



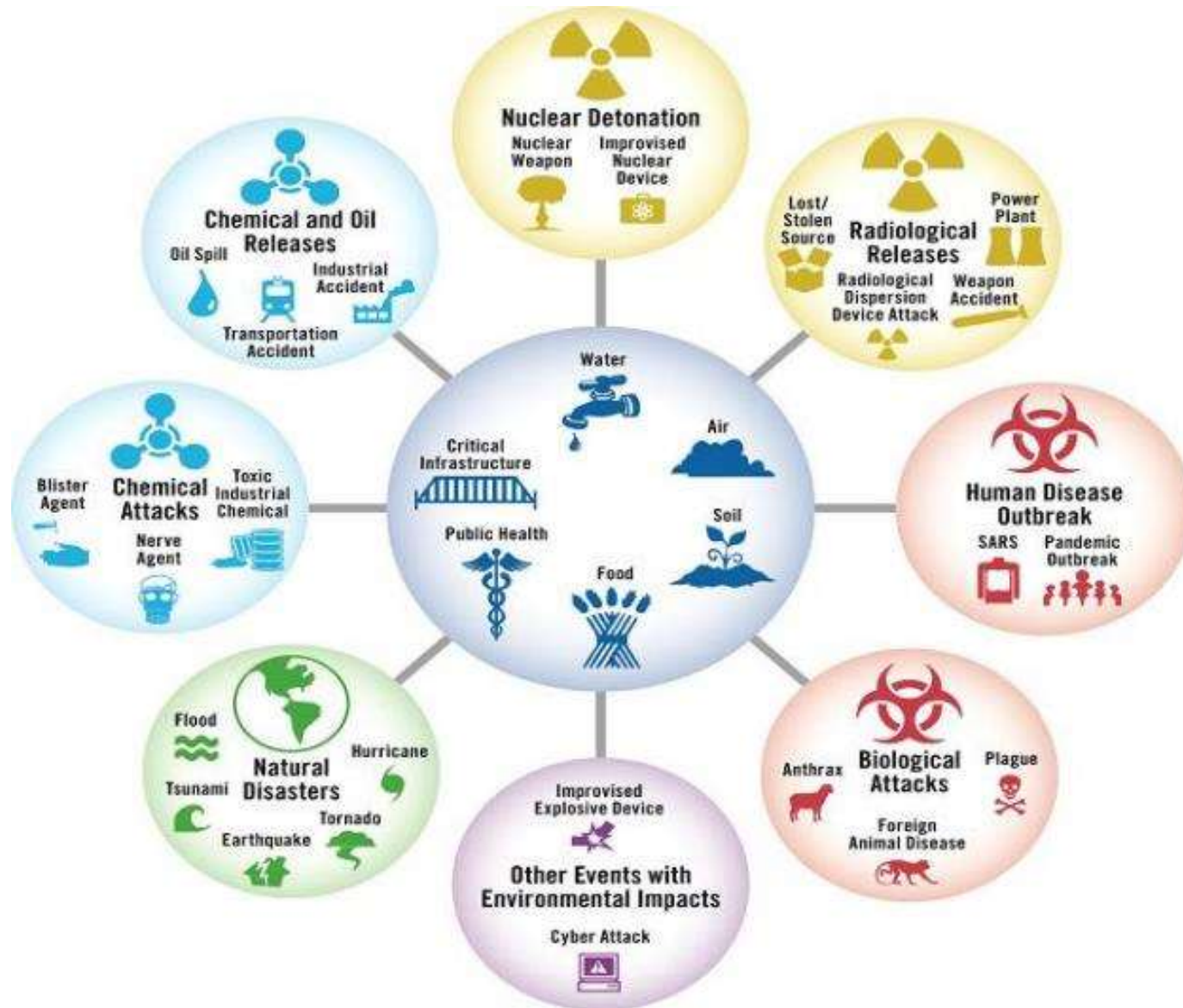
EPA Tools & Resources Training Webinar: Incident Waste Decision Support Tool (I-WASTE)

