

Testing in Response to Environmental Disasters A Laboratory Perspective

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The Four Stages

1

Determining the nature of the problem

2

Determining the severity and extent of contamination

3

Remediation of the situation

4

Demonstrating that remediation has been successfully accomplished

Stage One

Problem Identification



- What unnatural species are present that pose a danger and what type of danger does the contamination pose to humans and the environment (flora and fauna)?
- Soil, air, water and biota may have to be analyzed.
- Very wide variety of analytes of concern.
- Samples may pose an acute hazard to laboratory facilities and staff.

Stage One

Problem Identification



- Soil, air, water and biota may have to be analyzed.
- Very wide variety of analytes of concern.
- Samples may pose an acute hazard to laboratory facilities and staff.
- Most incidents probably do not result in a hazardous situation.

Major Incidents

Kingston Dam Rupture



Fukushima Tsunami & Reactor



Major Incidents

World Trade Center

Oslo Bombing



Special Considerations

- Stage One Laboratories have to deal with a special set of considerations:
 - Samples may pose an acute hazard (explosion, release of radioactivity, chemical or biological weapon).
 - Special facilities are needed to protect both staff and facilities.
 - Staff need special training.
 - Situation may involve classified materials.

Stage Two

Severity and Extent of Contamination



- Known analytes.
- Large number of samples to be tested.
- Rapid turn-around of samples needed.
- Management of data and the need to ensure data quality become problems.

Stage Three

Supporting the Remediation Process



- Analytical process becomes relatively routine.
- May only have to use indicator analytes.
- A number of laboratories may be involved.
- Number and type of samples are predictable with sample turn-around times more predictable and reasonable.

Stage Four

Problem Over – Things Back to Normal



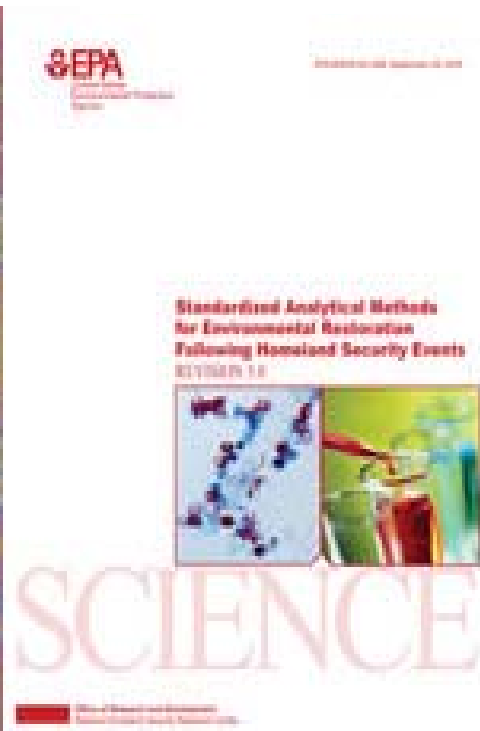
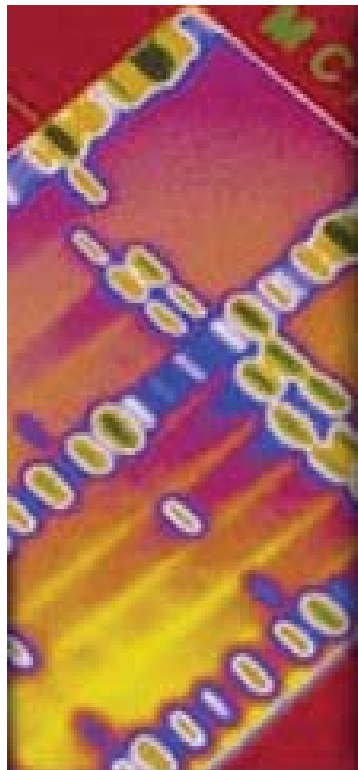
- Goal is to demonstrate that remediation has been completed successfully and area no longer poses a hazard to normal use.
- Need for high quality site characterization data that can withstand any challenges from skeptics.

Laboratory Networks

- EPA Environmental Response laboratory Network (ERLN) (<http://www.epa.gov/erln>)
- EPA's Water Laboratory Alliance (WLA) (<http://www.epa.gov/safewater>)
- FDA/USDA Food Emergency Response Network (FERN) (<http://fern.org>)
- CDC Laboratory Response Network (LRN) (<http://www.bt.cdc.gov/lrn>)

Resources

- EPA's Standardized Analytical Methods for Environmental Restoration Following Homeland Security Events (SAM) – Revision 5 (<http://www.epa.gov/sam>)



Resources

- EPA's "A Water Security Handbook: Planning for and Responding to Drinking Water Contamination Threats and Incidents"
(http://water.epa.gov/infrastructure/watersecurity/upload/2006_05_26_watersecurity_water_security_handbook_rptb.pdf)
- EPA's Sampling Guidance for Unknown Contaminants in Drinking Water
(http://www.epa.gov/safewater/watersecurity/pubs/guide_watersecurity_samplingforunknown.pdf)

What To Do Now

1. Join the ERLN and or other appropriate network.
2. Reach out to those in your area who might need your help. Make arrangements with them to provide help, if needed (e.g., Basic Ordering Agreement [BOA], Interagency Agreement, Mutual Aid Pact).
3. Contact appropriate government organizations and find out, and get to know, who to contact and what help they might be able to provide in an emergency.

For Further Information

Webinar hosted by PerkinElmer on this topic contains additional insights relative to the Deepwater Horizon Disaster and dealing with radioactive hazards and incidents.

<http://event.on24.com/eventRegistration/EventLobbyServlet?target=lobby.jsp&eventid=317800&sessionid=1&key=D6925F577376B88160EE93ECACAFB52B&eventuserid=52156678>

If All Else Fails . . . Contact Me!

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