

The Hazard Ranking System (HRS)

An Introduction



*October 26, 2023
Elizabeth Benjamin*

Presenters

- Matthew Jefferson, U.S. EPA
- Tanya Amme, GDIT
- Elizabeth Benjamin, GDIT
- Brian Kolodne, GDIT
- Jason Merkel, GDIT
- Molly Wenner, GDIT

Purpose and Goals

- Provide the foundation and concepts needed for evaluating sites using the HRS
- Focus on the variables, data points and information needed for the evaluation
 - NOT on preparing an HRS documentation record

The main take aways should be an understanding of:

- HRS pathway structure, factors and associated information needed
- How it is used and applied
- The reasons why

Training Agenda

- The Hazard Ranking System: An Introduction
- HRS: Universal Concepts
- HRS: Sources & Areas
- HRS: Migration Pathways
- HRS: Exposure Pathway



THE HRS ORIGIN STORY



Regulatory Basis for the HRS

Statute

CERCLA

Gave EPA authority for responding to releases or threatened releases of hazardous substances

Required EPA to:

Establish criteria for identifying priority releases

Create list of priorities – Update via rulemaking

Results were:

The Hazard Ranking System (HRS)

The National Priorities List (NPL)

Became:

Implementing Regulation

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Appendix A & B

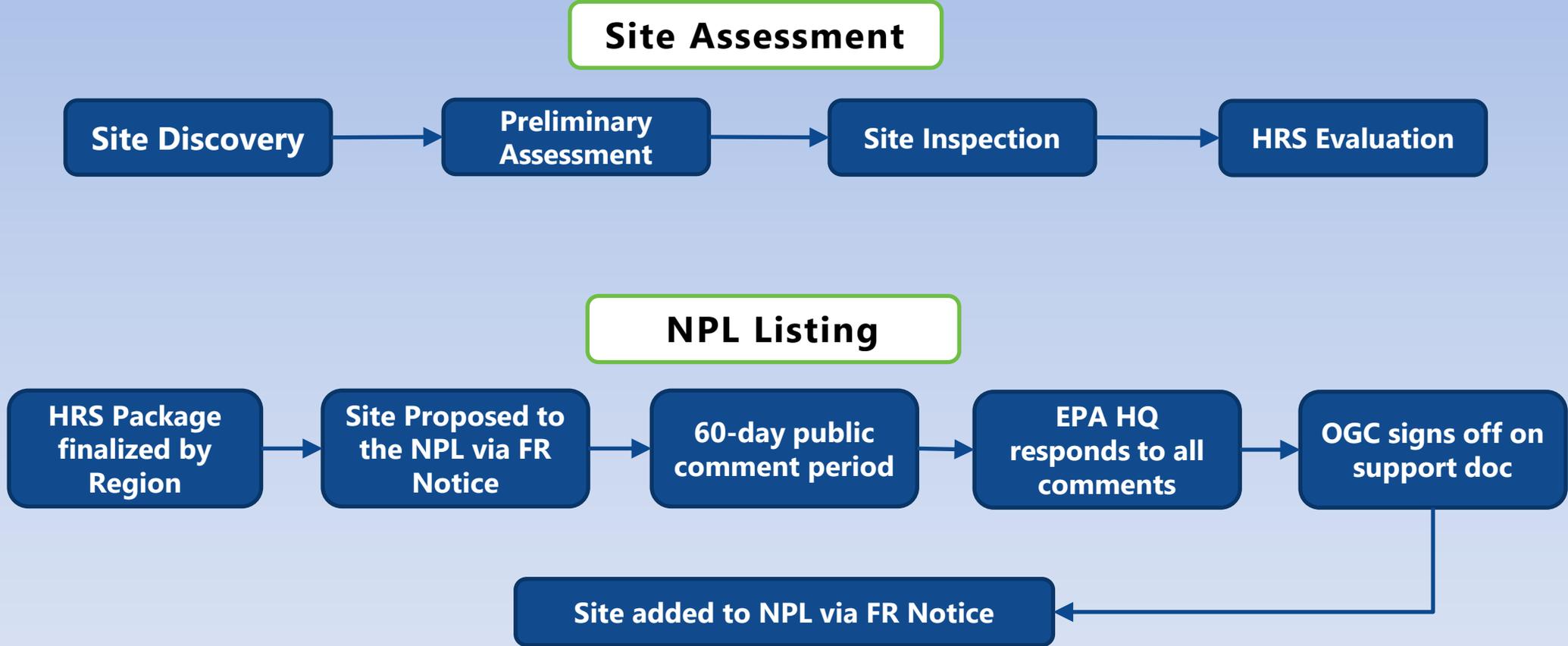
What is a Site?

Site definition:

Area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include areas between sources.

- Site does not equal facility
- All areas contaminated by a release may not be identified at the time of the HRS evaluation
- Site boundaries are not defined at time of listing

Site Assessment and NPL Listing Process



What is the HRS?

A set of procedures applied to a site resulting in a score

Regulatory basis	Purpose	Scope/ limitations	Level of information	Scoring approach	Scoring factors
<p>Created pursuant to CERCLA section 105(a)(8)(A)</p> <p>Performed following procedures defined in 40 CFR Part 300 Appendix A, of the NCP</p>	<p>Used to determine if a site is eligible for the NPL</p> <p>Listing a site only indicates further investigation is considered necessary</p>	<p>Qualitative estimate of the relative risk the site poses (relative to other sites)</p> <p>Not an assessment of risk</p> <p>Actual risk assessment in subsequent Superfund stage</p>	<p>Based on limited screening level information</p> <p>Typically Site Inspection data</p> <p>Biased sampling (looking for “hot” spots)</p>	<p>Numeric scoring system generating a score for a site</p> <p>Point-based scores are assigned to factors</p> <p>Each factor measures particular characteristics of site</p>	<p>Could/has the contamination entered the environment?</p> <p>How dangerous are the contaminants?</p> <p>How much contamination is at the site?</p> <p>How many humans, sensitive environments or resources may be affected?</p>

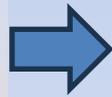
Setting up the Rest of the Training

Snapshot of the HRS Structure



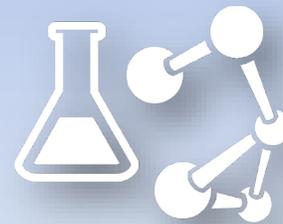
Sources vs Areas

- Where is the contamination located?



Likelihood of Release

- Has any contamination escaped?



Waste Characteristics

- How harmful is contamination and how much?



Targets

- Who or what is threatened by the contamination?

Setting up the Rest of the Training

What types of Sites Can be Evaluated Using the HRS?

Ground Water Migration Pathway



- Aquifers with drinking water wells

Surface Water Migration Pathway



Drinking Water Threat



Human Food Chain Threat



Environmental Threat

- Surface water used for drinking water
- Fishery used for human consumption
- Wetlands, critical habitats etc.

Soil Exposure and Subsurface Intrusion Pathway (SESSI)

Soil Exposure



Resident Population Threat



Nearby Population Threat

- Contaminated surficial material near residents, schools or workplaces
- Contaminated terrestrial sensitive environments

Subsurface Intrusion



- Indoor air in regularly occupied structure

Air Migration Pathway



- Outdoor air



Q & A