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All-Hazards Planning



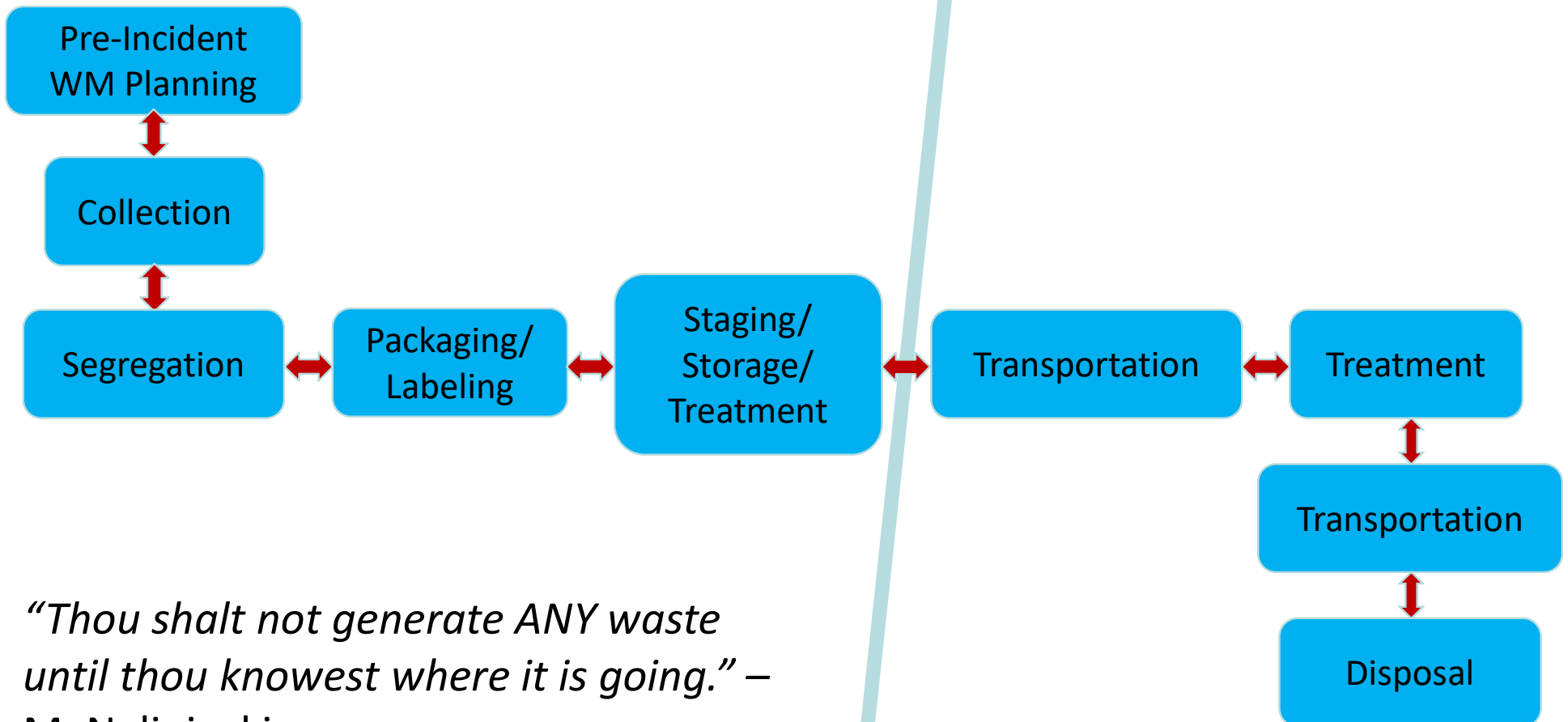
Example Wide-Area Contamination Scenario



Example: Bio-Waste Management Process

EASY

HARD



“Thou shalt not generate ANY waste until thou knowest where it is going.” – M. Nalipinski



Decision-Making Information Needs for Waste Management

- Waste quantity and characteristics
 - Sampling and analysis of waste
- Relevant regulatory requirements (local, state, federal levels)
- Potential treatment/disposal facilities
- Waste Acceptance Criteria
- Potential transportation issues/routes
- Impact of remediation/decontamination decisions on waste management and vice-versa



What Problem/Gap Does This Tool Address?

- Management of waste from all-hazards incidents is tightly coupled with other aspects of the response (i.e., system of systems)
- Decisions on waste management issues are made at the local/state/federal level and include private sector
- Chemical/Biological/Radiological/Nuclear (CBRN) waste is not explicitly addressed in many regulations
- Waste management decisions for CBRN-generated waste are closely tied to decontamination decisions
- Need for easy access to information to make informed decisions

Potential Applications

- Training, Planning and Exercise Tool
 - Supports State & Local Homeland Security (HS) Planning IAW National Planning Scenarios (National Response Framework, 2008)
 - Allows multiple scenarios to be examined
 - Encourages discussions with facilities prior to event
 - For use in design or evaluation of HS exercises involving disposal and recovery
- During an Environmental Response
 - Starting point for cleanup
 - Quick reference
 - Reach back resource for planners & responders

