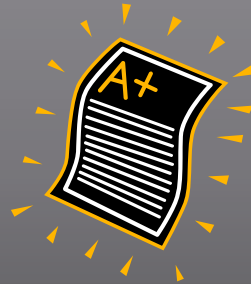


Module 3: Site Evaluation and Scoring Site Sources



3-1

Module Objectives

◆ **After this module has been completed, the participants will be able to:**

- » Explain the objective of the site scoring process
- » Describe the overall approach to scoring a site during the PA phase
- » Identify appropriate uses of existing analytical data
- » Describe and assess the use of best professional judgment
- » Define terminology specific to the PA
- » Explain the components and use of the Quickscore software



3-2

Notes



- ◆ This module focuses on the specific elements of the scoring process that participants must understand to successfully apply the scoring model to a PA. After they have completed this module, participants will be prepared to apply the Quickscore software to an example PA. Participants will be able to (1) explain the objective of the site scoring process, (2) describe the overall approach to scoring a site during the PA phase, (3) identify appropriate uses of existing analytical data, (4) describe and assess the use of best professional judgment, (5) define the terminology specific to the PA, and (6) explain the components and use of the Quickscore software.

Objective of the Site Scoring Process

- ◆ **Implement HRS as a screening tool**

- ◆ **Quantitatively assess HRS factors**

- » Some factors can be scored with relative certainty
- » Other factors must be scored using BPJ



3-3

Notes



- ◆ **Implement HRS as a screening tool:** Developing an HRS score requires extensive analytical data and a great deal of information about the site and its surroundings. At the PA stage — where the scope of the investigation and available hours are limited — it is generally not practical to apply the HRS in its entirety. Consequently, EPA's objective during the PA is to apply the HRS as a screening tool. EPA has developed a simplified evaluation approach that meets this objective.
- ◆ **Quantitatively assess HRS factors:** Some HRS factors can be scored when sufficient information already exists; these factors may be strong indicators of the potential site score. Some HRS factors usually can be evaluated within the scope of the PA.

However, sufficient information will not have been developed for some HRS factors to score them with relative certainty during the PA. As a result, the evaluator must use best professional judgment (BPJ) to determine how the factors will be scored and what impact the assumptions about the factors will have on the final HRS score.

Overall Approach to Scoring a Site: Hazardous Waste Quantity and Waste Characteristics

◆ Calculate a hazardous waste quantity score using existing information

- » Single score is used for evaluating each pathway, with some exceptions
- » Based on source types and sizes of those sources



3-4

Notes



- ◆ **Calculate hazardous waste quantity score using existing information:** The first step in site scoring is to calculate the hazardous waste quantity score based on the information collected during the PA. The hazardous waste quantity score is based on the types and sizes of the sources at the site. There are several different ways to calculate waste quantity, such as by volume, area, or mass. The method that yields the highest waste quantity is used to calculate the WC for each pathway. With some exceptions, the hazardous waste quantity calculated during this first step is a factor category that contributes to the WC for each pathway.

Overall Approach to Scoring a Site: Pathways

◆ Calculate the score for the pathways

- » Likelihood of release
 - › Observed release
 - › Potential to release
- » Targets
 - › Actual contamination
 - › Potential contamination
- » Waste characteristics (use WC already calculated)



3-5

Notes



- ◆ **Calculate the score for the pathways by assessing the factor categories for each pathway:** Three factor categories for each pathway (groundwater, surface water, soil, and air) are evaluated to compute the score for the pathway. The likelihood of release, targets, and waste characteristics are evaluated in accordance with the scoring methodology and the PA information. These factor category scores are combined for a total pathway score.

Overall Approach to Scoring a Site: Site Score

$$\sqrt{\frac{S_{\text{gw}}^2 + S_{\text{sw}}^2 + S_{\text{soil}}^2 + S_{\text{air}}^2}{4}}$$



3-6

Notes



- ◆ **Calculate the site score by entering the pathway scores into the formula:**
The site score is calculated by squaring each pathway score, adding the squared pathway scores together, dividing the sum of the squared pathway scores by 4, and finally, taking the square root of the dividend. The Quickscore software calculates the site score automatically.

Potential Pitfalls of Using Existing Analytical Data

- ◆ **Data not compatible with site assessment goals**
- ◆ **Data not sufficient to characterize the site**
- ◆ **Laboratory protocols and standards are unknown**
- ◆ **Conditions may have changed since sampling was conducted**



3-7

Notes



- ◆ **Data not compatible with site assessment goals:** It may not be appropriate to rely on existing analytical data if the data were collected for a purpose that is not compatible with the goals of a Superfund site assessment. The purpose of the data collection effort should be carefully reviewed to evaluate whether use of the data is appropriate for the PA. For example, if the purpose of data collection was to characterize material for proper waste disposal, the results of the sampling may have limited use because the analytes may be limited and the laboratory methodology may not be appropriate for determining if a release has occurred.
- ◆ **Data not sufficient to characterize the site:** It may not be appropriate to rely on existing analytical data if the sampling effort was not extensive enough to characterize the site and the possibility of a release. The types of media sampled, the analytical suite, and the sampling locations should be carefully reviewed to evaluate the extent existing data can be used.
- ◆ **Laboratory protocols and standards are unknown:** It may not be appropriate to rely on existing analytical data if the laboratory protocols and standards are not known. The analytical methods, QA/QC procedures, and validation procedures should be carefully reviewed before the investigator relies on existing analytical data.
- ◆ **Conditions may have changed since sampling was conducted:** It may not be appropriate to rely on existing analytical data if the conditions at the site may have changed since the sampling occurred. In some cases, months and even years may have passed since the data were collected. If the existing data indicate there was not a release, the condition could have changed in the time since the data were collected and the PA is conducted.

Appropriate Uses of Existing Analytical Data

- ◆ **Beware of false negative conclusions**
- ◆ **Support for “release”**
 - » Analytical indication is sufficient
 - » No definitive demonstration is necessary
- ◆ **Support for “no release” or “no targets exposed”**
 - » Definitive demonstration is necessary
 - » Indications alone are not sufficient



3-8

Notes



- ◆ **Beware of false negative conclusions:** Using existing analytical data to conclude that no release has occurred or no targets have been exposed could lead to false negative conclusions. EPA’s PA guidance strongly urges a conservative approach when such judgments are made at the PA stage. The mistake of making a false negative conclusion is not acceptable to EPA; therefore, a higher standard exists for using existing analytical data to support a “no release” conclusion than does use of the data to support a “release” conclusion.
- ◆ **Support for “release”:** Existing analytical data can be used to support a hypothesis that there has been a release without regard to data quality, attribution of substances to site operations, or concentrations compared with background levels. Analytical indications are sufficient to support the hypothesis, and a definitive determination is not necessary.
- ◆ **Support for “no release” or “no targets exposed”:** Existing analytical data can be used to support a hypothesis that there has been no release or that no targets have been exposed, but must be used as the principal consideration leading to the hypothesis. Using existing analytical data as the principal support requires that the data definitively demonstrate that a problem does not exist, and data quality, attribution of substances to site operations, or concentrations relative to background levels must be considered. Analytical indications are not sufficient to support the “no release” or “no targets exposed” hypotheses.

Best Professional Judgment

◆ BPJ combines:

- » Professional experience
- » Specific knowledge of characteristics and conditions of the site
- » Specific knowledge of site surroundings
- » Specific knowledge of targets



3-9

Notes



- ◆ **BPJ combines:** In most cases, suitable analytical data are not available during the PA. Therefore, the evaluator must apply professional judgment to evaluate the occurrence of releases and the presence of exposed targets. This process is somewhat intuitive and relies on the accumulated professional experience and the specific knowledge about the characteristics and conditions of the site, site surroundings, and targets.

Use BPJ to Hypothesize

- ◆ Release to pathway hypotheses
- ◆ Target exposure hypotheses
- ◆ Do not underestimate the potential threat
 - » Err on conservative side



3-10

Notes



- ◆ **Release to pathway hypotheses:** The use of BPJ during the PA stage takes the form of hypotheses. The site investigator must hypothesize about whether a release has or has not occurred. Releases are evaluated for groundwater, surface water, soil, and air. Release hypotheses form the foundation for the SI sampling strategy, if the site moves into that phase. The impact of the hypotheses on the site score are evaluated during scoring for the PA.
- ◆ **Target exposure hypotheses:** The site investigator must hypothesize about whether targets have or have not been exposed. Actual or potential targets may exist for the four pathways evaluated. Target exposure hypotheses must be evaluated more fully in the SI. The impact of the hypotheses on the site score are tested during scoring for the PA.
- ◆ **Do not underestimate the potential threat:** When BPJ is used, it is very important not to underestimate the potential threat. When in doubt, EPA strongly urges that it is best to err on the side of caution and conclude that a release has occurred or that specific targets have been affected. Not erring on the side of caution could result in prematurely designating the site as NFRAP.

