



U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF INSPECTOR GENERAL

Follow-Up Report: EPA Improves Management of Its Radiation Monitoring System

Report No. 14-P-0321

July 22, 2014



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http://www.epa.gov/oig/reports/2009/20090127-09-P-0087_glance.pdf

http://www.epa.gov/oig/reports/2006/20060426-2006-P-00022_glance.pdf

Report Contributors:

Eric Lewis
Dwayne Crawford
Christine Baughman
Andre von Hoyer II
Rodney Rice

Abbreviations

EPA	U.S. Environmental Protection Agency
MATS	Management Audit Tracking System
NAREL	National Analytical Radiation Environmental Laboratory
OAR	Office of Air and Radiation
OARM	Office of Administration and Resources Management
OIG	Office of Inspector General
RadNet	Radiation monitoring system

Cover photo: A stationary air monitor located in Montgomery, Alabama. (EPA OIG photo)

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**U.S. Environmental Protection Agency
Office of Inspector General**

14-P-0321
July 22, 2014

At a Glance

Why We Did This Review

We performed this follow-up review to assess actions taken by the U.S. Environmental Protection Agency (EPA) to address the recommendations in the Office of Inspector General (OIG) Report No. 12-P-0417, *Weaknesses in EPA's Management of the Radiation Network System Demand Attention*, issued April 19, 2012. Our work focused on actions that the EPA said were completed as of January 10, 2014. Specifically, the EPA reported that it had completed seven of the eight OIG recommendations from our 2012 report.

The EPA's nationwide radiation monitoring system (RadNet) is designed to measure ambient levels of radiation in the environment and large-scale atmospheric releases of radiation. The RadNet includes, among other things, a network of stationary air monitors that send near-real-time measurements of radiation to an EPA national laboratory.

This report addresses the following EPA goal or cross-agency strategy:

- *Addressing climate change and improving air quality.*

For further information, contact our public affairs office at (202) 566-2391.

The full report is at:
www.epa.gov/oig/reports/2014/20140722-14-P-0321.pdf

Follow-Up Report: EPA Improves Management of Its Radiation Monitoring System

What We Found

Responsible EPA offices completed corrective actions on all seven recommendations we reviewed. As a result of the completed corrective actions to date, the stationary air-monitoring network increased in both coverage and effectiveness.

RadNet improvements have increased the EPA's ability to assess radioactive threats to the public and the environment.

Through its actions, the EPA increased the number of air monitors installed from 124 to 132, and the agency has eight additional monitors available for installation. Based on recent weekly status reports, an average of 92.9 percent of installed monitors are operating. This is an improvement from the 80 percent of installed monitors operating in March 2011.

As of the date we started our review, not all of the corrective actions completed by the EPA were recorded in its official system for tracking corrective actions. However, as of April 22, 2014, the EPA completed all required actions and properly entered the data into its official tracking system. We were told that the completion of corrective actions for the remaining recommendation (recommendation 8), involving the tracking of the installation of RadNet monitors, is scheduled for September 2014.

EPA officials reviewed a draft of this report and informed the OIG that they had no issues with the findings and thus no comments.



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

THE INSPECTOR GENERAL

July 22, 2014

MEMORANDUM

SUBJECT: Follow-Up Report: EPA Improves Management of Its Radiation Monitoring System
Report No. 14-P-0321

FROM: Arthur A. Elkins Jr.

A handwritten signature in black ink that reads "Arthur A. Elkins Jr."

TO: Janet McCabe, Acting Assistant Administrator
Office of Air and Radiation

Craig E. Hooks, Assistant Administrator
Office of Administration and Resources Management

This is our report on the subject review conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This report contains findings that describe the problems the OIG has identified and corrective actions taken by the EPA. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. However, EPA officials reviewed a draft of this report and informed the OIG that they had no issues with the findings and thus no comments.

Because this report contains no recommendations, you are not required to respond to this report and it will be closed upon issuance. However, if you submit a response, it will be posted on the OIG's public website, along with our memorandum commenting on your response. Your response should be provided as an Adobe PDF file that complies with the accessibility requirements of Section 508 of the Rehabilitation Act of 1973, as amended. The final response should not contain data that you do not want to be released to the public; if your response contains such data, you should identify the data for redaction or removal along with corresponding justification.