Past Applications

- Highly Pathogenic Avian Influenza (HPAI) carcass disposal
- East Palestine, OH train derailment – finding alternate disposal facilities
- Penrose, CO funeral home – finding disposal facilities
- Ebola response
- National Level Exercises
- New York City bioremediation planning
- Incorporated into other tools



I-WASTE Overview – Current Features

- Web-based tool – no user account needed
- Calculators available to estimate mass & volume of disaster-generated waste and debris (offices, schools, theaters, shopping malls, residences, hotels, hospitals)
- Database of treatment/disposal facilities (location, technical information, permits, geolocation)
- Access to contaminant and decontaminant information
- Guidance for worker safety, packaging and storage, and transportation
- Application Programming Interface (API) functionality so other tools can directly access I-WASTE waste material estimator and facility databases

I-WASTE Caveats

- I-WASTE is not an expert system (i.e., I-WASTE does not tell the user what to do), but rather presents information to consider during the decision-making or planning process
- I-WASTE assumes the decision to treat/dispose has been made
- I-WASTE does not present massive quantities of information to the user, but rather tries to distill information while maintaining links to more detailed information
- I-WASTE does not take potential disposal options “off the table” – the users can do that if they want



Target Audience

- EPA Responders
 - On-Scene Coordinators/Removal Managers
 - EPA Special Teams
 - Technical Working Group (TWG)
- State and Local Agencies
 - Emergency Planners
 - Public Health
 - Environmental Protection
 - Transportation
- Treatment/Disposal Facility Operators
 - Combustors/incinerators
 - Landfills
 - Building owners/managers
 - Water infrastructure
 - Radiological waste disposal facilities
 - Agricultural facilities



Collaborators and Partners

- EPA
 - Office of Land and Emergency Management
 - Office of Research and Development
 - Office of Air and Radiation
 - Office of Water
- State Agencies (DE, MD, NY, PA, VA)
- Other Federal Agencies
 - Department of Homeland Security
 - Department of Energy
 - Department of Transportation
 - Federal Emergency Management Agency
 - US Army Corps of Engineers
 - US Department of Agriculture
- Waste Industry Groups
 - International Solid Waste Association (IWSA)
 - National Solid Wastes Management Association (NSWMA)
 - Solid Waste Association of North America (SWANA)
- Water Industry Groups
 - American Water Works Association (AWWA)
- Facility item databases populated via discussions with respective industry representatives (e.g., hotel chains, school systems, theater chains, etc.)
- Eastern Research Group (ERG) is primary contractor

I-WASTE Home Page

[Environmental Topics](#)

[Laws & Regulations](#)

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Incident Waste Decision Support Tool (I-WASTE DST)

Planners, emergency responders, and other individuals responsible for making disposal decisions can access technical information, regulations, and guidance to work through important disposal issues to assure safe and efficient removal, transport, treatment, and/or disposal of debris and waste materials.

Using the options below, quickly produce an order of magnitude waste estimate, access the treatment and disposal facility database, navigate through applicable guidance and information presented in a logical framework, and/or explore other related guidance information.



Waste Materials Estimator

Calculate an order of magnitude estimate for the weight and volume of materials that may require disposal.



Treatment & Disposal Facilities

Search for potential treatment and disposal facilities using geographic and waste acceptance filters.



Guidance & Information

View guidance and information compiled to assist with disposal decisions.

Waste Materials Estimator

Waste Materials Estimator

Use the Waste Materials Estimator to generate order of magnitude estimates for the types and quantities of materials that may require decontamination and/or disposal from one or more structure types. Base your estimates on default parameter values or modify parameters with user-defined values.

More Information

- [Default Parameter Values for Structures](#)
- [Modeling Other Structure Types](#)
- [Non-Structural/Interior Waste Materials](#)
- [Structural Waste Materials](#)
- [Waste Materials Estimator and HAZUS MH](#)

▲ Waste category estimates are individually computed and are rounded to two significant figures. Overall totals reflect the summation of waste categories followed by rounding to two significant figures (i.e., not the summation of individual rounded quantities). The difference between the estimated mass and volume of items and materials and actual values will vary considerably, given the wide range of building designs and layouts, even within a single building type addressed by the tool (e.g., hotels, hospitals, schools, etc.).