Definitions of PA and HRS Terminology

- ◆ **Four pathways - same for PA and HRS**
 - » Groundwater, surface water, soil and air
- ◆ **Three factor categories - same for PA and HRS**
 - » Likelihood of release
 - » Targets
 - » Waste characteristics

(continued)



3-11

Notes



- ◆ **Four pathways - same for PA and HRS:** The “pathway” for both the PA and the HRS refers to the environmental medium through which a hazardous substance may threaten targets. The PA and HRS evaluate the migration and threat potential through the groundwater, surface water, soil exposure, and air pathways.
- ◆ **Three factor categories - same for PA and HRS:** There are three factor categories for each pathway: likelihood of release or exposure, targets, and waste characteristics. Different factors are evaluated within each factor category, depending on the pathway examined. For example, the target factor category for the groundwater pathway looks at primary and secondary targets associated with drinking water, while the target factor category for surface water looks at drinking water, fisheries, and sensitive environments.

Definitions of PA and HRS Terminology

◆ PA terms and their HRS equivalents:

- » Suspected release versus observed release
- » No suspected release versus potential to release
- » Primary target versus Level I and II actual contamination
- » Secondary target versus target exposed to potential contamination



3-12

Notes



- ◆ **PA terms and their HRS equivalents:** The PA guidance uses terminology that is different than is used in the HRS model. This difference used to be significant because the software program formerly used by EPA, PA Score, used the PA terminology. EPA now uses one software program, Quickscore, for scoring during the PA and for the HRS, so HRS terminology is now used during the PA. However, when referring to the PA guidance, the following PA terms are equivalent to the listed HRS terms:

PA Term

Suspected release
No suspected release
Primary target
Secondary target

Equivalent HRS Term

Observed release
Potential to release
Level I and II actual contamination
Target exposed to potential contamination

Scoring Exercise – Defining the Site and Sources

◆ Objectives of the scoring exercise

- » Review site background
- » Identify site sources and identify HRS source types
- » Determine the hazardous waste quantify (HWQ) for sources
- » Select hazardous substances associated with the source
- » Select pathways for which to evaluate the source
- » Navigate around HRS Quickscore software to efficiently score a site for PAs and SIs



3-13

Site Definition

- ◆ Any area or areas where a hazardous substance has been deposited, stored, disposed, placed or has otherwise come to be located
- ◆ A site includes single or multiple sources and the areas between sources
- ◆ Also defined using all historical and current information regardless of existing boundaries, fences or ownership

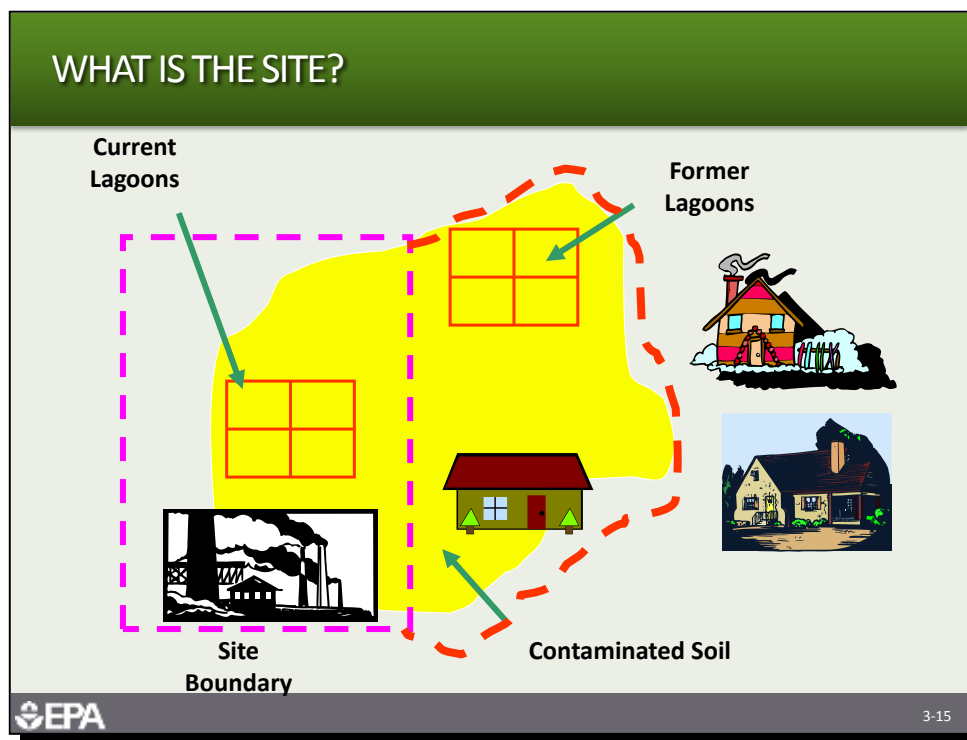


3-14

Notes



- ◆ **Site definition:** A site is defined independent of property boundaries. The location of hazardous substances that have been deposited, stored, disposed, placed or otherwise come to be located defines the boundaries of a site. In addition, a site can include multiple sources and the areas between the sources. During the PA, the site boundaries are defined using all available historical and current information. The site boundaries may be refined based on sampling conducted in future assessment efforts.



Notes



- ◆ **What is the site?** This example demonstrates that the property boundaries of a site do not necessarily define the site. In this example the site definition is extended beyond the property boundaries to include the contaminated soil and the former lagoons.

Source Definition

- ◆ Includes soil that may be contaminated from hazardous waste migration
- ◆ Evaluate present and former sources even if information is limited
- ◆ Hazardous substances within sources are assumed to be toxic, mobile, persistent and able to accumulate in tissues



3-16

Notes



- ◆ **Includes soil that may be contaminated from hazardous waste migration:** Soils that may have become contaminated from hazardous substance migration are included in the definition of a source.
- ◆ **Evaluate present and former sources even if information is limited:** During the PA, all current and former sources of hazardous substances should be evaluated. Information may be limited but that should not preclude inclusion of these sources.
- ◆ **Hazardous substances within sources are assumed to be toxic, mobile, persistent and able to accumulate in tissues:** Due to the limited scope of the PA, evaluation of waste characteristics will never be complete. Therefore, the PA can assume the worst case that hazardous substances within sources are toxic, mobile, persistent, and able to accumulate in tissues.

Types of Sources

- ◆ Landfills
- ◆ Surface impoundments
- ◆ Drums and other types of containers
- ◆ Waste piles: trash, chemical, junk



3-17

Notes



- ◆ **Landfills:** A landfill is defined in the HRS Guidance Manual as an engineered (by excavation or construction) or natural hole in the ground into which wastes have been disposed of by backfilling or by contemporaneous deposition of soil and wastes. In order to classify a pile as a landfill there must be evidence of soil and daily cover. If evidence of those two items is not observed, the area would be considered a pile.
- ◆ **Surface impoundments:** A surface impoundment is a topographic depression, excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed to hold accumulated liquid wastes, wastes containing free liquids, or sludges that were not backfilled or otherwise covered during periods of deposition; depression may be dry if deposited liquid has evaporated, volatilized or leached; structures that may be more specifically described as lagoon, pond, aeration pit, settling pond, tailings pond, sludge pit, etc.; also a surface impoundment that has been covered with soil after the final deposition of wastes materials (that is, buried or backfilled).
- ◆ **Drums and other types of containers:** A drum is a type of container used to hold hazardous substances. Drums are standard 55-gallon cylindrical containers. A container or tank includes a stationary device constructed primarily of nonearthen materials (such as wood, concrete, steel, or plastic) used to contain an accumulation of hazardous substance; or a portable in which a hazardous substance is stored or otherwise handled. Tanks may be above-ground or below-ground.

- ◆ **Waste piles:** There are five different types of waste piles under HRS. A chemical waste pile consists primarily of discarded chemical products (whether marketable or not), by-products, radioactive wastes, or used or unused feedstocks. Another pile is a term reserved for a pile of indeterminate origin that contains hazardous substances. A scrap metal or junk pile consists primarily of scrap metal or discarded durable goods such as appliances, automobiles, auto parts, or batteries, that contain or have contained hazardous substances. A tailings pile consists primarily of any combination of overburden from a mining operation and tailings from a mineral mining, beneficiation, or processing operation. A trash pile consists primarily of paper, garbage, or discarded nondurable goods that contain or have contained hazardous substances.



LANDFILLS



3-18

Surface Impoundments



3-19



Drums and
Other
Containers



3-20

Trash Pile



Chemical Pile



3-21

Types of Sources

- ◆ **Landfarms**



- ◆ **Contaminated soil**



- ◆ **Other: contaminated buildings, storm drain, dry well, injection well, groundwater plume and contaminate sediments with no identified sources, etc.**



3-22

Notes



- ◆ **Landfarms:** Landfarm/land treatment is a method of waste management in which either liquid wastes or sludges are spread over land and tilled or liquids are injected at shallow depths into soils.
- ◆ **Contaminated soil:** Contaminated soil excludes land treatment and is soil onto which available evidence indicates a hazardous substance was spilled, spread, disposed, or deposited.
- ◆ **Other:** This is a source type used when defined source types do not apply. Examples include: contaminated buildings, storm drains, dry wells, injection wells, and French drains. "Other" also can be used for groundwater plumes and sediments with no identified source.

Non-Sources

- ◆ Sources do not include volumes of air, groundwater, surface water or sediment that have become contaminated by waste migration;
- ◆ EXCEPT in the case of either a groundwater plume or contaminated sediment with no identifiable source. The plume or sediment may then be considered as the source.