We will post this report to our website at <http://www.epa.gov/oig>.

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Purpose

We reviewed actions taken by the U.S. Environmental Protection Agency (EPA) to address the recommendations in the Office of Inspector General (OIG) Report No. 12-P-0417, *Weaknesses in EPA's Management of the Radiation Network System Demand Attention*, issued April 19, 2012. We reviewed the status of the corrective actions for seven recommendations for which corrective actions were listed as completed in the EPA's Management Audit Tracking System (MATS) as of January 10, 2014. The Assistant Administrator for the Office of Air and Radiation (OAR) and the Assistant Administrator for the Office of Administration and Resources Management (OARM) were the action officials for these recommendations.

Background

The EPA's nationwide radiation monitoring system (RadNet) is designed to measure ambient levels of radiation in the environment. The RadNet also measures large-scale atmospheric releases of radiation impacting large parts of the country and major population centers due to: large nuclear facility incidents or accidents, large foreign radiological incidents or accidents, radiological dispersion devices resulting in widely impacted areas (e.g., multi-county or larger), and nuclear weapon detonations. The RadNet regularly samples the nation's air, precipitation, drinking water and pasteurized milk for a variety of radionuclides and radiation types.

The RadNet system is managed by the National Analytical Radiation Environmental Laboratory (NAREL). The NAREL is part of the EPA's Office of Radiation and Indoor Air, which is within the OAR. According to its website, the NAREL is a comprehensive environmental laboratory committed to developing and applying the most advanced methods for measuring environmental radioactivity and evaluating the risk to the public.

This report, like its April 2012 predecessor, addresses the air-monitoring portion of the RadNet. To sample the air, the NAREL established a network that currently has 132 stationary air monitors. The EPA's December 2004 "Critical Infrastructure and Key Resources Protection Plan" identified the RadNet monitors as critical infrastructure. Air monitors are located in the District of Columbia, Puerto Rico, and every state except South Carolina. Some states have more than one monitor. Figure 1 shows the locations of these monitors. Every hour each stationary monitor sends near-real-time measurements of beta and gamma radiation to the NAREL. Filters on the air monitors capture particles from the air (airborne particulates). Monitor operators collect the filters and send them to the NAREL for testing.

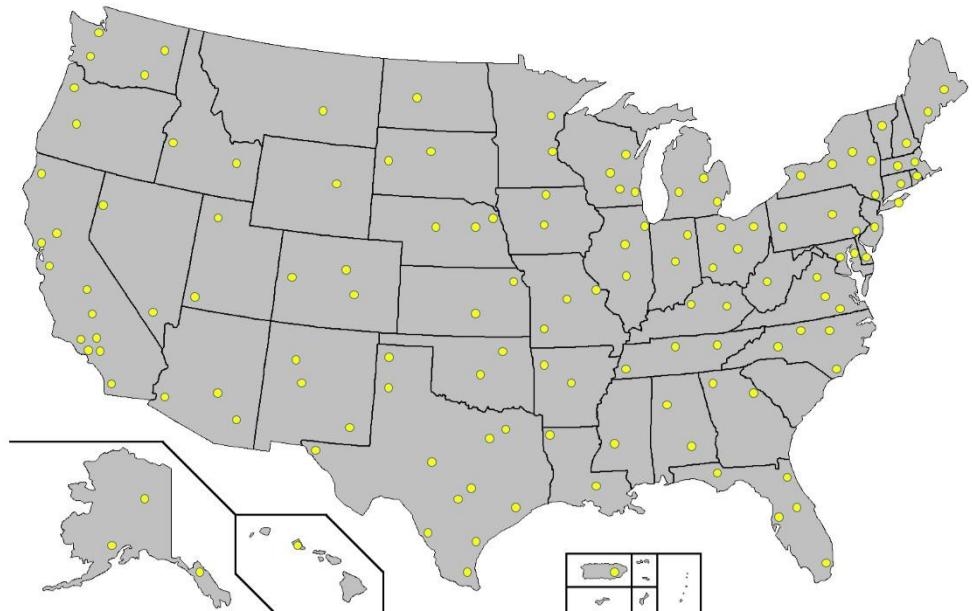


Figure 1: Map showing the current location of RadNet air monitors

Source: OIG analysis based on monitor locations provided by NAREL staff.