Specify Structure Quantities & Parameters

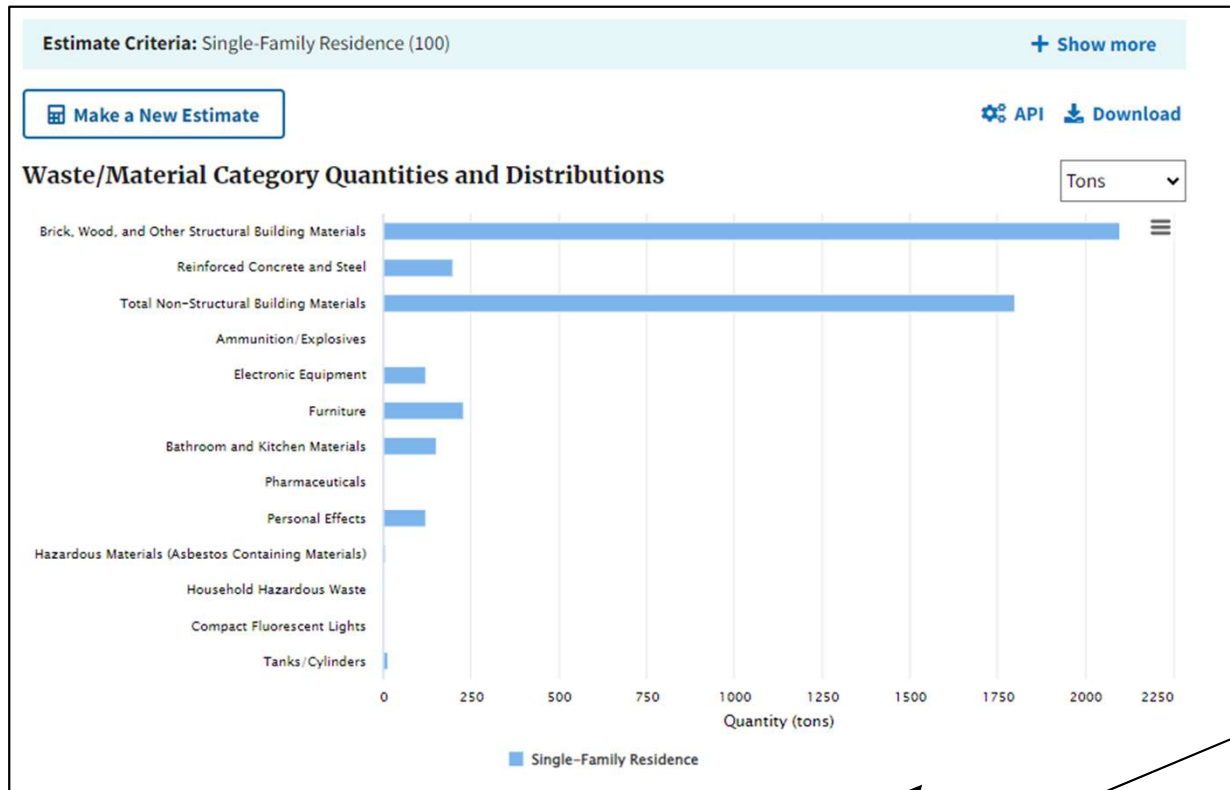
Open Space	Total affected area (square miles):	<input type="text"/>
Marine Vessels	Total estimated impacted waterfront (miles):	<input type="text"/>
Single-Family Residences	Qty:	<input type="text"/>
Movie Theaters	Qty:	<input type="text"/>
- Hospitals	Medium Hospital	Qty: <input type="text"/>
	Large Hospital	Qty: <input type="text"/>
- Hotels	Small Hotel	Qty: <input type="text"/>
	Medium Hotel	Qty: <input type="text"/>
	Large Hotel	Qty: <input type="text"/>
- Offices	Small Office	Qty: <input type="text"/>
	Medium Office	Qty: <input type="text"/>
	Large Office	Qty: <input type="text"/>
- Schools	Elementary School	Qty: <input type="text"/>
	Middle School	Qty: <input type="text"/>
	High School	Qty: <input type="text"/>
- Shopping Malls	Small Shopping Mall	Qty: <input type="text"/>
	Medium Shopping Mall	Qty: <input type="text"/>
	Large Shopping Mall	Qty: <input type="text"/>

Clear

Generate Estimates

A “quick and dirty” waste estimate can be generated for a variety of buildings with minimal user input.