3-23

Notes



- ◆ **Non-sources:** According to the HRS Guidance Manual, in general, the volumes of air, groundwater, surface water, and surface water sediments that may have become contaminated through migration are not considered sources. The exception to this is the case of either a groundwater plume or contaminated sediment with no identifiable source. The plume or sediment may then be considered as the source.

Source and Waste Data

◆ Sources

- » Do sources contain the waste?
- » Have wastes leaked or flowed out?
- » Where did contents go?

◆ Wastes

- » How much?
- » What kinds?
- » Physical state – solid, liquid or gas?



3-24

Notes



- ◆ **Sources:** The PA should evaluate each source using historical data and current observations. The PA should assess whether each source adequately contains the waste and evaluate if wastes have leaked, flowed, or otherwise migrated out of the sources. The PA should assess where wastes may have gone after migrating from the sources.
- ◆ **Wastes:** The PA should also evaluate wastes within and migrating from the sources. The PA should conservatively estimate the volume of waste material in each source and use existing information to evaluate the kinds of wastes associated with each source. The PA should describe to the extent possible the physical state of material currently in the sources and the physical state of the wastes when they were first placed in the sources.

Data Resources

- ◆ **Prior inspection reports and enforcement actions**
- ◆ **Waste manifests**
- ◆ **Aerial photography: recent and historical**
- ◆ **Site recon observations**
 - » Source size and dimensions
 - » Containment
 - » Evidence of waste migration



3-25

Notes



- ◆ **Prior inspection reports and enforcement actions:** Prior inspection reports and enforcement actions can provide valuable information for the PA. Both local health department (county or city) and state records should be searched for previous actions taken at the site. In addition, federal actions by another program, such as RCRA or the water program, may have also occurred in the past.
- ◆ **Waste manifests:** Depending on the type of facility and the time period of operation, waste manifests may be available in site files or local or state files, that describe the type of waste material in the sources at the site.
- ◆ **Aerial photography: recent and historical:** Aerial photography can be used to identify waste storage or disposal areas that may have been used in the past, but are not visible now.
- ◆ **Site recon observations:** Observations during site reconnaissance are very important for evaluating sources at a site. The site recon should estimate the size/dimensions of all sources. The site recon should also describe the presence or lack of containment for all sources. Finally, all evidence of waste migration from sources should be documented with photographs.

Waste Quantity Types

◆ Four tiers

- » A – Constituent quantity
- » B – Waste stream quantity
- » C – Volume
- » D – Area

◆ Volume and area most common

- » Information is most readily available
- » Easier to document and estimate



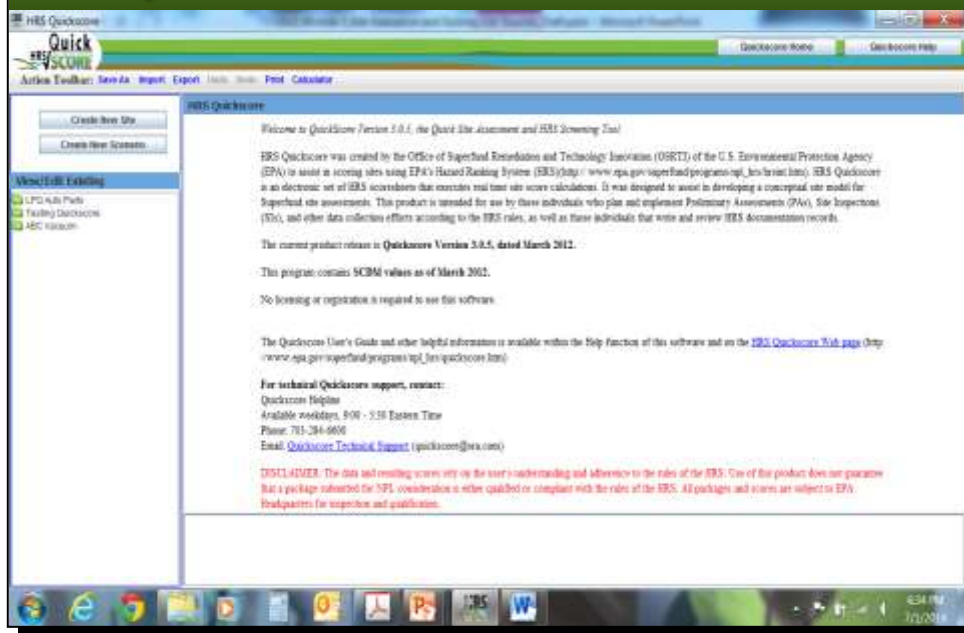
3-26

Notes



- ◆ **Four tiers:** Sources can be evaluated using four tiers. The tier giving the highest score is then used for preliminary HRS scoring purposes. Some source types, such as drums and tanks, cannot be evaluated using the Tier D – Area, and others, such as contaminated soil, can only be evaluated using Tier D – Area. Tiers A and B require specific information to be evaluated and are not commonly used during the PA.
- ◆ **Volume and area most common:** The easiest tiers to evaluate are Tiers C and D, because they require only estimates of dimensions rather than chemical-specific data.

Components and Use of HRS Quickscore Version 3.0.5 Software



Notes



- ◆ The key functions of Quickscore version 3.0.5 are:
 - Quick HRS pathway and site score calculations
 - HRS scoresheet preparation and printing
 - Easy identification of HRS data gaps in your CSM
 - Back of the envelope tracking of data gaps, notes, refinements, and adjustments in scenario testing, and
 - Scratchpad ability to make notes as you work
- ◆ EPA recommends use of Quickscore during all phases of the site assessment process, from PA to HRS package. EPA no longer uses the software programs PA Score or PreScore during the PA stage and SI stage.
- ◆ Quickscore organizes information that you enter by site name, and then by scenario. It does not create an electronic file for each site or scenario. Instead, each scenario is maintained in a spreadsheet or database that is organized by the site name for easy retrieval. The summary page for each scenario is linked to the source evaluation and pathway score pages for the scenario.
- ◆ Each pathway scoring page has dropdown menus that link to HRS rule and appropriate HRS tables necessary to score all the factors related to the factor category. The hazardous waste quantity calculated from the source page is carried forward to all pathway scoring pages.
- ◆ Quickscore uses the inputs to calculate pathway scores and the site score. Quickscore makes it easy to evaluate the impact of particular assumptions and hypotheses when a pathway is scored.

What's New in Version 3.0.5

- ◆ A new look and feel
- ◆ Consolidated software platform
- ◆ Increased functionality
- ◆ Closer adherence to the structure of the HRS
- ◆ Easier to navigate between site, sources and pathway data entry screens
- ◆ Updated SCDM values – NEW FOR VERSION 3.0.5
- ◆ Calculation of Level I, Level II and Potential target values
- ◆ Calculation of Waste Characteristics values from site data



3-28

Notes



- ◆ **Version 3.0.5:** This release includes updated SCDM values. In December 2011 and March 2012, EPA released information regarding updates to 49 volatile substances listed in SCDM. These updates affected the human toxicity factor (HTF), groundwater mobility, persistence, bioaccumulation, ecotoxicity, gas mobility and migration, and benchmark values of these substances.

A list of the chemicals with updated SCDM values is available at <http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm#mar2012>.

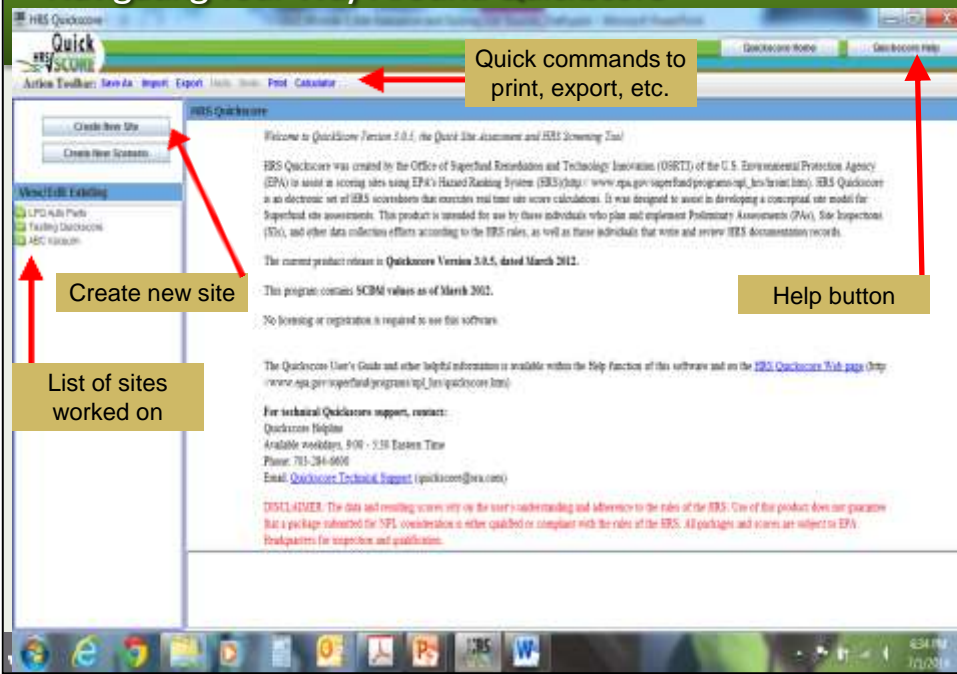
Navigating Your Way Around Quickscore

- ◆ Easy to use by clicking on buttons
- ◆ Help provides information on the use and scoring elements of the software
- ◆ Information is saved as you enter it
- ◆ Numbered steps to guide you through the process for all scoring elements
- ◆ If corrections are made, they transfer to all screens in the program
- ◆ Quickly run multiple scenarios
- ◆ Printable HRS scoresheets



