



Reducing Uncontrolled Radioactive Sources through Tracking and Training: U.S. Environmental Protection Agency Initiatives

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EPA's Clean Materials Initiatives

Purpose: To keep unwanted radioactive material out of the public domain and protect public health and the environment.

Approach: Non-regulatory, voluntary partnership approach with industry, states, federal agencies and international organizations.

Goals:

- 1) Finding and securing lost sources
- 2) Preventing future losses

Focus: National and international activities

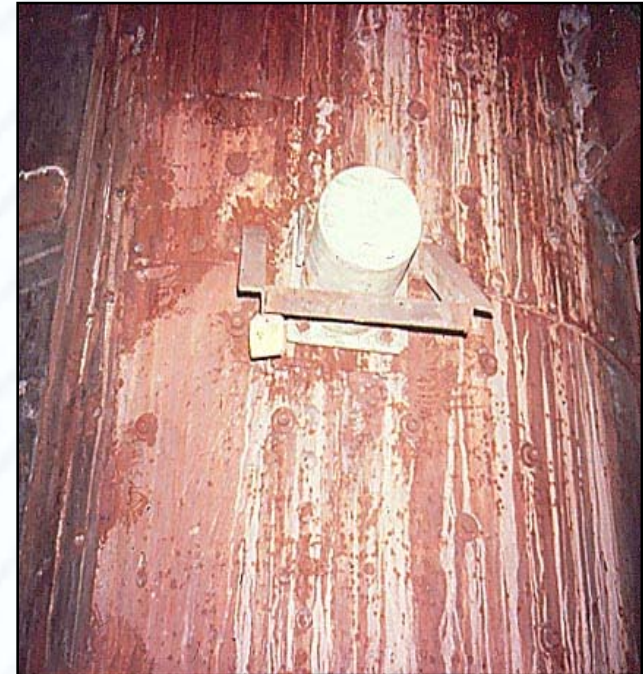


Radioactive Source Roundup

-30 Cesium sources were recovered and secured for \$30,000

-legal template developed

-set stage for nationwide roundup of radioactive sources— no fee to source finder



Training to Targeted Industry Sectors

-Metal processing facilities

“Responding to Radiation Alarms at Metal Processing Facilities”

-Demolition industry

“Identifying Radioactive Sources at Demolition Sites”

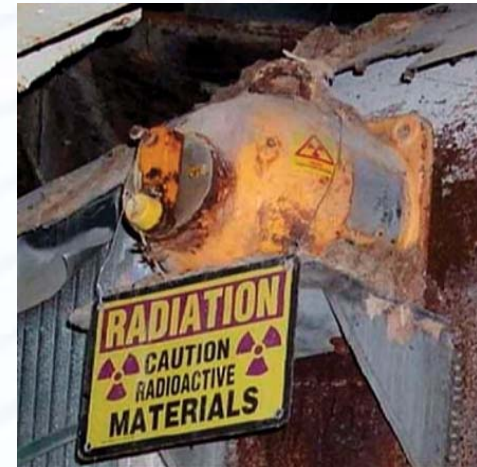
-Building Managers/Engineers

“Responsible Management of Tritium Exit Signs”



Product Stewardship

- Control of radioactive sources from manufacture to disposal
- Accomplished through shared responsibility with manufacturers, retailers, consumers and government
- Focus is on tritium exit signs and industrial gauges and devices



Alternatives to Radiation-Source Devices

Fewer radiation sources = Fewer orphan sources

Finding non-radiation source alternatives to the most commonly used devices and those that experience the highest loss rate

Example projects:

Soil moisture density gauge

Radiography camera

Industrial thickness gauges



Tracking Radioactive Sources in Commerce

Using Radiofrequency Identification (RFID) technology to track packages while in transit

Goal is prevention of loss during truck/air transport in global supply chain



RFID Phase I Testing

40 shipments :

- modified Type A radioactive materials shipping container with electronic seal and embedded tag (reusable container)
- various isotope mixtures
- multiple tags per shipment
- various truck constructions and package loading configurations

Testing conducted:

- while in transport
- in offsite overnight storage
- in association with radiation monitoring systems

*Wireless Reader Tag
Approx. size: 2.5 by 1.75 inches*



*Modified Type A Radioactive
Material Shipping Container:
Wireless tag embedded in wall*



RFID Phase II Testing

Validate performance of RFID to track radioactive materials in a nationwide supply chain

- Land - truck
- Air express

Quantify reliability of RFID systems

- Probability of tag detection
- Operational reliability

Determine implementation needs and deployment readiness

3 active tags tested in the presence of Phosphorus-32 radioisotope, with and without dry ice



RadSTram Project - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Reload Print Mail Wordpad New Folder


Address <http://www.us.sensornet.gov/eparfid/a/viewer.faces> Go Links

Google Search 71 blocked Check AutoLink AutoFill Options


Shipments

Refresh

	Order #	From	To	Prepared	Expected	When Received	Status
Show	3	ORNL	Perkin Elmer	Mar 24, 2006 1:14:45 PM		Mar 28, 2006	delivered (10)
Show	Driven to Weigh Station	ORNL	ORNL	Mar 24, 2006 12:36:35 PM		Mar 27, 2006	delivered (10)
Show	2	Perkin Elmer	ORNL	Mar 21, 2006 3:04:05 PM		Mar 24, 2006	delivered (10)
Show	1	ORNL	Perkin Elmer	Mar 14, 2006 2:21:29 PM		Mar 15, 2006	delivered (10)
Show	000001	ORNL	Perkin Elmer	Mar 14, 2006 9:24:42 AM		Apr 7, 2006	delivered (10)



RadSTram Viewer



Goal: Develop fully automated/networked data collection, that filters data to facilitate timely reporting to responsible officials

Shipments List

New Shipment

Read Me

Log Out

Internet

Radiation Monitoring of Scrap Metal at Ports

Radiation Monitoring of Scrap Metal at Ports

- Monitor imported scrap metal during off-loading
 - Grapple mounted radiation detectors evaluated and validated
- 2 Pilot projects at US ports
- 4,000,000 tons of scrap metal monitored
- transition to industry for independent operation



International Scrap Metal Monitoring Protocol

United Nations Economic Commission for Europe (UNECE)

Compendium of current state of monitoring, regulatory infrastructure, contractual, reporting, and disposition practices

- 1) Recommendations for Monitoring and Response
- 2) Information exchange (web portal)
- 3) Capacity building and training programs



For Further Information

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