Waste Material Estimator Results



Waste/Material Category	Waste/Material Quantities	
	Tons	Cubic Yards
Structural		
Brick, Wood, and Other Structural Building Materials	2,100	5,200
Reinforced Concrete and Steel	200	220
Interior/Non-Structural		
Total Non-Structural Building Materials	1,800	12,000
Drywall	1,200	3,400
Carpet	66	500
Wood	96	200
Other Non-Structural Building Materials	480	7,400
Ammunition/Explosives	0.028	0.015
Electronic Equipment	120	1,400
Furniture	230	3,700
Bathroom and Kitchen Materials	150	1,500
Pharmaceuticals	0.045	0.38
Personal Effects	120	1,500
Hazardous Materials (Asbestos Containing Materials)	5.9	17
Household Hazardous Waste	3.5	5.1
Oil & Latex Paint	1.9	1.7
Used Oil	0.56	0.91
Lab Packed Aerosols	0.078	0.097
Flammable Liquids	0.16	0.17
Bulk Fuels	0.29	0.36
Flammable Solids	0.019	0.0065
Pesticides	0.033	0.037
Poisons	0.16	0.19
Antifreeze	0.058	0.061
Batteries	0.14	1.5
Other Corrosives	0.055	0.037
Cleaning Supplies	0.00039	0.0024
Compact Fluorescent Lights	0.083	0.26
Tanks/Cylinders	13	25
Totals	4,800	25,000

The results of the waste estimate can be viewed in table form or in a variety of graphical forms. They can be exported as an Excel file.



I-WASTE Facility Databases

- Landfills
 - Municipal Solid Waste
 - Construction & Demolition Debris
 - Hazardous Waste
- Combustion Facilities
 - Municipal Waste Combustors (Waste-to-Energy)
 - Hazardous Waste
 - Medical/Biohazardous Waste
 - Industrial Combustion Facilities (e.g., boilers, smelters, etc.)
- Decontamination Wastewater Disposal Facilities
 - Publicly-Owned Treatment Works (POTWs)
 - Federally-Owned Treatment Works (FOTWs)
 - Liquid Hazardous Waste Combustion Facilities
- Other Disposal Facilities
 - Centralized Waste Treatment (CWT) Facilities
 - Commercial Medical Waste Autoclaves
 - Commercial and Federal Radioactive Waste Disposal Facilities

Facility Database Query

Treatment & Disposal Facilities

Search for treatment and disposal facilities using the filters below. Click View Facilities to generate a list of facilities that meet all of the specified criteria.

More Information

- [Universe of Facilities](#)
- [Questions for Facility Contacts](#)

⚠ The facilities presented in the tool are not endorsed by EPA, nor have any facility owners agreed to accept any material. A facility's ability to accept incident waste is case specific and determined by the facility and its regulators. Facility contact information is provided to facilitate the initiation of treatment and disposal discussions.

Filter Facilities

Facility Type
Inert or Construction and Demolition Landfills ×

State
Select a state

EPA Region
Region 6 (AR, LA, NM, OK, TX) ×

Clear **View Facilities**

The facility databases can be queried by facility type, state, or EPA region.

Facility Database Results

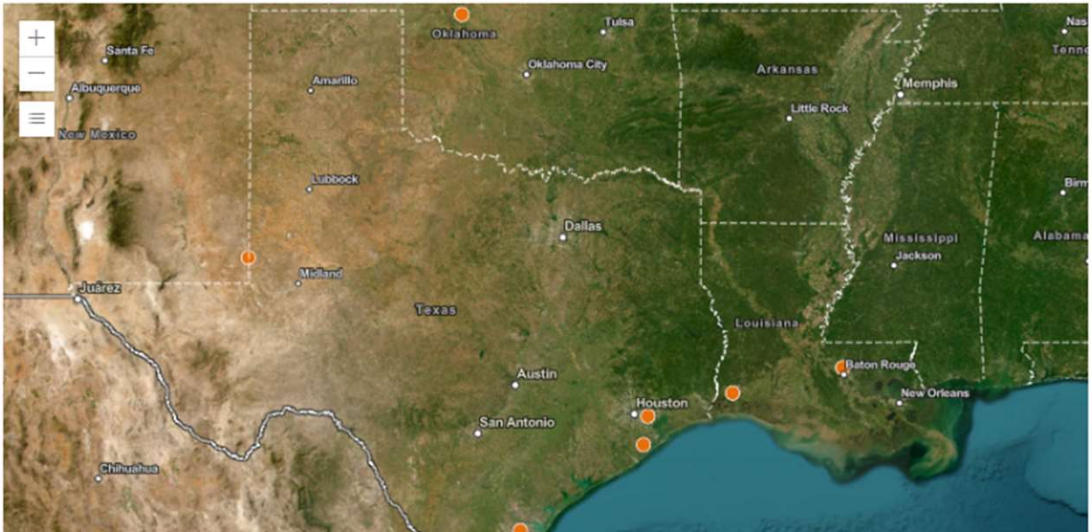
Database query results have hyperlinks to facility info and permits (if online). Results can be exported to an Excel file.