3-29

Navigating Your Way Around Quickscore



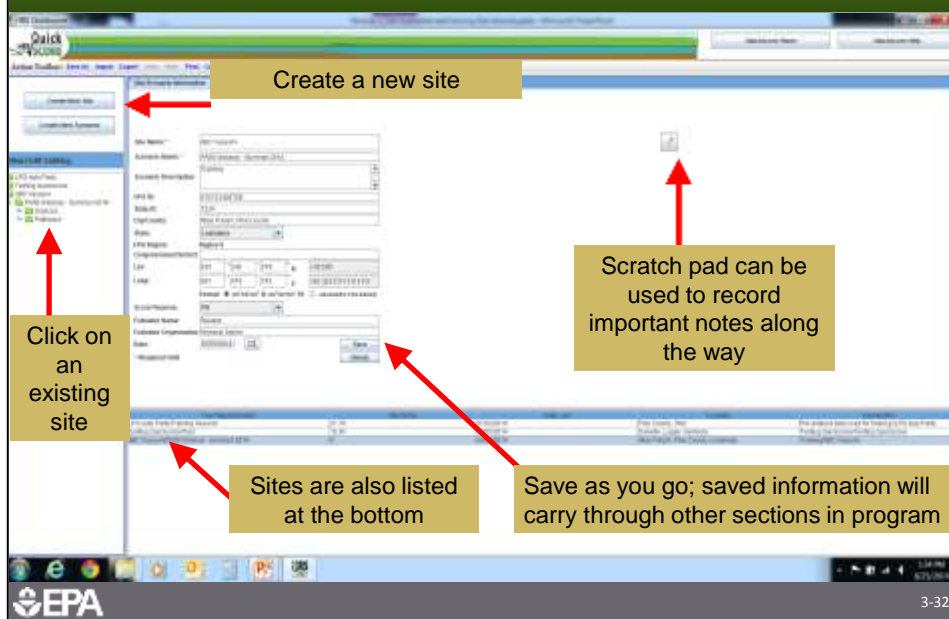
QuickScore – Site Information

- ◆ Review ABC site information
- ◆ Complete site characterization information in QuickScore



3-31

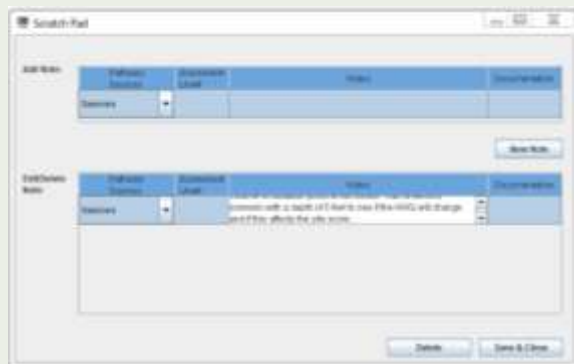
HRS QUICKSCORE – General Site Information



3-32

HRS QUICKSCORE – Scratchpad

- ◆ Scratch pad allows the user to make notes along the way and notes can be printed out with scoresheets

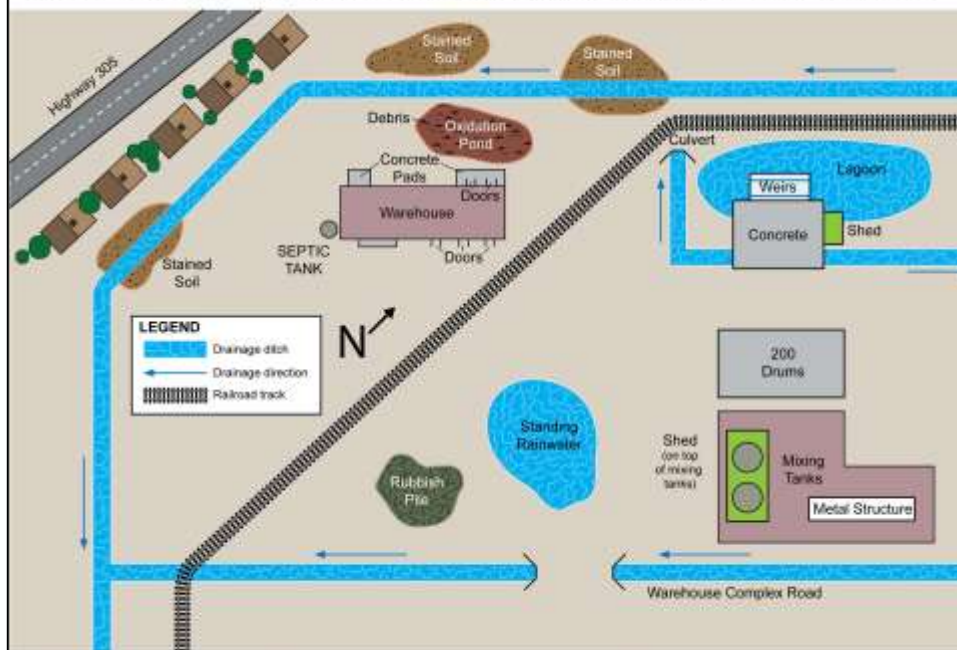


- ◆ We will use HRS Quickscore to prepare a preliminary HRS score for the ABC Vacuum site



3-33

ABC Vacuum Service - Site Characterization and Sources



3-34

HRS Quickscore – Sources at ABC Vacuum

◆ Use the site background information to identify sources at ABC Vacuum

- » 200, 55-gallon drums
- » Two, 1,000 gallon mixing tanks
- » 3,000 ft² lagoon
- » 750 ft² oxidation pond
- » 500 ft² rubbish pile
- » Contaminated soil

◆ Hazardous substances associated with the sources include:

- » Benzene, benzo(a)pyrene, trichloroethylene (TCE), arsenic, barium, cadmium, chromium, lead and selenium

◆ An excerpt from the field notes is provided on the next page



3-35

Logbook Excerpts from Site Reconnaissance

1-2-99 by Lisa A. Lillis

- 0845 Perform on-site reconnaissance. Site is currently inactive. Enter site from warehouse complex road.
- 0850 Proceeding north/northwest from road. Observe rubbish pile due west of railroad tracks which traverses the site. The rubbish pile consists of assorted debris and is estimated to be 500 square feet in area. Continue walking east from rubbish pile.
- 0855 Observe area of standing rainwater east of shed and metal structure. Shed covers two 1,000 gallon mixing tanks. The tanks and metal structure are situated on one concrete pad. The metal structure is inaccessible. Adjacent to the north of this pad is a smaller, second concrete pad on which 200, 55-gallon drums are stored. Contents of the tanks and drums are not indicated.
- 0915 Walked north/northwest of drum pad to a lagoon. A concrete pad, shed and a series of weirs are located on the southern edge of the lagoon. A drainage ditch borders the west and south of the lagoon; flow appears to be north and east, respectively. North drainage flows into a culvert pipe. The lagoon is estimated to be 3,000 square feet, volume unknown.
- 0940 Walk west over railroad tracks to site warehouse building. Doors are located on the south and north facades. The facility septic tank is located to the west, outside of the warehouse. Two small concrete pads are located on the northeast and northwest corners of the north façade. An oxidation pond is observed north/northwest of the warehouse. The pond is estimated to be 750 square feet. Volume unknown. Some debris is observed in the pond.
- 0955 A drainage ditch is observed along the perimeter of the property. The drainage ditch is walked. The ditch appears to be intermittent, although areas of the ditch were observed to be overflowing during the reconnaissance. The ditch appears to receive all site runoff and borders the site to the north and west and south. Eventual flow is to the south into a perennial ditch approximately 6,000 feet from the site. Three areas of overflow and stained soils are observed along the northwest corner of the property. Each area is approximately 10 feet wide and are estimated at 50 feet, 20 feet, and 30 feet in length, respectively, for a total of 1,000 square feet of observed stained soils.
- 1030 The site perimeter is unfenced, but no evidence of trespassing was observed. Total site area is approximated to be 13 acres.
- 1040 Leave ABC property to complete survey of nearby targets (environs).
- 1050 A small subdivision of 5 houses is located between 100 and 200 feet to the north and west of the site. No schools or daycare facilities are observed within ½ mile of the site.
- 1130 Environs survey completed.



3-36

HRS Quickscore – Sources at ABC Vacuum

- ◆ Score each source associated with the site
- ◆ Determine the hazardous substances
- ◆ Calculate the source hazardous waste quantity (HWQ)

The screenshot shows the 'Sources' tab in the HRS Quickscore software. A red box highlights the 'Click Source Information Tab' instruction. The interface includes fields for 'Source ID', 'Source Name', and 'Source Type'. Below these are sections for 'Hazardous Substances' and 'Hazardous Waste Quantity'.



3-37

Source 1 – Drums – Step 1 – Source Name and Source Type

The screenshot shows the 'Source 1' step in the HRS Quickscore software. A red box highlights the 'Select Source Type from drop down menu' instruction. The interface includes fields for 'Source ID', 'Source Name', and 'Source Type'. Below these are sections for 'Hazardous Substances' and 'Hazardous Waste Quantity'.

