

Hazard Ranking System (HRS)

An Introduction

Sources and Areas

October 26, 2023

Jason Merkel



Overview

Introduction to sources and areas, which serve as the basis or starting point for an HRS evaluation.



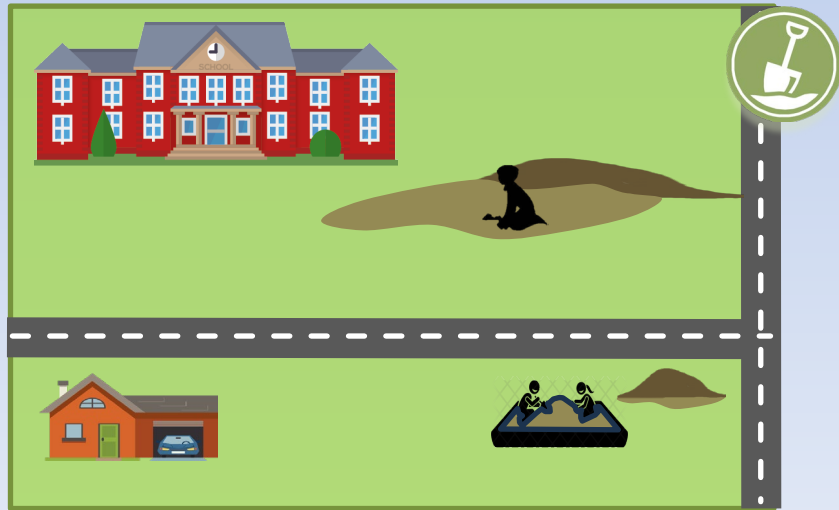
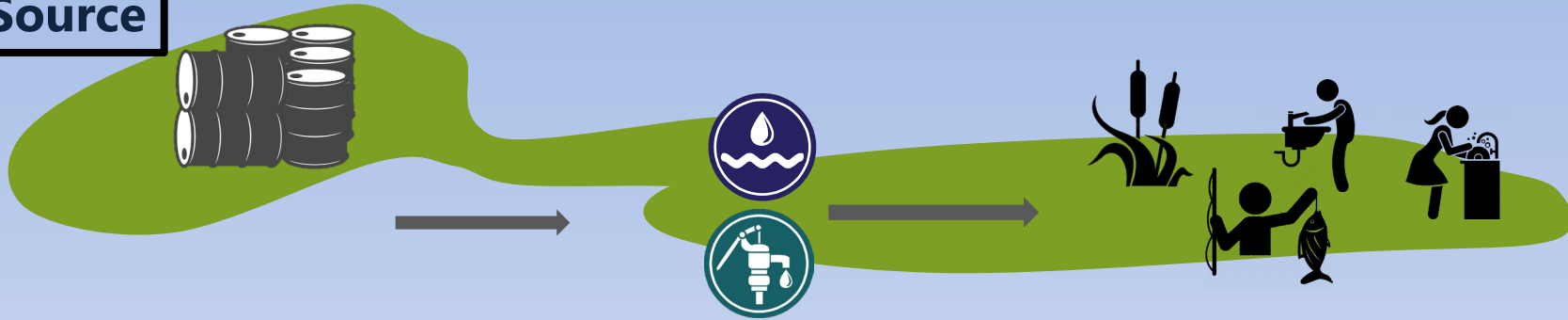
Sources or Areas

- Where is the contamination located?