Display Map
 Display Table
 Display Full Width

Filter Criteria: Facility Type: RCRA Subtitle C Landfill; EPA Region: Region 6 (AR, LA, NM, OK, TX)
Facility Count: 7

[Submit a facility data correction](#)

[Print](#) [API](#) [Download](#)



Earthstar Geographics | Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS | Powered by Esri

Name	Street Address	City	State	EPA Region	Contact Info	Source ID	Facility Type
Lake Charles Chemical Waste Facility	7170 John Brannon Rd	Sulphur	LA	06	866-909-4458	1026921	RCRA Subtitle C Landfill with Low Activity Radioactive Waste Authority, RCRA Subtitle C Landfill
Clean Harbors Environmental Baton Rouge	13351 Scenic Highway	Baton Rouge	LA	06	225-778-1234	1026922	RCRA Subtitle C Landfill
Clean Harbors Lone Mountain Facility LLC	40355 South County Road 236	Waynoka	OK	06	580-697-3500	1027252	RCRA Subtitle C Landfill
Clean Harbors Deer Park Incineration Facility	2027 Independence Parkway	La Porte	TX	06	281-930-2300	1027422	RCRA Subtitle C Landfill with Low Activity Radioactive Waste Authority, RCRA Subtitle C Landfill
US Ecology Texas Recycling and Disposal Center	3277 County Road 69	Robstown	TX	06	361-387-3518	1027430	RCRA Subtitle C Landfill

Relevant Guidance

Guidance & Information

I-WASTE does not promulgate any new guidance but has links to existing guidance documents for various activities. Guidance and information related to managing incident related waste are organized and tailored to specific categories of events and accessible through the links below.

Chemical/Biological

Provides access to contaminant and decontaminant agent information. Detailed information on building debris contaminated by biological or chemical agents is also available, along with sample building inventories.

[View More >](#)

Radiological/Nuclear

Provides access to information on nuclear materials, nuclear incidents and cleanup, radioactive waste, regulations, and properties of selected radionuclides. Guidance and documents on radioactive waste types, waste treatment, and disposal is available.

[View More >](#)

Natural Disaster

Addresses disposal of waste and debris resulting from a natural disaster. Provides access to case studies, preparedness guidance documents, and applicable rules and regulations.

[View More >](#)

Agricultural Incidents & Foreign Animal Disease

Provides access to information related to the disposal of animal carcasses in the aftermath of an event. Disposal hierarchies and training modules can be accessed, as well as information on pathogens and past events.

[View More >](#)

Critical Infrastructure

Provides access to information related to water contaminant information and equipment associated with water systems.

[View More >](#)

Browse Resources

Choose a resource type, followed by event and topic of interest to view a list of relevant resources.

Resource Type
 Documents & Reports
 Guidance

Event Type
 

Topic
 

Quick Links

- [Treatment & Disposal Facilities](#)
- [Disposal Guidance](#)
- [Size Reduction Guidance](#)
- [Packaging/Container Guidance](#)
- [Hazardous Waste Transportation Regulations](#)
- [Waste Transportation Guidance](#)

Other Resources

- [Key Terminology](#)
- [Response Management Jurisdictional Boundaries](#)
- [Regional, State, and Local Contacts](#)
- [Other Planning & Response Tools](#)
- [Laboratory Information](#)

We have gathered relevant guidance for easy access.

Radiological/Nuclear Basic Information Page

Radiological/Nuclear

Basic Information

Incident Response and Cleanup Information

Radiological Dispersal Device (RDD) Information

Low-Level Radioactive Waste Compacts

Radionuclide Information

Radioactive Materials & Waste Regulations

Nuclear Materials

Source Material

Special Nuclear Material

Byproduct Material

Radiological/Nuclear

Additional guidance and functionality specific to radiological/nuclear events can be accessed using the left navigation menu items or accessing the quick links below:

Radiological Incidents

- [Radiological Dispersal Device \(RDD\)](#)
- [Orphan Sources](#)
- [Nuclear Power Plant Accidents](#)
- [Transportation Accidents](#)
- [Satellites and Rockets](#)

Nuclear Materials

- [Source Material](#)
- [Special Nuclear Material](#)
- [Byproduct Material](#)

