



IMMEDIATE ACTIONS PART 2

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THE WORLD OF RELEASES

Current Universe requiring LEP involvement

Total cumulative values:

- **PTP – 6,213**
- **Voluntary Program – 570**
- (Verifications Not Submitted or Verifications Rejected)
- **Current Universe of Spills Reported under 22a-450**
- **Annually = 5,820**
- **10-year cumulative = 63,002**
- **Historical contamination at reported sites not in PTP or Voluntary program**
- **Annually = 1,236**
- **Current Universe of SEHs**
 - 10 year average = 37





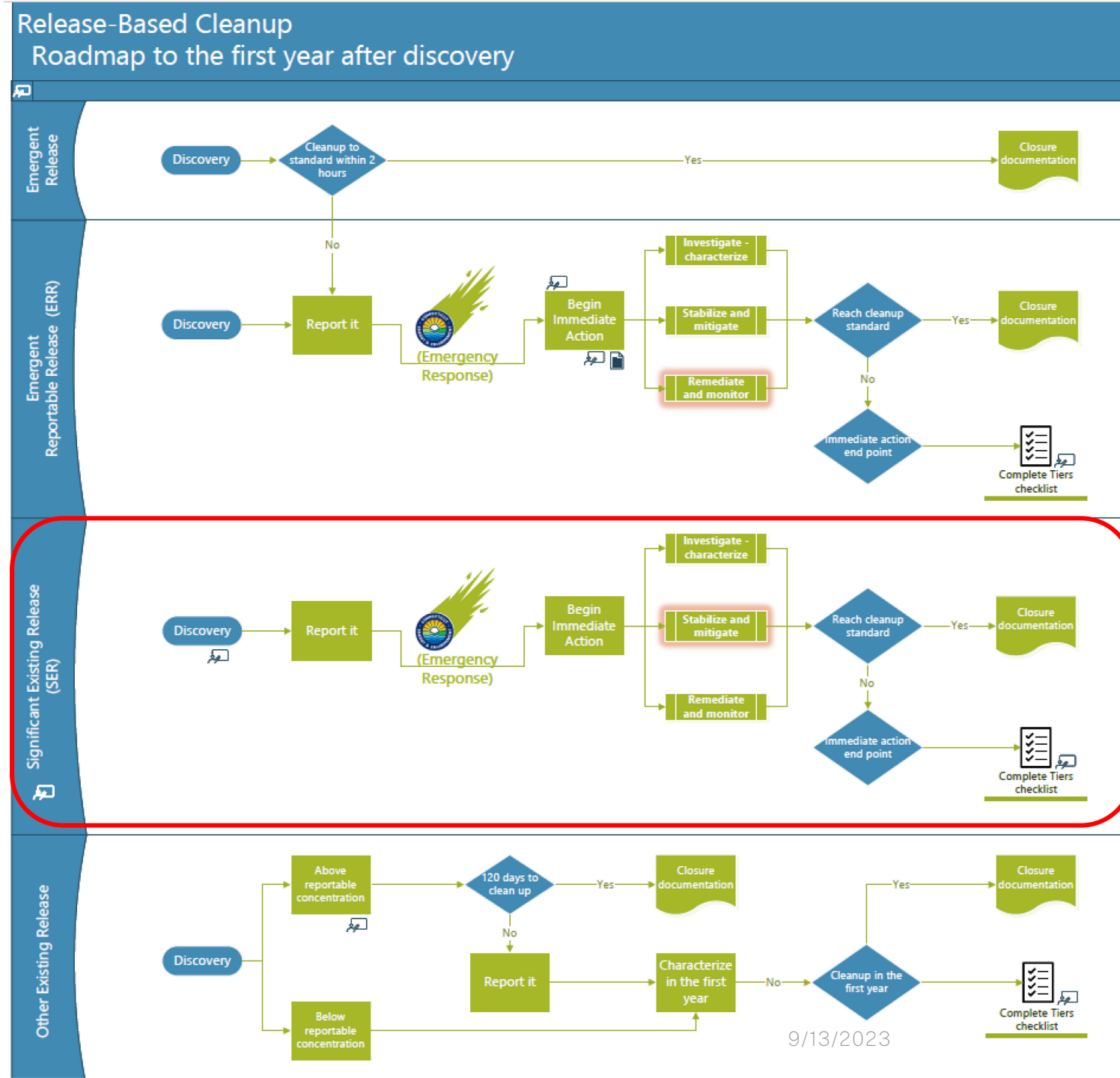
WHAT IS AN IMMEDIATE ACTION (“IA”)?

