Relations  
Associate Administrator for Public Affairs  
Regional Administrator, Region 6  
Regional Administrator, Region 9  
Director, Office of Continuous Operations, Office of the Administrator  
Principal Deputy Assistant Administrator for Enforcement and Compliance Assurance  
Deputy Assistant Administrator for Enforcement and Compliance Assurance  
Deputy Assistant Administrator for International and Tribal Affairs  
Deputy Regional Administrator, Region 6  
Deputy Regional Administrator, Region 9  
Director, American Indian Environmental Office, Office of International and Tribal Affairs  
Audit Follow-Up Coordinator, Office of the Administrator  
Audit Follow-Up Coordinator, Office of Enforcement and Compliance Assurance  
Audit Follow-Up Coordinator, Office of International and Tribal Affairs  
Audit Follow-Up Coordinator, Region 6  
Audit Follow-Up Coordinator, Region 9