Migration vs Exposure

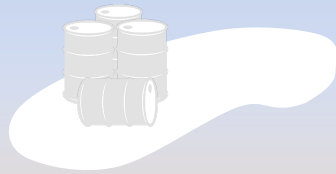
Different HRS conceptual models

Source



Areas





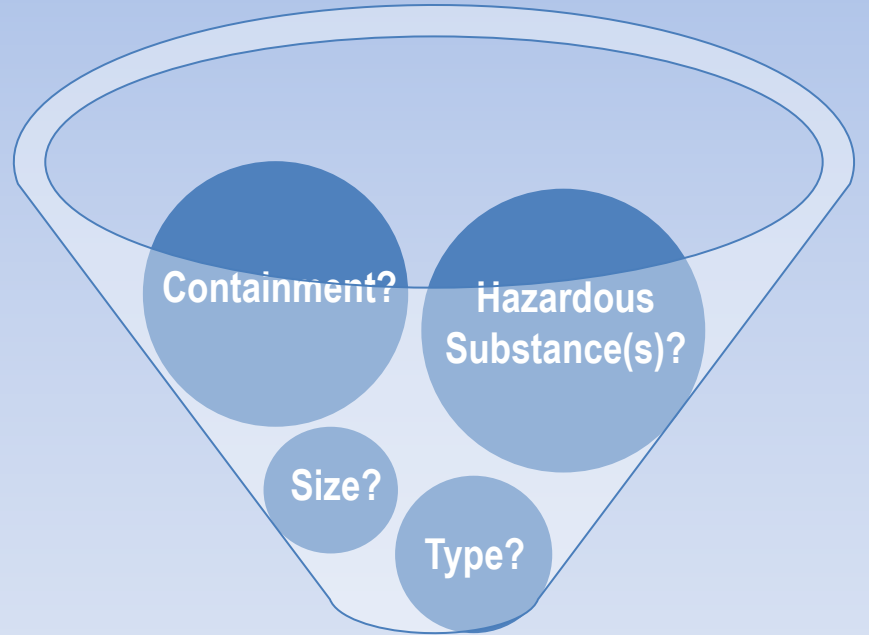
SOURCES

What is a Source?

- Where the hazardous substance first entered into the environment or where was it first deposited
- HRS definition: Any area where a hazardous substance has been deposited, stored, disposed or placed, plus those soils that have become contaminated from migration of a hazardous substance

Source Evaluation

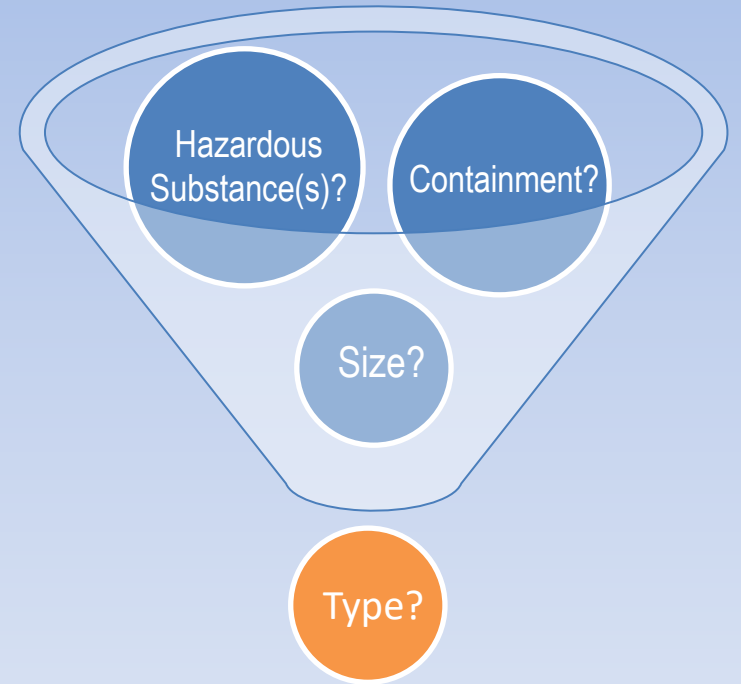
- Requires specific information that will play into how the overall pathway is evaluated and scored
- Each data point should have supporting documentation