3-38

Source 1 – Step 2 – Hazardous Waste Quantity

What Tier will be used?
What units are needed?
Click on the link to check HRS Table 2-5.

3-39

Source 1 – Step 2 – Hazardous Waste Quantity

Table 2-5 Hazardous Waste Quantity Evaluation System

Tier	Volume	Units	Equation for assigning value
A	Hazardous constituent	lb	C quantity (C)
B	Hazardous constituent	lb	10,000 quantity (R)
C	Volume (V)		
	Landfill	yd ³	V/2.58
	Surface impoundment	yd ³	V/1.2
	Surface impoundment (lined for 30 days)	yd ³	V/1.3
	Drums ¹	gallons	V/2.7
	Tanks and containers other than drums	yd ³	V/1.3
	Contaminated soil	yd ³	V/2.58
	Pile ²	yd ³	V/1.3
	Other	yd ³	V/1.3
D	Area (A)		
	Landfill	yd ²	A/3.438
	Surface impoundment	yd ²	A/11
	Surface impoundment (lined for 30 days)	yd ²	A/11
	Land treatment	yd ²	A/2.75
	Pile ²	yd ²	A/11
	Contaminated soil	yd ²	A/11.088

¹ Do not include empty drums.
² Sources related to area values are based on 100,000 gallons of waste per 1,000 square feet of area.
³ Do not include empty drums.

2.4.1.2 - Hazardous waste quantity. Evaluate these hazardous waste quantities for the source for each of the evaluation system based on the tier of hazardous waste quantity plus the tier of any additional CERCLA pollutants and constituents (as defined in CERCLA section 101(12)), as indicated by the tier of the source. The tier of the source is determined by the tier of the source's hazardous waste quantity.

Assume 50
gallons per
drum x 200
drums =
10,000



3-40

Source 1 – Step 2 – Hazardous Waste Quantity Volume

1. Enter 10,000

2. Click

EPA

3-41

Source 1 – Step 3 – Availability to Migrate to a Pathway

Decision Tree 3.3.1

Is the substance a regulated substance? (CERCLA or EPCRA)

Is the substance listed on the CERCLA or EPCRA lists?

Yes

No

3-42

Source 1 – Step 4 – Hazardous Substances Associated with Source

The screenshot displays the 'QuickSCDM' software interface. The main window is titled 'Data Sources to be Incorporated'. It features a tabbed interface with three tabs: 'General Information', 'Source Information', and 'Pathways to be Incorporated'. The 'General Information' tab is currently selected, showing a form with fields for 'Name', 'Description', 'Source', 'Pathway', and 'Unit'. A red box highlights the 'Source' field, and a red arrow points to it with the text 'Click button to access SCDM'. Below the 'Source' field, there is a 'Calculate' button. The 'Pathways to be Incorporated' tab is also visible, showing a list of pathways and a 'Calculate' button. The interface includes a sidebar on the left with various icons and a top menu bar with options like 'File', 'Edit', 'View', 'Tools', 'Help', and 'Window'.

Source 1 – Step 4 – Hazardous Substances Associated with Source

1. Select Hazardous Substance

2. Use these buttons to associate the hazardous substance to a source (if known), or to the site.

Substance Associated with a Source

UFI Number	Chemical Name	Toxicity
000001-001	Acetic Acid	Low
000002-002	Acetic Acid	Low
000003-003	Acetic Acid	Low
000004-004	Acetic Acid	Low
000005-005	Acetic Acid	Low
000006-006	Acetic Acid	Low
000007-007	Acetic Acid	Low
000008-008	Acetic Acid	Low
000009-009	Acetic Acid	Low
000010-010	Acetic Acid	Low
000011-011	Acetic Acid	Low
000012-012	Acetic Acid	Low
000013-013	Acetic Acid	Low
000014-014	Acetic Acid	Low
000015-015	Acetic Acid	Low
000016-016	Acetic Acid	Low
000017-017	Acetic Acid	Low
000018-018	Acetic Acid	Low
000019-019	Acetic Acid	Low
000020-020	Acetic Acid	Low
000021-021	Acetic Acid	Low
000022-022	Acetic Acid	Low
000023-023	Acetic Acid	Low
000024-024	Acetic Acid	Low
000025-025	Acetic Acid	Low
000026-026	Acetic Acid	Low
000027-027	Acetic Acid	Low
000028-028	Acetic Acid	Low
000029-029	Acetic Acid	Low
000030-030	Acetic Acid	Low
000031-031	Acetic Acid	Low
000032-032	Acetic Acid	Low
000033-033	Acetic Acid	Low
000034-034	Acetic Acid	Low
000035-035	Acetic Acid	Low
000036-036	Acetic Acid	Low
000037-037	Acetic Acid	Low
000038-038	Acetic Acid	Low
000039-039	Acetic Acid	Low
000040-040	Acetic Acid	Low
000041-041	Acetic Acid	Low
000042-042	Acetic Acid	Low
000043-043	Acetic Acid	Low
000044-044	Acetic Acid	Low
000045-045	Acetic Acid	Low
000046-046	Acetic Acid	Low
000047-047	Acetic Acid	Low
000048-048	Acetic Acid	Low
000049-049	Acetic Acid	Low
000050-050	Acetic Acid	Low
000051-051	Acetic Acid	Low
000052-052	Acetic Acid	Low
000053-053	Acetic Acid	Low
000054-054	Acetic Acid	Low
000055-055	Acetic Acid	Low
000056-056	Acetic Acid	Low
000057-057	Acetic Acid	Low
000058-058	Acetic Acid	Low
000059-059	Acetic Acid	Low
000060-060	Acetic Acid	Low
000061-061	Acetic Acid	Low
000062-062	Acetic Acid	Low
000063-063	Acetic Acid	Low
000064-064	Acetic Acid	Low
000065-065	Acetic Acid	Low
000066-066	Acetic Acid	Low
000067-067	Acetic Acid	Low
000068-068	Acetic Acid	Low
000069-069	Acetic Acid	Low
000070-070	Acetic Acid	Low
000071-071	Acetic Acid	Low
000072-072	Acetic Acid	Low
000073-073	Acetic Acid	Low
000074-074	Acetic Acid	Low
000075-075	Acetic Acid	Low
000076-076	Acetic Acid	Low
000077-077	Acetic Acid	Low
000078-078	Acetic Acid	Low
000079-079	Acetic Acid	Low
000080-080	Acetic Acid	Low
000081-081	Acetic Acid	Low
000082-082	Acetic Acid	Low
000083-083	Acetic Acid	Low
000084-084	Acetic Acid	Low
000085-085	Acetic Acid	Low
000086-086	Acetic Acid	Low
000087-087	Acetic Acid	Low
000088-088	Acetic Acid	Low
000089-089	Acetic Acid	Low
000090-090	Acetic Acid	Low
000091-091	Acetic Acid	Low
000092-092	Acetic Acid	Low
000093-093	Acetic Acid	Low
000094-094	Acetic Acid	Low
000095-095	Acetic Acid	Low
000096-096	Acetic Acid	Low
000097-097	Acetic Acid	Low
000098-098	Acetic Acid	Low
000099-099	Acetic Acid	Low
000100-100	Acetic Acid	Low

Add New Substance

Delete Substance

Associate

List of Hazardous Substances

- ◆ Arsenic
- ◆ Barium
- ◆ Benzene
- ◆ Benzo(a)pyrene – represents PAHs
- ◆ Cadmium
- ◆ Chromium
- ◆ Lead
- ◆ Phenol
- ◆ Selenium
- ◆ TCE – represents chlorinated solvents
- ◆ Do not include NORM



3-45

Notes



- ◆ This slide shows the list of contaminants generally associated with the ABC site. Two general categories of contaminants were listed, PAHs and chlorinated solvents. For the purpose of scoring, we decided to select the most toxic compounds in those two categories, benzo(a)pyrene representing PAHs and TCE representing chlorinated solvents. We will not include naturally occurring radioactive material (NORM).

Add First Substance to the List

2. Put substance in this box only if it is present in this source and no other source at the site. At this stage it is not possible to associate any contaminants with a single source

At this stage it is not possible to associate any contaminants with a single source

Click on the substance in the table, and then use the arrow button to move it to your list of substances.