The EPA OIG's April 2012 audit report sought to determine whether the agency effectively implemented corrective actions to address the findings and recommendations from the previous EPA OIG Report No. 09-P-0087, *EPA Plans for Managing Counter Terrorism/Emergency Response Equipment and Protecting Critical Assets Not Fully Implemented*, issued January 27, 2009. The EPA OIG's April 2012 report found that broken RadNet monitors and delayed filter changes impaired this critical infrastructure asset.

The EPA's management of the RadNet as a low priority, parts shortages, and insufficient contract oversight contributed to extensive delays fixing broken monitors. On March 11, 2011, at the time of the Fukushima, Japan, nuclear incident, 25 of the 124 RadNet monitors installed (20 percent) were out of service an average of 130 days. The service contractor completed repairs on all monitors by April 8, 2011. In addition, broken RadNet monitors and relaxed quality controls led to untimely filter changes. Six of the 12 RadNet monitors that the OIG sampled for its 2012 report had gone over 8 weeks in a 1-year period without a filter change. This is significant since out-of-service monitors and unchanged filters may reduce the quality and availability of critical data needed to assess radioactive threats to the public and the environment.

According to EPA Manual 2750, *Audit Management Procedures*, EPA staff (i.e., the responsible office audit follow-up coordinator) tracks agency progress on the corrective actions resulting from OIG recommendations and updates the agency's official audit-tracking system, or MATS, accordingly. When the responsible EPA action official completes corrective actions, the action official prepares a certification memorandum certifying that the actions were completed. Based on the certification memorandum, the audit follow-up coordinator from the responsible office enters the final action date in the MATS.

Scope and Methodology

We performed our review from January through June 2014. 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 interviewed EPA staff in the NAREL, OAR and OARM's Office of Acquisition Management who were involved in implementing corrective actions for the seven recommendations we reviewed. We also reviewed various guidance documents, including EPA Manual 2750. In addition, we visited the NAREL in Montgomery, Alabama, to observe air monitors and other facility operations.

We did not review corrective actions for one recommendation (recommendation 8) made in the EPA OIG's April 2012 report because the corrective actions were not completed when we started our review. This recommendation involved tracking the installation of RadNet monitors against a revised schedule. We were told in May 2014 by the OAR Audit Follow-Up Coordinator that the completion of corrective actions for recommendation 8 is scheduled for September 2014.

Results of Review

The OAR and the OARM completed and recorded corrective actions on seven recommendations made in the EPA OIG's April 2012 report. Through these actions, the EPA increased the number of the RadNet fixed air monitors installed, which expanded system coverage. These actions also increased the RadNet system's operational readiness.

Corrective Actions Are Now Completed and Recorded in the Official Agency Tracking System

Both the OAR and OARM completed corrective actions for the seven recommendations we reviewed, as summarized in table 1. Not all of the actions were reflected in the MATS as of January 10, 2014. However, during the course of our follow-up review EPA staff revised the MATS to include the most recent actions.

With two exceptions, as of January 10, 2014, the MATS properly reflected the corrective actions taken at that time. As shown in table 1, the MATS was not current for actions taken on OIG recommendations 3 and 7. Regarding recommendation 3, the MATS did not reflect that the NAREL established a metric of 200 hours for changing the filters in the air monitors. To prevent blower motor damage, the RadNet air monitors are typically programmed to stop after

200 hours of operation should the blower not be able to maintain air flow. Maintaining a set flow rate during sampling is a desirable operating goal. If a set air flow is not maintained, less material is collected during the sampling interval. Air flow issues may adversely affect the collection efficiency of the filter. At our request, the NAREL documented the 200-hour limit in a quality assurance project plan for the RadNet. Staff from the OAR revised the MATS in April 2014 to reflect the 200-hour limit.

Regarding recommendation 7, the MATS incorrectly identified May 2012 as the date for the performance evaluation of delivery order three under contract EP-W-07-076. The OARM certification that this recommendation was complete was also incorrect, since the April 2013 date it cited was for an evaluation that was withdrawn shortly afterwards. The correct date for completing the performance evaluation of delivery order three is April 2014. Staff from the OARM revised the MATS in April 2014 to reflect recent corrective actions.