Source Evaluation

The HRS defines 17 specific source types used for an HRS evaluation in the HRS

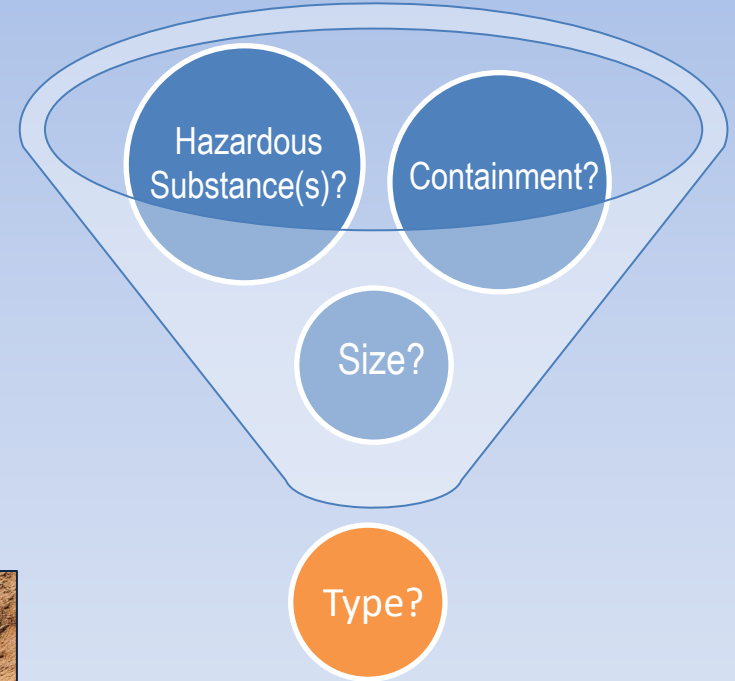
Examples include above- or below-ground tanks, drums, landfills, piles, surface impoundments, contaminated soils, burn pits



Source Evaluation

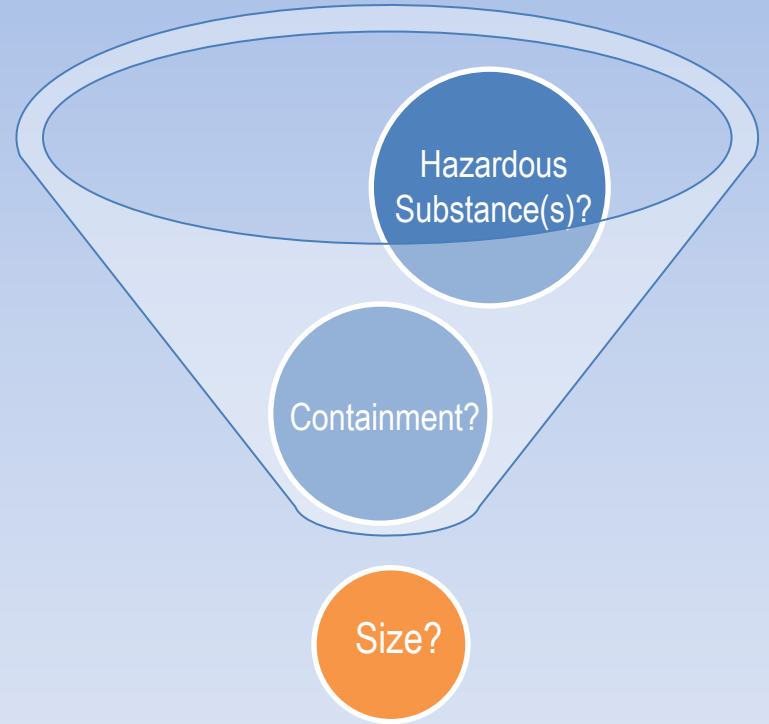
Source type "Other" is used when the defined source types do not apply

Examples of source type "other" include outfalls, other discharge point, or smokestacks



Source Evaluation

- Represents the estimate of the amount of hazardous substance or waste allocated to the source
- Available source information will determine how to arrive at a source hazardous waste quantity using the HRS
 - Source dimensions and boundaries are typically used for determining the hazardous waste quantity
- Boundary accuracy becomes critical when evaluating distance to targets impacted

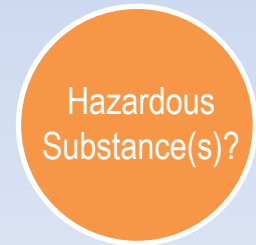
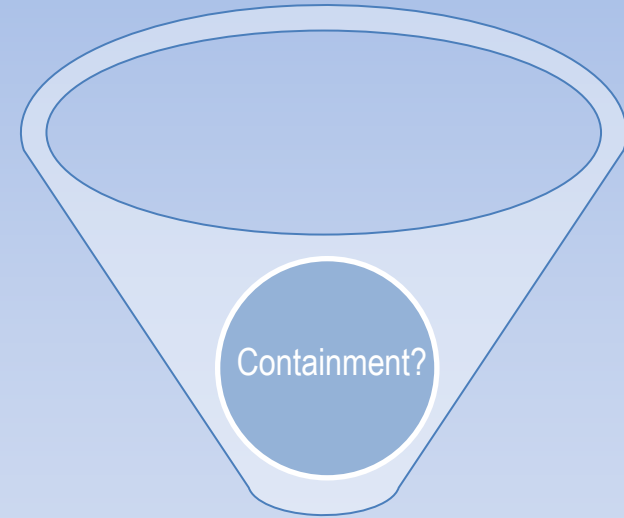
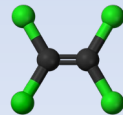
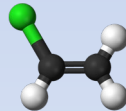
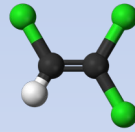