An IA is the immediate response upon discovery of a release by:

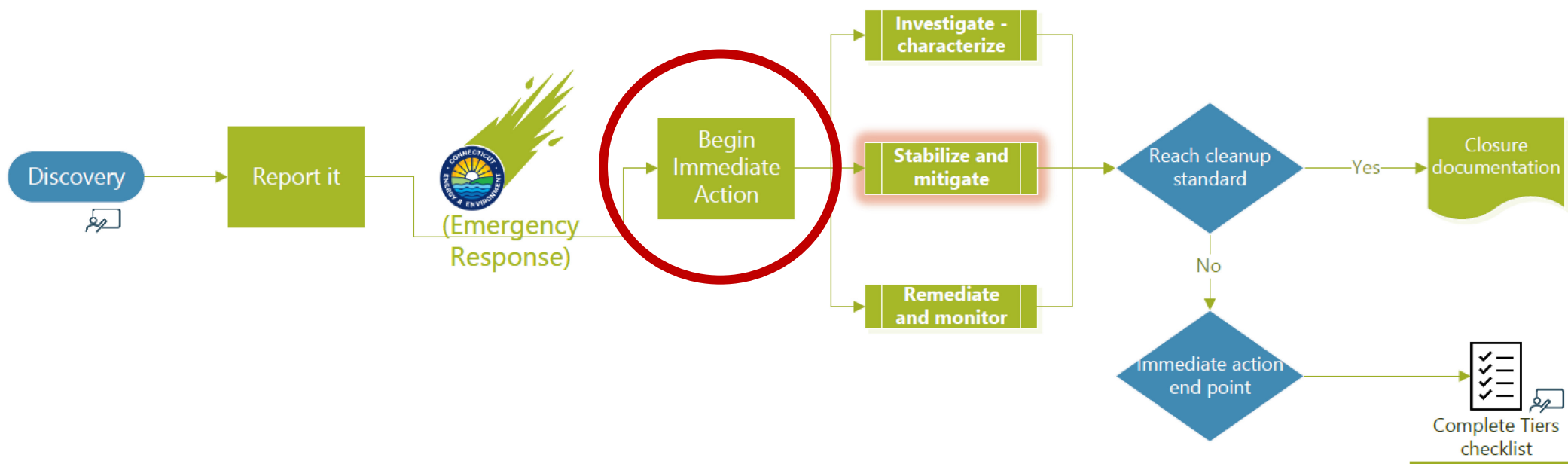
1. Removing the release from the land and waters of the state
2. Implementing measures to prevent migration of the release, such as active remediation techniques, the use of physical barriers, or appropriate treatment systems
3. Identifying the source of the release and eliminating it (with some exceptions)

Immediate means starting removal no later than 2 hours after such release is reported.

PLACE IN PROPOSED RELEASE-BASED FRAMEWORK



SIGNIFICANT EXISTING RELEASES



TYPES OF RELEASES FOR WHICH IA IS REQUIRED

Emergent Reportable Release (“ERR”)

“Emergent reportable release” means a release to the land and waters of the state discovered by an observed change in conditions that is required to be reported by regulations adopted pursuant to section 22a-450 of the Connecticut General Statutes.

Significant Existing Release (“SER”) –

“Significant existing release” means a release to the land and waters of the state discovered pursuant to section 22a-134tt-2 of the Regulations of Connecticut State Agencies that is present in the location identified by, or creating one or more of the impacts to public health or the environment identified in, subsection [placeholder] of this section.