Radioactive Waste

- [Categories](#)
 - [High-Level Radioactive Waste \(HLW\) and Spent Nuclear Fuel](#)
 - [Transuranic Waste \(TRU\)](#)
 - [Low-Level Radioactive Waste \(LLRW\)](#)
 - [11.e.\(2\) Byproduct Material](#)
 - [Mixed Wastes \(MHLW, MTRU, MLLW\)](#)
- Other Waste Types
 - [Orphan Sources](#)
 - [Naturally-Occurring Radioactive Materials \(NORM\)](#)
- [Transportation](#)
- [Treatment](#)
- [Brokers and Processors](#) DISCLAIMER
- Storage
 - [Government-Owned Land/Facilities](#)
- [Waste Classification](#)
- [Disposal](#)
 - [Federal Facilities](#)
 - [Commercial Facilities](#)

Chemical/Biological Basic Information Page

Chemical/Biological

Chemical/Biological and Decontamination Agent Information

Sample Building Inventories

Building Waste Characteristics

Chemical/Biological and Decontamination Agent Information

Contaminants are categorized into three types: chemical agents, biotoxins, and biological agents. These contaminants were chosen because of their potential to be used in terrorism attacks and their ability to be dispersed within a building, potentially leaving some residue on surfaces or in absorbent materials that will require some level of cleanup after initial decontamination is completed. Select a contaminant or decontaminant below to view chemical summary information.

More Information

- [EPA's Computational Toxicology Dashboard](#)
- [CBRN Quick Reference Guides](#)

Contaminants

Chemical Agents

Biotoxins

Biological Agents

Decontaminants

Decontamination Agents

We have gathered relevant guidance for easy access.

Natural Disaster Basic Information Page

Natural Disaster

Case Studies by Natural Disaster Event Type

Waste & Debris Fact Sheets

Regulations, Guidance, and
Facilities

Hazardous

Transportation Regulations

Other Disposal Guidance

Hazardous Waste Disposal
Facilities

Non-Hazardous

Disposal Guidance

Disposal Facilities

Recycling Guidance

Recycling Facilities

Debris Management Equipment

Planning Documents

Case Studies by Natural Disaster Event Type

Brief descriptions of types of natural disaster events are presented below, along with information about the types of debris expected to be generated and links to relevant case studies.

- [Earthquake](#)
- [Flooding](#)
- [Hurricane](#)
- [Tornado](#)
- [Wildfire](#)

We have gathered relevant
guidance for easy access.