Source Evaluation

Determine the hazardous substances associated with each source

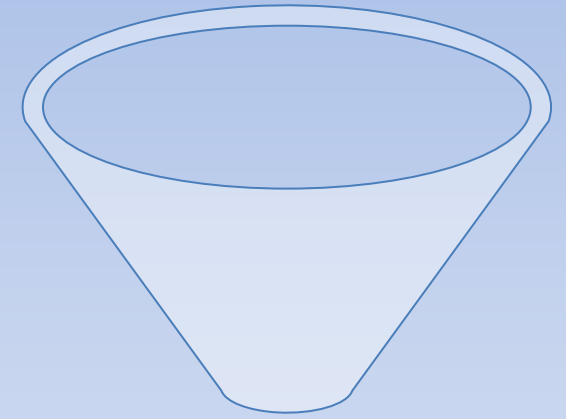
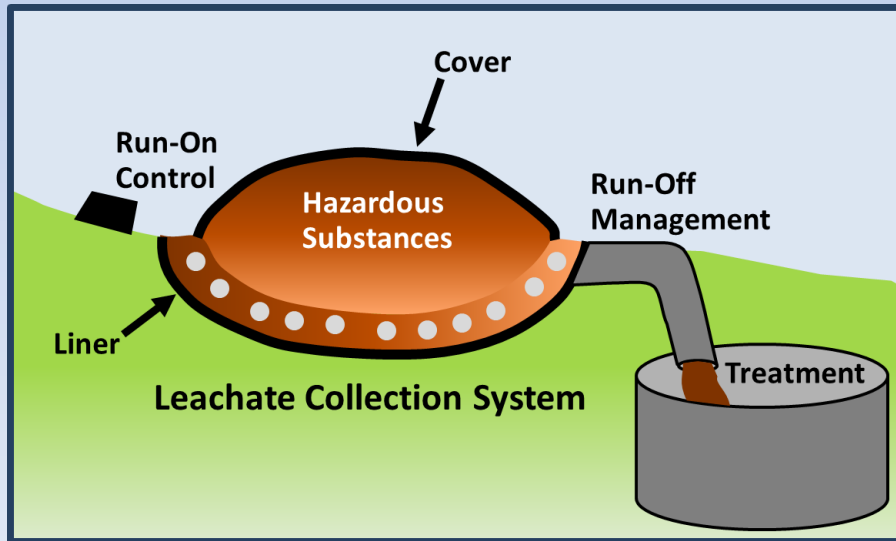
The HRS (Section 1.1) defines a hazardous substance as **CERCLA hazardous substances**, pollutants, or contaminants

- **CERCLA hazardous substances:**
 - Defined in CERCLA 101(14)
 - Listed in section 302.4 of the Code of Federal Regulations (40 CFR § 302.4)