Look up by substance name:

Look up by CAS Number:

CAS Num	Chemical Name	Toxicity	Score
			Percent
000000-22-9	Hydrogen peroxide	18	1000
000000-35-9	Hydrogen peroxide	30	0
000000-54-1	Hydrogen	1	100
000000-67-6	Acetylene	18000	10000
000000-89-1	Hydrogen	18000	10
000000-92-4	Hydrogen	180	1000
000000-95-0	Hydrogen	18000	10000
000000-96-5	Hydrogen	30	100
000000-10-2	Hydrogen peroxide	18000	10000
000000-11-2	Hydrogen peroxide	180	1000
000000-47-7	Hydrogen peroxide	180	1000
000000-55-5	Hydrogen	18000	10000
000000-12-1	Hydrogen peroxide	18	10000
000000-10-6	Hydrogen peroxide (hydrogen peroxide)	1800	1000
000000-10-6	Hydrogen peroxide	18000	100
000000-29-9	Hydrogen	18000	10
000000-22-4	Hydrogen	18000	0
000000-24-3	Hydrogen	180	1000
000000-29-5	Hydrogen	18000	0
000000-55-5	Hydrogen peroxide	1800	10000
000000-14-5	Hydrogen	1800	1000
000000-47-5	Hydrogen	18000	100
000000-22-9	Hydrogen peroxide	18000	10000
000000-22-9	Hydrogen peroxide	30	0
000000-44-0	Hydrogen peroxide (hydrogen peroxide)	180	10000
000000-69-9	Hydrogen peroxide	180	0
000000-47-1	Hydrogen	18000	0
000000-11-2	Hydrogen peroxide	180	1000

1. Highlight Arsenic

2. Click

Substance(s) Associated with a Source

Substance(s) Associated with this Site, but the specific source cannot be determined
(see HHS Section 2.2.2)

Remove from List

Add Substances

First Substance is on the List

[illegible]

Add Nine Other Substances

Click on the substance in the table, and then use the arrow button to move it to your list of substances.

Look up by substance name:

Look up by CAS Number:

CAS Name	Chemical Name	Toxicity	Priority
000200-11-9	1,1,1,1-Tetrachloroethane, 1,1,1,1-	10000	1
000019-34-1	Acetaminophen, 1,1,2,2-	100	1
000029-54-4	1,1,1,2-Tetrachloroethane	1000	1
013068-51-3	Thallium 204 (radioactive)	10000	10000
007448-29-0	Thallium	100	1
070521-47-9	Therium 232 (radioactive)	10000	10000
013174-62-9	Therium 230 (radioactive)	10000	10000
010569-54-6	Therium 231 (radioactive)	10000	10000
014028-42-7	Therium 234 (radioactive)	10000	10000
014021-46-1	Therium 235 (radioactive)	10000	10000
007448-29-1	Therium 236 (radioactive)	10000	10000
010009-18-8	Therium 238 (radioactive)	10000	10000
000198-48-3	Therium	100	1
000071-35-2	Thiodiazole	10000	10000
001401-23-3	Thiodiazole dithiolate	100	10000
0050-30-0	Thiodiazole mine	10000	10000
000048-29-2	Thiodiazole	10000	10000
000708-83-1	Thiodiazole dithiolate, 1,2,3-	100	1000
000071-35-8	Thiodiazole dithiolate, 1,3,5-	100	100
000019-34-2	Thiodiazole dithiolate, 1,3,5-	10000	10000
000019-34-3	Thiodiazole dithiolate (TOD)	10000	1000
000019-34-4	Thiodiazole dithiolate, 1,3,5-	100	100
000019-34-5	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-34-6	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-34-7	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-34-8	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-34-9	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-0	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-1	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-2	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-3	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-4	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-5	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-6	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-7	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-8	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-35-9	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-0	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-1	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-2	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-3	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-4	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-5	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-6	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-7	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-8	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-36-9	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-0	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-1	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-2	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-3	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-4	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-5	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-6	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-7	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-8	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-37-9	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-38-0	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-38-1	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-38-2	Thiodiazole dithiolate, 1,3,5-	100	10000
000019-38-			

Notes



- ◆ Add the other nine hazardous substances in the same manner was done for Arsenic. Substances can be added and associated with the source and the site, but they cannot be the same substances. So for instance, if they were two drums labeled PCB oil, they could add PCBs as a substance associated with the source and have the other 10 substances associated with the site. Tell them to click the “Add Substances” button when they have all ten substances in the box.

Source 1 – Step 5 – Determine if Source Can Be Considered for Soil Exposure Pathway

Check if the source occurs within the top 2 feet from ground surface. For this site, assume all sources occur within the top 2 feet from the ground surface.

Source 1 – Source Characterization Complete

Click "Add New Source" to evaluate next Source

Source 2 – Tanks – Step 1 – Source Name and Source Type

The screenshot displays the HHS QuickScore software interface. The top menu bar includes 'File', 'Edit', 'View', 'Tools', 'Help', and 'QuickScore'. Below the menu is a toolbar with buttons for 'Save As', 'Import', 'Export', 'Undo', 'Redo', 'Print', and 'Calculator'. The main workspace is divided into three panes. The left pane, titled 'View/Edit Existing', contains a list of files: 'LPG Auto Parts', 'Training Session', 'Cobalt', and 'ABC'. The middle pane, titled 'Site/Scenario Information', contains a form for 'STEP 1: Site / Scenario Name: ABC / ABC'. The form has fields for 'Source #:' (1), 'Source Name:' (Tartar), and 'Source Type:' (Tartar/Combustion other than Diesel). The right pane, titled 'STEP 2: The substances in this source are capable of migrating to which of the following pathways? 2.2.1', contains a list of pathways with checkboxes: 'Ground Water (GW) Migration Pa...', 'Surface Water (SW) Migration Pa...', and 'Air Migration Pathway'. Below this is a section for 'STEP 4: Which substances are associated with this source? 2.2.2', which contains a list of substances: 'Ammonia', 'Benzene', 'Dioxane', 'Ethanolamine', and 'Cadmium'. At the bottom of the interface is a table with columns: 'Source #', 'Source Name', 'Source Type', 'Fuel', 'Source Strength (lb/hr)', 'Air', 'Water', 'Soil', 'Air', 'Soil', 'Air', 'Soil'. The table contains two rows of data: Row 1: Source # 1, Source Name 'Tartar', Source Type 'Tartar/Combustion', Fuel 'Tartar', Source Strength (lb/hr) 20.0, Air 1, Water 1, Soil 1, Air 1, Soil 1, Air 1, Soil 1. Row 2: Source # 2, Source Name 'Tartar', Source Type 'Tartar/Combustion', Fuel 'Tartar', Source Strength (lb/hr) 30.0, Air 2, Water 2, Soil 2, Air 2, Soil 2, Air 2, Soil 2.

Tanks – Step 2 – Hazardous Waste Quantity

- ◆ **How many tanks are there?**
 - » Two 1,000 gallon tanks
- ◆ **What Tier should be used?**
 - » Tier C – Volume
- ◆ **What are the units needed?**
 - » Cubic yards
- ◆ **What is the conversion factor – see HRS Table 2-5**
 - » 1 ton = 2,000 lbs = 1 yd³ = 4 drums = 200 gal
 - » 2,000 gal = ? yd³

1. Enter 10.0

2. Click

EPA 3-53

Tanks – Steps 3, 4 and 5

1. Check all boxes in Step 3.

2. Hazardous substances selected for site carry over for Step 4.

3. Check box in Step 5.

4. Click "Add New Source" button.

EPA 3-54

Source 3 – Lagoon – Step 1 – Source Name and Type

[illegible]

Lagoon – Step 2 – Hazardous Waste Quantity

- ◆ **What Tier should be used?**
 - » Tier C Volume or Tier D Area
 - » Tier D should be used because depth was not provided; therefore, volume cannot be calculated
- ◆ **What units are needed?**
 - » Square feet
- ◆ **How many square feet is the lagoon?**
 - » 3,000 square feet

1. Enter 3000

2. Click

Source #	Source Name	Source Type	Tier	Source ID	GA	MS	IL	IN	SC	ADG/Lib
1	Quartz	Quartz	20.0	0	Y	Y	Y	Y	Y	LA
2	Tarps	Tarps/Conts	4.0	0	Y	Y	Y	Y	Y	SC
3	Legatom	Surface Imps	10	230.7992307	Y	Y	Y	Y	Y	SC

Lagoon – Steps 3, 4 and 5

[illegible]

Source 4 – Oxidation Pond – Step 1 – Source Name and Type

The screenshot displays the EPA QuickSCAM software interface. The 'STEP 1' section is highlighted with a red box, showing input fields for Site ID, Source ID, Agency Name, and Source Type. The 'STEP 2' section shows various chemical and physical property input fields. The 'STEP 3' section shows a table of chemical properties. The 'STEP 4' section shows a table of chemical properties.