SIGNIFICANT EXISTING RELEASE (SER) – TRIGGERS

SER Trigger	Criteria	Current SEH Law
Water supply well (from a release)	\geq Detection limit	22a-6u(b) and 22a-6u(c)
Polluted GW within 500 feet of water supply well	\geq GWPC	22a-6u(g)
Top 2 feet of soil	$\geq 15 \times$ applicable DEC	22a-6u(d)
Volatile Petroleum Substances (VPS) in GW within 10 feet of building and within 10 feet of ground surface	$\geq 10 \times$ applicable GWVC	22a-6u(e)
Volatile Organic Substances (VOS) in GW within 30 feet of building and within 30 feet of ground surface	$\geq 10 \times$ applicable GWVC	22a-6u(e)
Soil vapor beneath building – VPSs and VOSs	$\geq 10 \times$ applicable SVVC	New
Indoor air not due to current process/material use – VPSs and VOSs	Criteria not yet defined	New
GW within 500 feet of surface water	NAPL present or $\geq 10 \times$ SWPC	22a-6u(f)

SIGNIFICANT EXISTING RELEASES (“SERs”) – DRINKING WATER WELLS

Actions required for SERs in a **drinking water well**:

- Ensure that water contaminated by the release is not consumed, which may mean providing another source of drinking water
- Install physical barriers to prevent further migration of plume
- Within 2 days of discovery:
 - Identify & sample drinking water wells on adjacent parcels located within 500 feet of impacted well
- **Within 15 days of discovery:**
 - Identify & sample drinking water wells within 200 feet of impacted well; 500 feet downgradient of an impacted well
 - Submit an immediate action plan to DEEP



IMMEDIATE ACTION PLAN FOR DRINKING WATER WELL

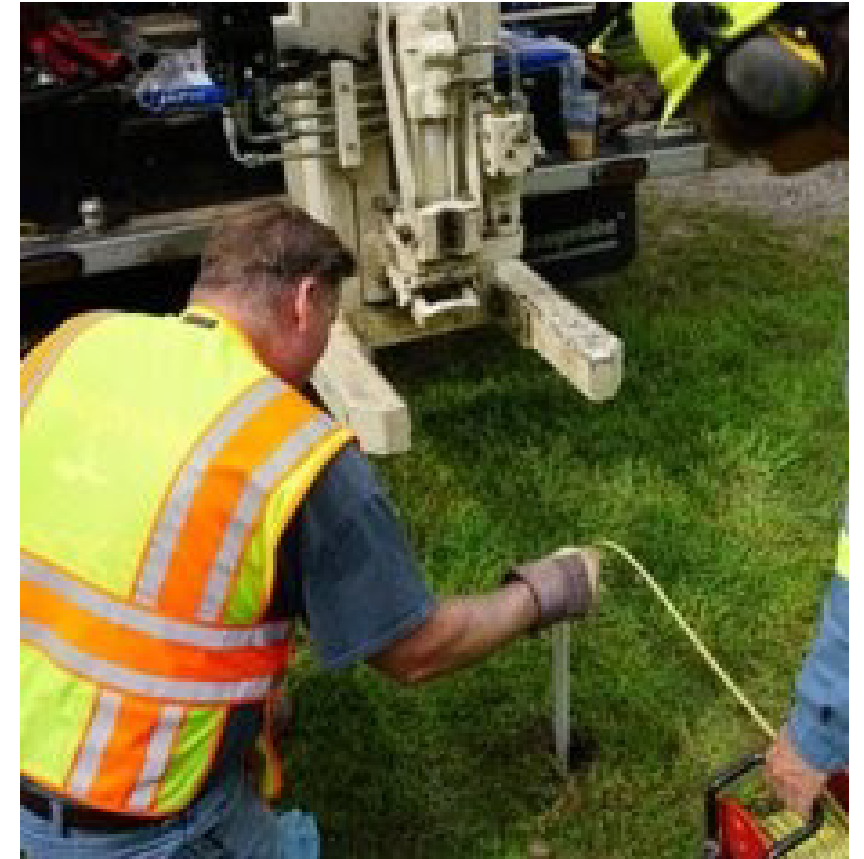
- List of all drinking water wells identified and tested, specifying which wells were impacted by the release
- Schedule for sampling parcels adjacent to impacted drinking water wells until all impacted drinking water wells are identified
- Identify and describe an appropriate treatment system (installation in 15 days) or a connection to a public drinking water source (within 30 days) for each well impacted at concentrations >GWPC
- Schedule for the treatment system maintenance and monitoring
- Schedule for quarterly monitoring of all wells impacted at concentrations \leq GWPC or within 200 feet of an impacted well
- Describe measures taken or to be taken to prevent further migration and a schedule for implementation and maintenance of such measures