Agricultural/Foreign Animal Disease Basic Information Page

Agricultural Incidents & Foreign Animal Disease

Pathogen Information

Agricultural Waste Disposal
Guidance

Training Modules

Case Studies

Pathogen Information

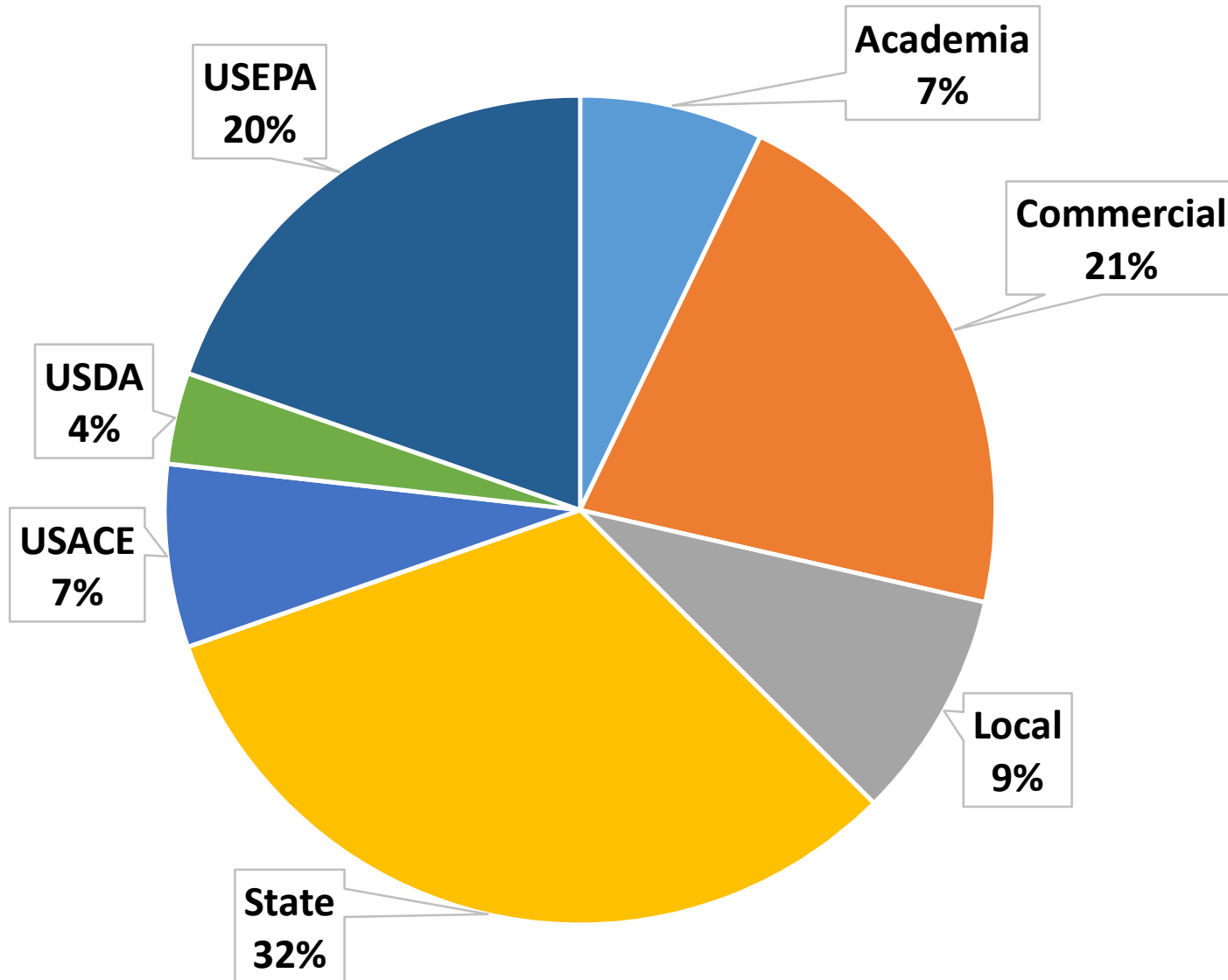
- [African Horse Sickness](#)
- [African Swine Fever](#)
- [Akabane Virus](#)
- [Avian Influenza](#)
- [Bovine Spongiform Encephalopathy](#)
- [Classical Swine Fever](#)
- [Contagious Bovine Pleuropneumonia](#)
- [Coxiella Burnetii \(Q Fever\)](#)
- [Eastern Equine Encephalitis](#)
- [Ehrlichia Ruminantium \(Heartwater\)](#)
- [Exotic Newcastle Disease](#)
- [Foot-and-Mouth Disease](#)
- [Japanese Encephalitis](#)
- [Nipah and Hendra Viruses](#)
- [Rift Valley Fever](#)
- [Rinderpest](#)
- [Venezuelan Equine Encephalitis](#)

USDA Resources

- [Carcass Management Dashboard](#) DISCLAIMER
- [Animal Health Emergency Management](#)
DISCLAIMER
- [National Animal Health Emergency Management System \(NAHEMS\) Guidelines](#) DISCLAIMER

We have gathered relevant guidance for easy access. We also have linked directly to USDA/Animal and Plant Health Inspection Service training modules.

Distribution of Users





Future Enhancements

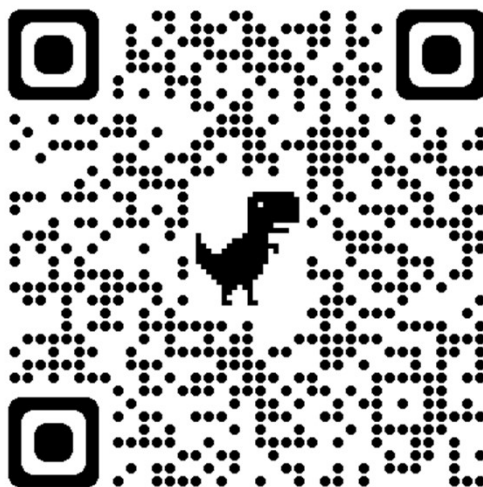
- Incorporation of geospatial data and facility information into EPA GeoPlatform
- Integration of several EPA waste management tools into dashboard to allow easy user access to all features
 - I-WASTE
 - Waste Storage & Staging Tool
 - Waste Logistics Tool
 - Disaster Debris Recovery Tool (EPA Region 5)
 - All-Hazards Waste Management Planning Tool (OLEM)



Access

<http://iwaste.epa.gov/>

No username or account is needed



Bottom Line

- Waste management is a critical component of responding to wide-area disasters, whether they are man-made or naturally occurring
- Decisions are made at the local, state, Tribal, and federal level and include the waste management facilities themselves
- Pre-incident planning for waste management is a key element of enhancing resiliency of communities to these types of incidents
- I-WASTE is intended to support pre-incident planning as well as decision-making during an incident



Contact

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