STEP 1

Site / System Name (SCAM ID):

Source ID:

Agency Name:

Source Type:

STEP 2

Tier 1 - Hazardous Constituent Quantity:

Q1: ☐ Check if Tier 1 is adequately determined

Tier 2 - Hazardous Constituent Quantity:

Q2: ☐ Check if Tier 2 is adequately determined

Tier 3 - Volume:

V1: ☐ Check if greater than 0, but unknown

Tier 4 - Area:

A1: ☐ Check if greater than 0, but unknown

STEP 3

ENTER the code if you are scoring this source for the first time (see Appendix B)

STEP 4

Table with 10 columns: Chemical Name, Chemical Type, Tier, Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q49, Q50, Q51, Q52, Q53, Q54, Q55, Q56, Q57, Q58, Q59, Q60, Q61, Q62, Q63, Q64, Q65, Q66, Q67, Q68, Q69, Q70, Q71, Q72, Q73, Q74, Q75, Q76, Q77, Q78, Q79, Q80, Q81, Q82, Q83, Q84, Q85, Q86, Q87, Q88, Q89, Q90, Q91, Q92, Q93, Q94, Q95, Q96, Q97, Q98, Q99, Q100, Q101, Q102, Q103, Q104, Q105, Q106, Q107, Q108, Q109, Q110, Q111, Q112, Q113, Q114, Q115, Q116, Q117, Q118, Q119, Q120, Q121, Q122, Q123, Q124, Q125, Q126, Q127, Q128, Q129, Q130, Q131, Q132, Q133, Q134, Q135, Q136, Q137, Q138, Q139, Q140, Q141, Q142, Q143, Q144, Q145, Q146, Q147, Q148, Q149, Q150, Q151, Q152, Q153, Q154, Q155, Q156, Q157, Q158, Q159, Q160, Q161, Q162, Q163, Q164, Q165, Q166, Q167, Q168, Q169, Q170, Q171, Q172, Q173, Q174, Q175, Q176, Q177, Q178, Q179, Q180, Q181, Q182, Q183, Q184, Q185, Q186, Q187, Q188, Q189, Q190, Q191, Q192, Q193, Q194, Q195, Q196, Q197, Q198, Q199, Q200, Q201, Q202, Q203, Q204, Q205, Q206, Q207, Q208, Q209, Q210, Q211, Q212, Q213, Q214, Q215, Q216, Q217, Q218, Q219, Q220, Q221, Q222, Q223, Q224, Q225, Q226, Q227, Q228, Q229, Q230, Q231, Q232, Q233, Q234, Q235, Q236, Q237, Q238, Q239, Q240, Q241, Q242, Q243, Q244, Q245, Q246, Q247, Q248, Q249, Q250, Q251, Q252, Q253, Q254, Q255, Q256, Q257, Q258, Q259, Q260, Q261, Q262, Q263, Q264, Q265, Q266, Q267, Q268, Q269, Q270, Q271, Q272, Q273, Q274, Q275, Q276, Q277, Q278, Q279, Q280, Q281, Q282, Q283, Q284, Q285, Q286, Q287, Q288, Q289, Q290, Q291, Q292, Q293, Q294, Q295, Q296, Q297, Q298, Q299, Q300, Q301, Q302, Q303, Q304, Q305, Q306, Q307, Q308, Q309, Q310, Q311, Q312, Q313, Q314, Q315, Q316, Q317, Q318, Q319, Q320, Q321, Q322, Q323, Q324, Q325, Q326, Q327, Q328, Q329, Q330, Q331, Q332, Q333, Q334, Q335, Q336, Q337, Q338, Q339, Q340, Q341, Q342, Q343, Q344, Q345, Q346, Q347, Q348, Q349, Q350, Q351, Q352, Q353, Q354, Q355, Q356, Q357, Q358, Q359, Q360, Q361, Q362, Q363, Q364, Q365, Q366, Q367, Q368, Q369, Q370, Q371, Q372, Q373, Q374, Q375, Q376, Q377, Q378, Q379, Q380, Q381, Q382, Q383, Q384, Q385, Q386, Q387, Q388, Q389, Q390, Q391, Q392, Q393, Q394, Q395, Q396, Q397, Q398, Q399, Q400, Q401, Q402, Q403, Q404, Q405, Q406, Q407, Q408, Q409, Q410, Q411, Q412, Q413, Q414, Q415, Q416, Q417, Q418, Q419, Q420, Q421, Q422, Q423, Q424, Q425, Q426, Q427, Q428, Q429, Q430, Q431, Q432, Q433, Q434, Q435, Q436, Q437, Q438, Q439, Q440, Q441, Q442, Q443, Q444, Q445, Q446, Q447, Q448, Q449, Q450, Q451, Q452, Q453, Q454, Q455, Q456, Q457, Q458, Q459, Q460, Q461, Q462, Q463, Q464, Q465, Q466, Q467, Q468, Q469, Q470, Q471, Q472, Q473, Q474, Q475, Q476, Q477, Q478, Q479, Q480, Q481, Q482, Q483, Q484, Q485, Q486, Q487, Q488, Q489, Q490, Q491, Q492, Q493, Q494, Q495, Q496, Q497, Q498, Q499, Q500, Q501, Q502, Q503, Q504, Q505, Q506, Q507, Q508, Q509, Q510, Q511, Q512, Q513, Q514, Q515, Q516, Q517, Q518, Q519, Q520, Q521, Q522, Q523, Q524, Q525, Q526, Q527, Q528, Q529, Q530, Q531, Q532, Q533, Q534, Q535, Q536, Q537, Q538, Q539, Q540, Q541, Q542, Q543, Q544, Q545, Q546, Q547, Q548, Q549, Q550, Q551, Q552, Q553, Q554, Q555, Q556, Q557, Q558, Q559, Q560, Q561, Q562, Q563, Q564, Q565, Q566, Q567, Q568, Q569, Q570, Q571, Q572, Q573, Q574, Q575, Q576, Q577, Q578, Q579, Q580, Q581, Q582, Q583, Q584, Q585, Q586, Q587, Q588, Q589, Q590, Q591, Q592, Q593, Q594, Q595, Q596, Q597, Q598, Q599, Q600, Q601, Q602, Q603, Q604, Q605, Q606, Q607, Q608, Q609, Q610, Q611, Q612, Q613, Q614, Q615, Q616, Q617, Q618, Q619, Q620, Q621, Q622, Q623, Q624, Q625, Q626, Q627, Q628, Q629, Q630, Q631, Q632, Q633, Q634, Q635, Q636, Q637, Q638, Q639, Q640, Q641, Q642, Q643, Q644, Q645, Q646, Q647, Q648, Q649, Q650, Q651, Q652, Q653, Q654, Q655, Q656, Q657, Q658, Q659, Q660, Q661, Q662, Q663, Q664, Q665, Q666, Q667, Q668, Q669, Q670, Q671, Q672, Q673, Q674, Q675, Q676, Q677, Q678, Q679, Q680, Q681, Q682, Q683, Q684, Q685, Q686, Q687, Q688, Q689, Q690, Q691, Q692, Q693, Q694, Q695, Q696, Q697, Q698, Q699, Q700, Q701, Q702, Q703, Q704, Q705, Q706, Q707, Q708, Q709, Q710, Q711, Q712, Q713, Q714, Q715, Q716, Q717, Q718, Q719, Q720, Q721, Q722, Q723, Q724, Q725, Q726, Q727, Q728, Q729, Q730, Q731, Q732, Q733, Q734, Q735, Q736, Q737, Q738, Q739, Q740, Q741, Q742, Q74

Oxidation Pond – Step 2 – Hazardous Waste Quantity

- ◆ **What Tier should be used?**
 - » Tier C Volume or Tier D Area
 - » Tier D should be used because depth was not provided; therefore, volume cannot be calculated
- ◆ **What units are needed?**
 - » Square feet
- ◆ **How many square feet is the oxidation pond?**
 - » 750 square feet

[illegible]

Oxidation Pond – Steps 3, 4 and 5

The screenshot shows the 'QuickRSR v3.00' software interface. The main window has a menu bar (File, Edit, View, Format, Calculate) and a toolbar. The 'Add New Source' dialog box is open, showing the 'STEP 3: Add New Source' tab. This tab contains a list of sources with columns for Name, Location, Source Type, and Status. The list includes 'CITY OF NEW YORK', 'CITY OF NEW YORK', 'CITY OF NEW YORK', and 'CITY OF NEW YORK'. The 'Add New Source' button is highlighted in the bottom right corner.

1. Check the boxes in Step 3.
2. All hazardous substances for the site have been carried forward for Step 4.
3. Check box in Step 5.
4. Click the "Add New Source" button.

Source 5 – Rubbish Pile – Source Name and Type

STEP 1: Source Information

Site ID: Source ID:
 Source Name: Source Type:

STEP 2: Hazardous Waste Quantity

Tier A: Hazardous Constituent Quantity: ☐ Check if Tier A is adequately determined
 Tier B: Hazardous Waste Quantity: ☐ Check if Tier B is adequately determined
 Tier C: Volume: ☐ Check if greater than B, but unknown
 Tier D: Area: ☐ Check if greater than C, but unknown

STEP 3: Substances

Which substances are associated with this source? (Y 2.2.2)

☐ Arsenic
☐ Barium
☐ Benzene
☐ Bromine
☐ Cadmium

STEP 4: Substances

Check the box if present during this inspection (Tier A is adequate) (Y)

Substance	Present	Not Present
1. Arsenic	<input type="checkbox"/>	<input type="checkbox"/>
2. Barium	<input type="checkbox"/>	<input type="checkbox"/>
3. Benzene	<input type="checkbox"/>	<input type="checkbox"/>
4. Bromine	<input type="checkbox"/>	<input type="checkbox"/>
5. Cadmium	<input type="checkbox"/>	<input type="checkbox"/>

STEP 5: Substances

Check the box if present during this inspection (Tier A is adequate) (Y)

Substance	Present	Not Present
1. Arsenic	<input type="checkbox"/>	<input type="checkbox"/>
2. Barium	<input type="checkbox"/>	<input type="checkbox"/>
3. Benzene	<input type="checkbox"/>	<input type="checkbox"/>
4. Bromine	<input type="checkbox"/>	<input type="checkbox"/>
5. Cadmium	<input type="checkbox"/>	<input type="checkbox"/>

STEP 6: Substances

Check the box if present during this inspection (Tier A is adequate) (Y)

Substance	Present	Not Present
1. Arsenic	<input type="checkbox"/>	<input type="checkbox"/>
2. Barium	<input type="checkbox"/>	<input type="checkbox"/>
3. Benzene	<input type="checkbox"/>	<input type="checkbox"/>
4. Bromine	<input type="checkbox"/>	<input type="checkbox"/>
5. Cadmium	<input type="checkbox"/>	<input type="checkbox"/>

Rubbish Pile – Step 2 – Hazardous Waste Quantity

- ◆ **What Tier should be used?**
 - » Tier D – Area
- ◆ **What units are needed?**
 - » Square feet
- ◆ **Look at footnote “d” in Table 2-5**
- ◆ **What is area of rubbish pile?**
 - » 500 square feet

HRS QuickScore

QuickScore

QuickScore Help... QuickScore H...