SIGNIFICANT EXISTING RELEASES (“SERs”) – GROUNDWATER NEAR DRINKING WATER WELLS

Actions required for SERs for impacted **groundwater present in a groundwater monitoring well** within 500 feet of a drinking water well:

- Prevent further migration as soon as practicable
- Identify and sample all drinking water wells:
 - **on adjacent parcels – within 2 days**
 - **within 200 feet of impacted monitoring well or 500 feet downgradient of impacted well – within 15 days**
- If impacts to drinking water wells are discovered, complete actions for SERs in drinking water wells.
- Within 15 days submit an immediate action plan to DEEP



Immediate Action Plan For Groundwater



- List of all drinking water wells identified, sampled and impacted by the release and provide laboratory analytical results.
- List each drinking water well within 200 feet of an impacted public or private drinking water well, or within 500 feet downgradient of a groundwater monitoring well and groundwater plume exceeding GWPC and specific a schedule for the sampling of the wells.
- A schedule for quarterly monitoring of groundwater reported at concentration greater than GWPC.
- A description of the measures already undertaken, or to be undertaken to prevent further migration of the release, including a schedule for periodic testing and a schedule to implement, maintain and monitor any measures taken.

SIGNIFICANT EXISTING RELEASES ("SERs") – SOIL

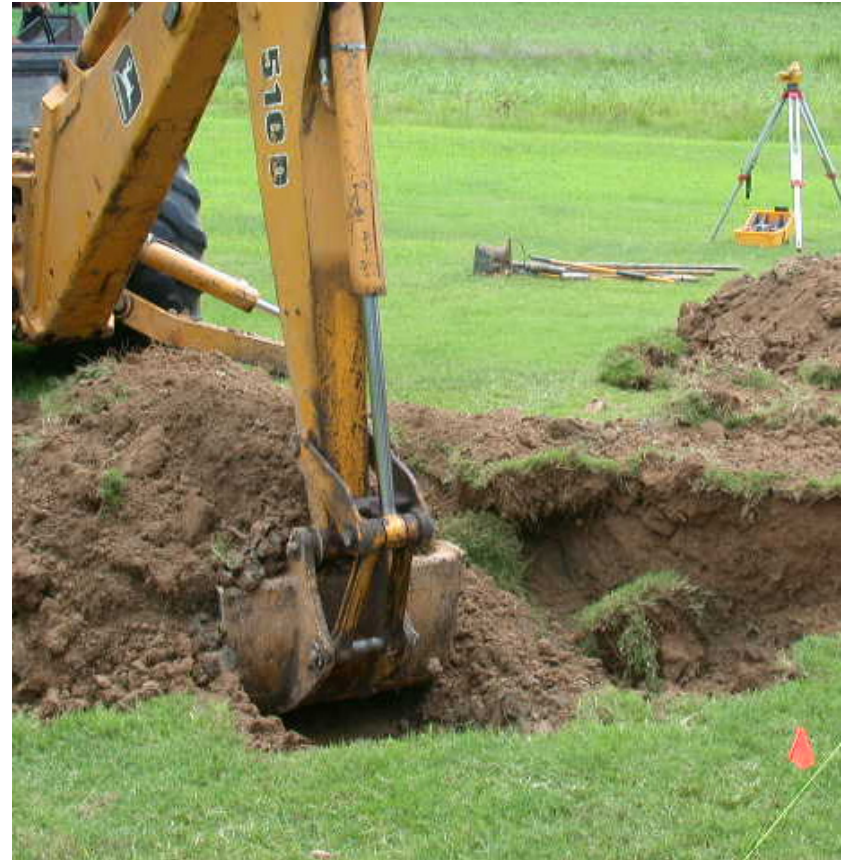
Actions required for **SERs discovered in soil**:

- Within 45 days:
 - Determine location and extent of impacted soil
- Within 90 days:
 - Remediate all impacted soil to the applicable DEC;
 - Remove or mitigate soils to prevent exposure and submit immediate action plan;
 - Render soils inaccessible (as defined in RSRs); or
 - Remediate soil impacted by PCBs as required by 40 CFR 761