Table 1: Summary of actions completed and reported

Recommendation	Did the action officials complete appropriate corrective actions?	Were corrective actions properly reported in MATS?
1. Establish and enforce written expectations for RadNet operational readiness commensurate with its role in and importance to EPA's mission.	Yes	Yes
2. Implement metrics for RadNet operational readiness to be reviewed daily by NAREL, and periodically by OAR (at least monthly) and by the Deputy Administrator (as needed).	Yes	Yes
3. Direct that NAREL improve planning and management for RadNet.	Yes	No
4. Require follow-on RadNet contracts to include incentives/disincentives and a requirement for monthly progress reports.	Yes	Yes
5. Require the contracting officer and contracting officer representative to formally evaluate RadNet contractors' performance on an annual basis and enter information into Past Performance Information Retrieval System through Contractor Performance Assessment Reporting System.	Yes	Yes
6. Determine whether domestic contract options are available for crucial repair parts that are identified as only being available from a foreign subcontractor.	Yes	Yes
7. Review the information in MATS for the prior audit and ensure it is accurate and current.	Yes	No

Source: OIG analysis.

EPA Actions on OIG Recommendations Resulted in Expanded and Increased RadNet Operational Readiness

Corrective actions taken by the EPA in response to our recommendations have increased the availability of critical data needed to assess radioactive threats to the public and the environment. There are more air monitors in the network now and a greater percentage of the total monitors are operating properly. Table 2 compares some key operational factors from the prior report to the current situation.

Table 2: Comparison of RadNet operational factors before and after corrective actions

Operational factor	EPA OIG April 2012 report	After corrective actions on 2012 recommendations
Number of stationary air monitors in RadNet.	124 monitors	132 monitors
Percent of stationary monitors operating (i.e., operational readiness).	80% (on 3/11/2011)	92.9% (average of weekly reports for a 73-week period)
Number of stationary monitors not operating for at least 14 days.	24 monitors (on 3/11/2011)	4.1 monitors (average of weekly reports for a 73-week period)
For 12 randomly selected stationary monitors, number of filters analyzed during a 1-year period.	728 (5/1/2010 – 4/30/2011)	929 (1/1/2013 – 12/31/2013)
For 12 randomly selected stationary monitors, longest number of days between filter changes.	339 days (5/1/2010 – 4/30/2011)	46 days (1/1/2013 – 12/31/2013)

Source: OIG analysis.

Since the EPA OIG's April 2012 report, there are a larger number of installed monitors in the network—132 monitors instead of 124. In addition, the NAREL has eight more air monitors available for installation, which will bring the network total up to 140 monitors. Locations in Paducah, Kentucky, and Columbia, South Carolina, have been selected for two of the eight additional monitors; the locations for the other six have not yet been decided.

Furthermore, the NAREL has increased the RadNet's operational readiness. Our analysis of weekly status reports provided by the NAREL covering a 73-week period ending with the week of February 17, 2014, showed that an average of 92.9 percent of the air monitors were operational, up from 80 percent in March 2011. For selected monitors over a 1-year period, the length of time that individual monitors were not operating had been reduced, as evidenced by the reduction in the longest number of days between filter changes. Similarly, the operators sent more air filters from these monitors to be analyzed by the NAREL.

Conclusion

The OAR and the OARM completed corrective actions on the recommendations reviewed from EPA OIG Report No. 12-P-0417, and have now properly recorded their efforts in the MATS. As a result of these efforts, the stationary air-monitoring network increased its coverage and effectiveness. In addition, completing the corrective actions increased the EPA's ability to assess radioactive threats to the public and the environment.

Agency Response and OIG Evaluation

On June 24, 2014, the OAR and OARM responded that they appreciated the OIG's efforts to assess whether the EPA is successfully addressing the recommendations in the OIG Report No. 12-P-0417 issued in April 2012. The OAR and OARM stated that they reviewed the draft report and had no further comment. Since the OAR and OARM completed corrective actions on the recommendations we reviewed and have now properly recorded their efforts in MATS, this final report is closed upon issuance.

Appendix A

Distribution

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