Action Toolbar: Save As Import Export Info Help Print Calculator

Create New S...
Create New S...

View/Edit Existing

- LPG Auto Parts
- Training Session
- Cities
- ABC

Site/Source Information **Source Information** **Pathway Scorecards**

STEP 1

Site / Scenario Name: ABC / ABC

Source #:

Source Name: RUSHUR Pile

Source Type:

STEP 2

Tier A - Hazardous Constituent Quantity: 12-50

0.5 lbs ☐ Check if Tier A is adequately determined

Tier B - Hazardous Waste Stream Quantity:

0.5 Bbl ☐ Check if Tier B is adequately determined

Tier C - Volume:

10³ ☐ Check if greater than 0, but unknown

Tier D - Area:

500.0 ft² ☐ Check if greater than 0, but unknown

38.46153846153846 : Source Hazardous Waste Ques...

STEP 3

The substances in this source are capable of migrating to which of the following pathways? 2.2.1

☐ Ground Water (GW) Migration Pa...
☐ Surface Water (SW) Migration Pa...
☐ Air Migration Pathway

STEP 4

Which substances are associated with this source? 2.2.2

* Arsenic
* Cadmium
* Benzene
* Benzopyrene
* Cadmium

* = Substance associated with the Site

☐ Check this box if you are scoring this source for the Soil Exposure (SE) pathway

Source #	Source Name	Source Type	Tier	Source HWP	GW	SW	SE	SA	ADP Label
1	Crump	Drum	C	10.0	Y	Y	Y	Y	A
2	Tanks	Tank/Container	C	4.0	Y	Y	Y	Y	B
3	Lagoon	Surface Imp.	D	230 7692307	Y	Y	Y	Y	C
4	Coastal P.	Surface Imp.	D	57 452 82 769	Y	Y	Y	Y	D
5	Rushur Pile	Pile	D	38.46153846	Y	Y	N	N	F

1. Enter 500

2. Click

Rubbish Pile – Steps 3, 4 and 5

[illegible]

Source 6 – Stained Soil – Source Name and Type

STEP 1:

Site - Source Name: ABC - ABC

Source ID: 1

Source Name: Stained Soil in C&D area

Source Type: Contaminated Soil

STEP 2:

Tier A - Hazardous Constituent Quantity: 0.00 lb ☐ Check if Tier A is adequately determined

Tier B - Hazardous Waste Quantity: 0.00 lb ☐ Check if Tier B is adequately determined

Tier C - Volume: 0.00 yd³ ☐ Check if greater than B, but unknown

Tier D - Area: 0.00 sq ft ☐ Check if greater than B, but unknown

STEP 3:

☐ Check this box if you are scoring this source for the Soil Exposure only

STEP 4:

The substances in this source are capable of migrating to each of the following pathways (T 2.2.1)

☐ Ground Water (GW) Migration Pa...

☐ Surface Water (SW) Migration Pa...

☐ Air Migration Pathway

STEP 5:

Which substances are associated with this source? (T 2.2.2)

RCM

Substance associated with this site

Arsenic

Barium

Benzene

Chlorobenzene

Chromium

Lead

Mercury

Nickel

Polychlorinated Biphenyls

Polycyclic Aromatic Hydrocarbons

Sulfur Dioxide

Thallium

Vanadium

Zinc

Other

Table:

Source ID	Source Name	Source Type	Tier	Source Volume	Source Area	Source Weight	Source Length	Source Width	Source Depth	Source Height	Source Area	Source Weight	Source Length	Source Width	Source Depth	Source Height
1	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Stained Soil	Contaminated Soil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Stained Soil – Step 2 – Hazardous Waste Quantity

- ◆ **What Tier should be used?**
 - » Tier D – Area
- ◆ **What units are needed?**
 - » Square feet
- ◆ **What is area of stained soil?**
 - » 1,000 square feet

STEP 3

Site / Scenario Name: ABC / ABC
 Source ID: 1
 Source Name: Stained Soil in Clothes
 Source Type: Contaminated Soil

Tier A - Hazardous Constituent Quantity: 0.0 lb ☐ Check if Tier A is adequately determined

Tier B - Hazardous Waste/Stream Quantity: 0.0 lb ☐ Check if Tier B is adequately determined

Tier C - Volume: 0.0 m³ ☐ Check if greater than 0, but unknown

Tier D - Area: 1000.0 m² ☐ Check if greater than 0, but unknown

0.02941176470588 : Source Hazardous Waste Quant... **Calculate**

STEP 4

☐ Check this box if you are scoring this source for the Soil Exposure (SE) pathway

STEP 5

The substances in this source are capable of migrating to which of the following pathways? 2.2.1

☐ Ground Water (GW) Migration Pathway
☐ Surface Water (SW) Migration Pathway
☐ Air Migration Pathway

STEP 6

Which substances are associated with this source? 2.2.2

SCM

* Arsenic
 * Barium
 * Benzene
 * Benzophenone
 * Cadmium

* = Substance associated with this Site

Table:

Source ID	Source Name	Source Type	Tier	Source HWQ	SW	GW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
1	Drums	Drums	20.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Tanks	Tanks/Drums	4.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
3	Lagoon	Surface Imps	2.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
4	Crustacean Pile	Surface Imps	0.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5	Wastewater Pile	Pile	0.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
6	Stained Soil	Contaminated Soil	0.029411764	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

Stained Soil – Steps 3, 4 and 5

STEP 3

Site / Scenario Name: ABC / ABC
 Source ID: 1
 Source Name: Stained Soil in Clothes
 Source Type: Contaminated Soil

Tier A - Hazardous Constituent Quantity: 0.0 lb ☐ Check if Tier A is adequately determined

Tier B - Hazardous Waste/Stream Quantity: 0.0 lb ☐ Check if Tier B is adequately determined

Tier C - Volume: 0.0 m³ ☐ Check if greater than 0, but unknown

Tier D - Area: 1000.0 m² ☐ Check if greater than 0, but unknown

0.02941176470588 : Source Hazardous Waste Quant... **Calculate**

STEP 4

☐ Check this box if you are scoring this source for the Soil Exposure (SE) pathway

STEP 5

The substances in this source are capable of migrating to which of the following pathways? 2.2.1

☐ Ground Water (GW) Migration Pathway
☐ Surface Water (SW) Migration Pathway
☐ Air Migration Pathway

STEP 6

Which substances are associated with this source? 2.2.2

SCM

* Arsenic
 * Barium
 * Benzene
 * Benzophenone
 * Cadmium

* = Substance associated with this Site

Table:

Source ID	Source Name	Source Type	Tier	Source HWQ	SW	GW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
1	Drums	Drums	20.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Tanks	Tanks/Drums	4.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Lagoon	Surface Imps	2.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Crustacean Pile	Surface Imps	0.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5	Wastewater Pile	Pile	0.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6	Stained Soil	Contaminated Soil	0.029411764	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Final Sources 1 through 6

Source #	Source Name	Source Type	Tier	Source HWQ	GW	SW	Air	SE	AOC Letter
1	Drums	Drums		20.0	Y	Y	Y	Y	A
2	Tanks	Tanks/Contai	C	4.0	Y	Y	Y	Y	B
3	Lagoon	Surface Impo	D	230.7692307	Y	Y	Y	Y	C
4	Oxidation Po	Surface Impo	D	57.69230769	Y	Y	Y	Y	D
5	Rubbish Pile	Pile	D	38.46153846	Y	Y	Y	Y	E
6	Stained Soil	Contaminate	D	0.029411764	Y	Y	Y	Y	F

The assigned source HWQ for the site will be automatically calculated for each pathway based on the information we entered for the sources

AOC letter or Area of Observed Contamination is for the soil exposure pathway



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Summary

- ◆ **The objectives of the site scoring process are to:**
 - » Use the HRS as a screening tool
 - » Calculate a preliminary HRS score
- ◆ **The overall approach to scoring involves calculating:**
 - » The waste quantity score
 - » The pathway scores by evaluating factor categories
- ◆ **Existing analytical data should be used with caution**

(continued)



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Summary

- ◆ Best professional judgment should be used to evaluate and score pathways, as appropriate and in the absence of existing data
- ◆ Proper understanding of PA and HRS terminology is necessary
- ◆ HRS Quickscore is used to calculate pathway and site scores
- ◆ Several scenarios can easily be evaluated to determine what factors affect the pathway and overall site score
- ◆ Best professional judgment assumptions and hypotheses can be tested during the SI



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Next Webinar – Module 4

- ◆ Module 4 – Groundwater Migration Pathway Exercise will be on Wednesday, July 9, 2014.

QUESTIONS



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