Immediate Action Plan for Soil

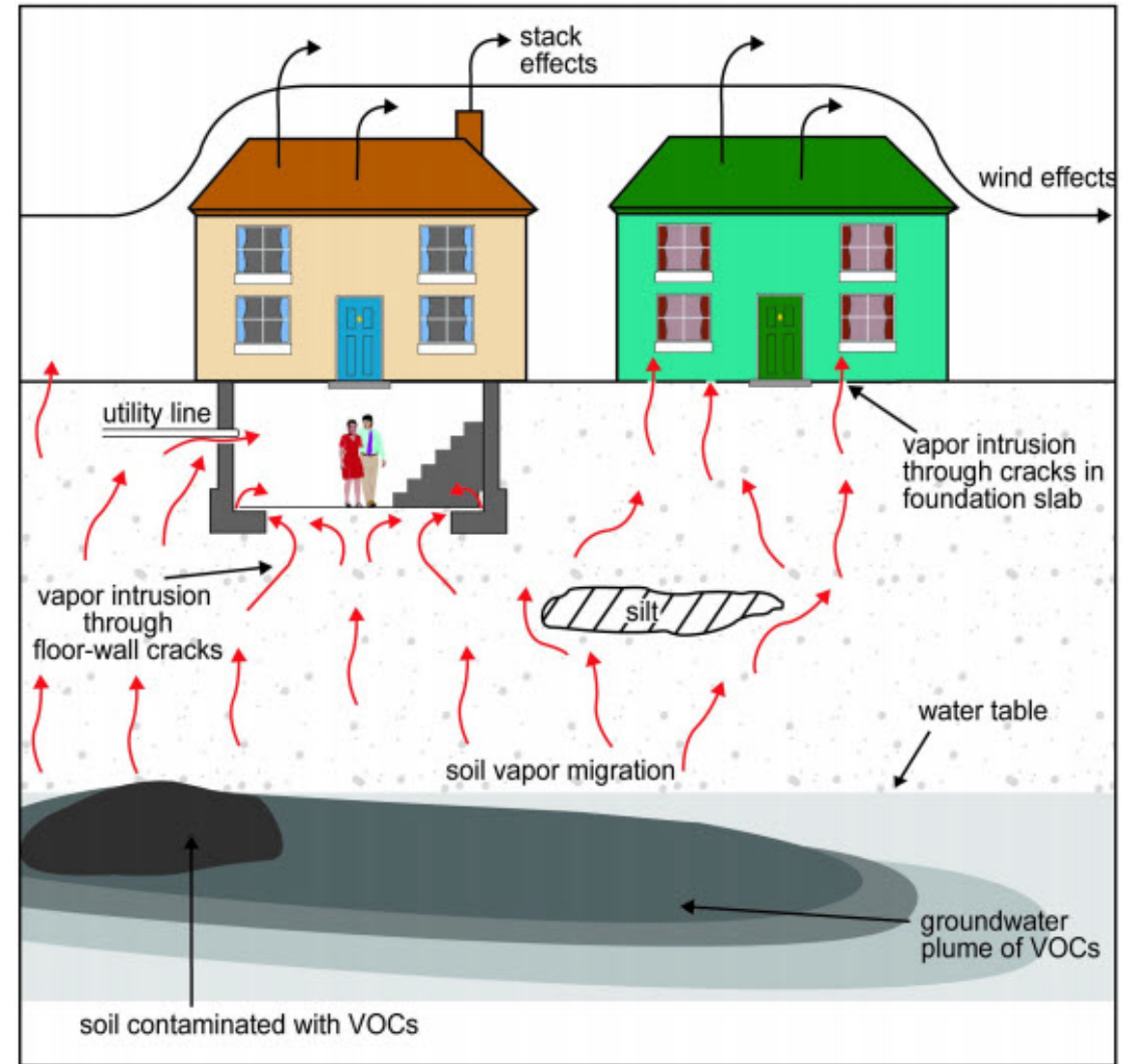
- Location and extent of the release
- Laboratory analytical results of samples collected
- Description and photo documentation of mitigation measures
- A schedule of maintenance and monitoring to ensure the measures are effective.