Source Evaluation

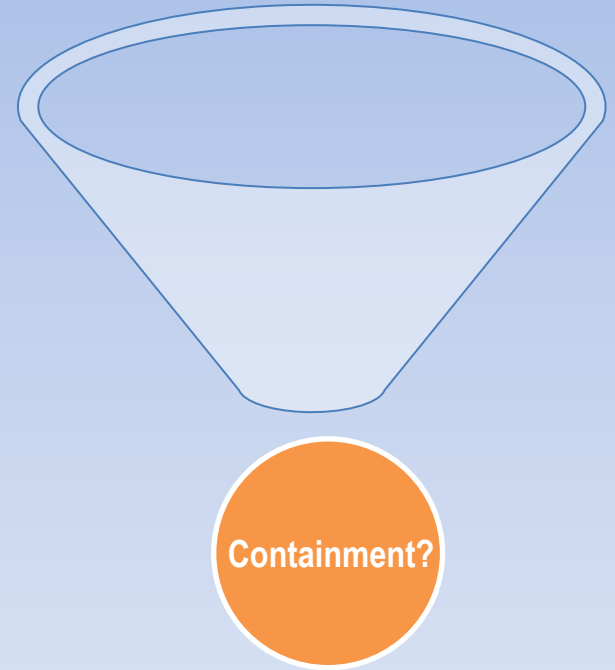
Containment represents the ease of which contamination can exit the source (migration pathways)



Source Evaluation

Containment is used in 2 ways as part of an HRS evaluation

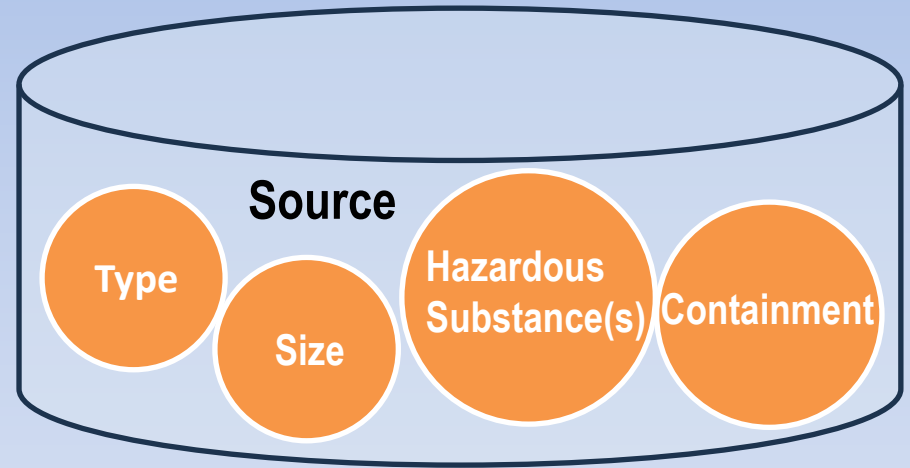
- To show a source could release or has released hazardous substance to a particular pathway
- In evaluating potential for release in the absence of a documented release
- Containment is evaluated differently in the migration pathways vs the soil exposure and Ssl components

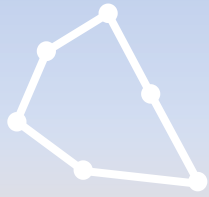


Source Evaluation

Examples of Documentation

- Visual observations
- Measurements
- Historical records
- Sampling data
- Aerial photographs
- Interviews
- PRP records, labels, and manifests
- State or Federal records and permits
- Information on site operations