SIGNIFICANT EXISTING RELEASES – VAPOR INTRUSION*

Actions required for **SERs for Volatiles**:

- Ventilate the building to the maximum extent practicable (if building is occupied or in use)
- Submit Immediate Action Plan that:
 - Describes nature and extent of release and includes lab results
 - Specifies a vapor mitigation system to be used or installed (e.g., sealing cracks, sub-slab depressurization system, soil vapor extraction system)
 - Provides a maintenance and monitoring schedule for vapor mitigation system
 - Describes measures already undertaken or to be undertaken to prevent further migration of the release and a schedule for further actions



*This is in addition to soil and groundwater SERs that may be required

SIGNIFICANT EXISTING RELEASES ("SERS") – SURFACE WATER

Actions required for **SERs to surface water**:

Submit a report that includes:

- Measures taken to prevent migration
- Schedule for completing tier characterization





THANK YOU!

Please submit any questions within 7 business days to DEEP.Cleanup.Transform@ct.gov.



BACKGROUND FOR RELEASE DETERMINATION

(NATURAL METALS IN SOIL)

Background Team: Rosemary Gatter-Evarts, Carl Gruszczak, Kevin Neary, Katie Nee, Amber Trahan, Gary Trombly, Kevin Vanderveer, Peter Zaidel
Bureau of Water Protection and Land Reuse

OVERALL GOAL

Create an objective framework for determining if a release of metals to soil has occurred

- **No release = no reporting**
- **No release = no tiering**

BACKGROUND DEFINITION

RSRs 22a-133k-1(a)(5) – “Background concentration” means the concentration of a substance in soil or groundwater* that, based on a validated conceptual site model, is:

- A. In the general geographic vicinity of a release; and
- B. Either:
 - i. Naturally occurring; or
 - ii. Minimally affected by human influences at concentrations equal to or less than criteria specified in the RSRs.

*This presentation addresses only soil.

3 OPTIONS FOR DETERMINING NATURALLY OCCURRING BACKGROUND METALS

Option 1 – Default state-wide background

- **Baseline values**
- **No sampling required**

Option 2 – Site-specific background

- **At least 3 samples required**
- **State-wide upper limit**

Option 3 – Expanded site-specific background

- **More thorough evaluation**
- **LEP implementation or DEEP approval**

BACKGROUND OPTION 1

Default State-Wide Background, No Sampling

- Can be used by anyone
- Investigation data is compared directly to a default, state-wide background value
- A detection equal to or less than the default background is not considered a release

BACKGROUND OPTION 2

Site-Specific Background Limited Sampling, State-Wide Cap

- Can be used by anyone
- Requires collection of a minimum of 3 samples representative of naturally occurring background
- If all background samples are less than the state-wide upper limit, the highest background value from the data set may be used as site-specific background
- A detection equal to or less than background determined using this method is not considered a release

DERIVATION OF STATE-WIDE NATURALLY OCCURRING METALS VALUES

Options 1 and 2 are both tied to
state-wide values



Major and Trace Element Geochemistry
and Background Concentrations for
Soils in Connecticut
(Brown & Thomas, 2014)