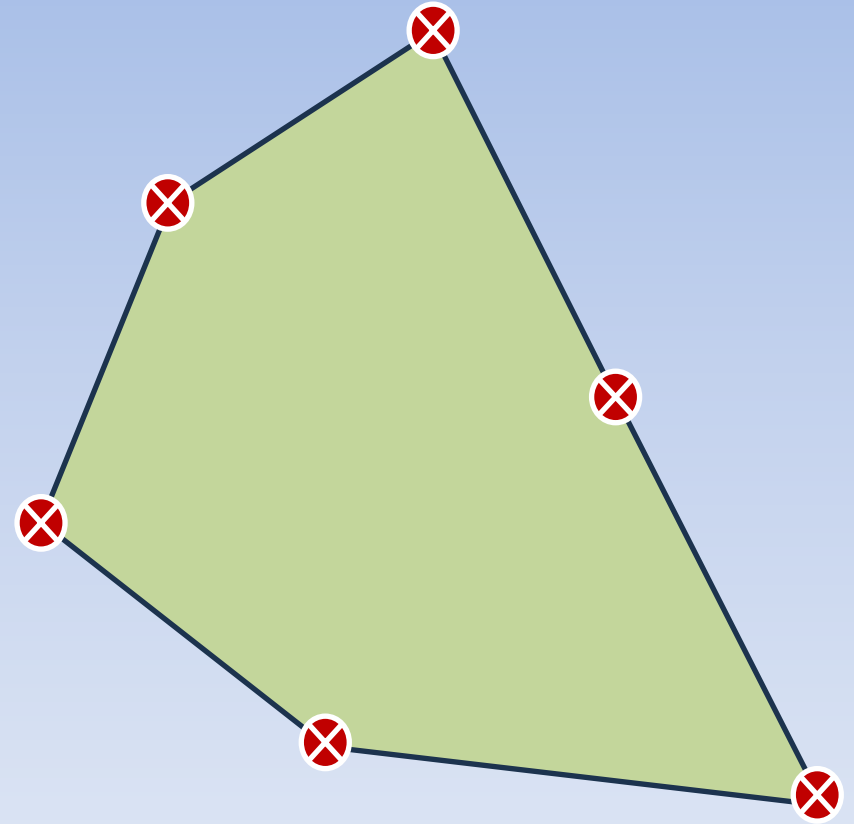




AREAS

Areas

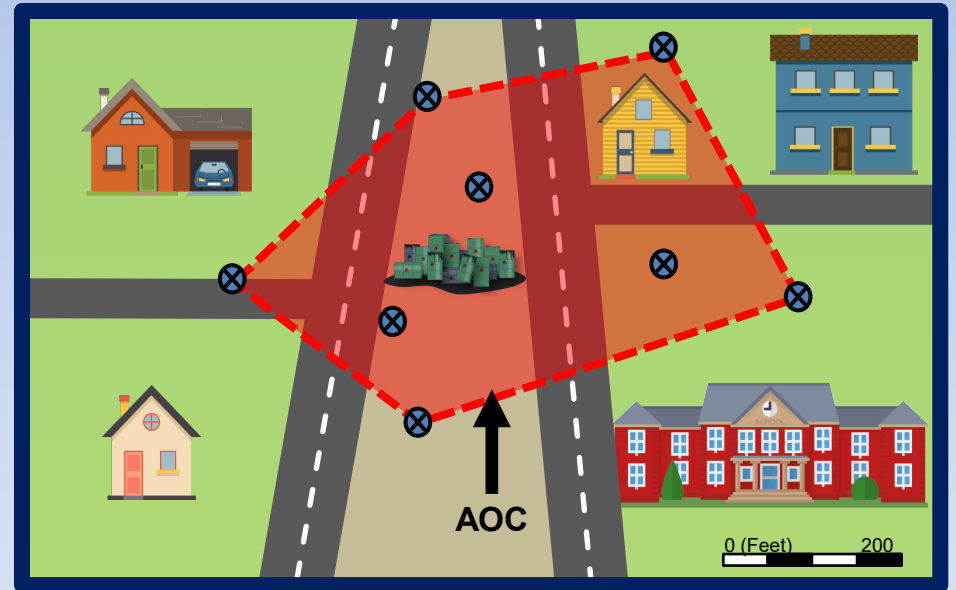
- Unique to the Soil Exposure and Subsurface Intrusion pathway
- A different conceptual site model than the migration pathways
- Defined by surface, indoor air or subsurface samples that meet the criteria from HRS Table 2-3



Areas of Observed Contamination (AOC)

Soil Exposure Component

An area delineated using locations of surface and near surface samples containing hazardous substances meeting observed contamination criteria



Area of Observed Exposure (AOE)

Subsurface Intrusion (Ssl) Component

An area delineated using regularly occupied structures with indoor samples containing hazardous substances meeting observed exposure criteria



Areas of Subsurface Contamination (ASC)

Subsurface Intrusion (Ssl) Component

An area generally delineated using subsurface sample locations containing hazardous substances meeting observed release and volatility criteria, excluding any AOE's



Hazardous Substances and Hazardous Waste Quantity in Areas

Soil Exposure Component

- Eligible hazardous substances must meet observed contamination criteria
- Hazardous waste quantity is evaluated based on the AOC and amount of hazardous substances people may be exposed to

Subsurface Intrusion Component

- Eligible hazardous substances must meet observed exposure criteria or must meet observed release and volatility criteria
- Hazardous waste quantity is evaluated based on the amount of hazardous substances in regularly occupied structures



Q & A