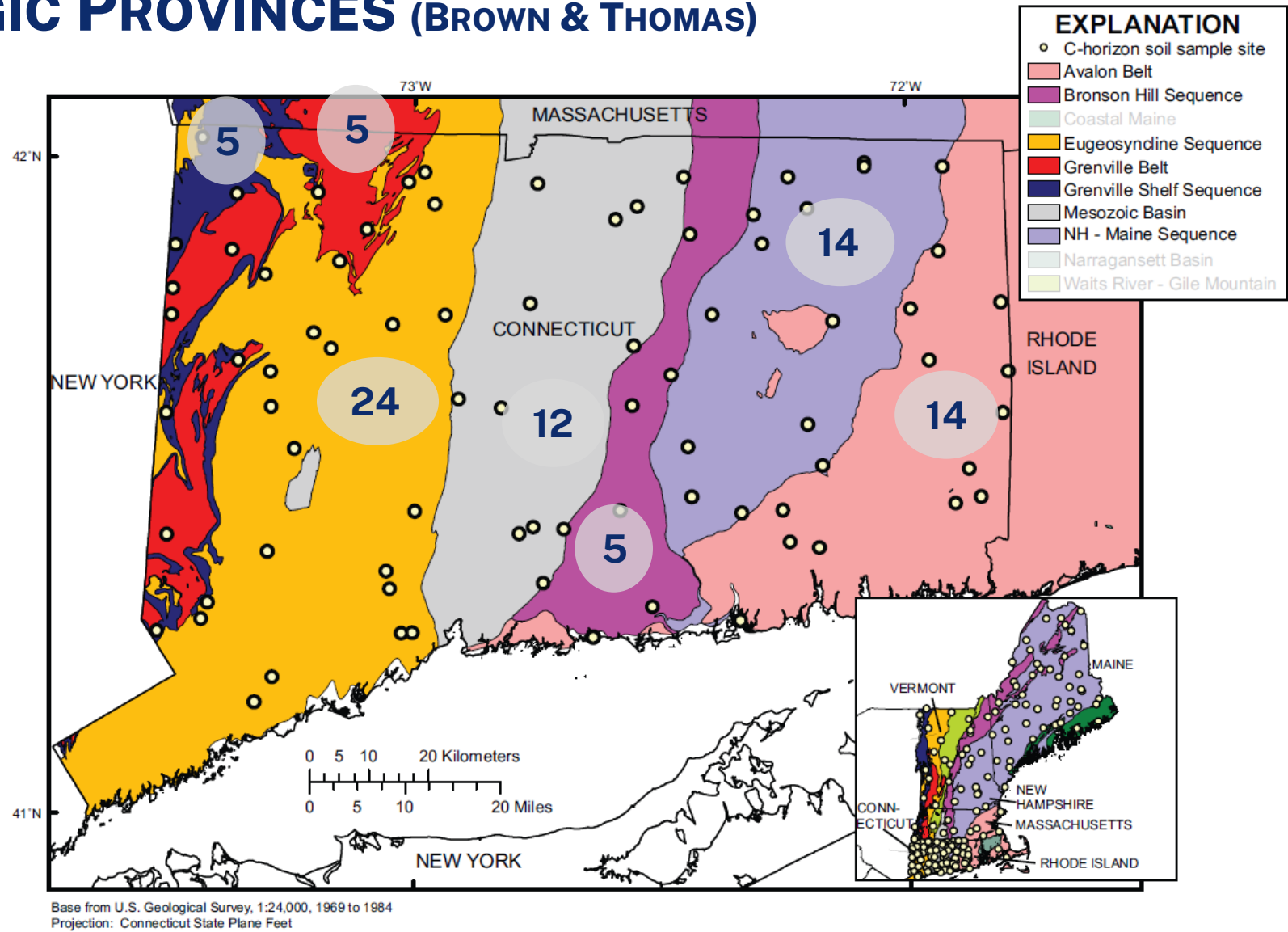
79 C
horizon soil
samples

7 geologic
provinces

43 metals
(trace element
analysis)

GEOLOGIC PROVINCES (BROWN & THOMAS)

Number of
Samples
(C Horizon)



STATE-WIDE BACKGROUND VALUES DETERMINATION

Calculated the 95% upper confidence limit (UCL)
for each metal in each province



7 UCLs for each metal



Option 1 Background (no sampling to
support background demonstration)



Lowest UCL = Default Background

Option 2 Background (3 sample minimum)



Highest UCL = Background Cap

SELECTED STATE-WIDE BACKGROUND METALS

Reference Metal	Option 1 Default (Low UCL) <i>(no sampling)</i>	Option 2 Upper Limit (High UCL) <i>(3 samples min)</i>	CT Res DEC
Arsenic	3	6	10
Barium	385	756	4700
Cadmium	ND	0.3	34
Chromium	31	60	100 (Cr ⁶)
Copper	17	45	2500
Lead	18	27	400
Mercury	0.03	0.08	20
Nickel	13	36	1400
Selenium	ND	0.8	340
Silver	ND	ND	340
Zinc	44	104	20000

Units = milligrams per kilogram

ND = non-detect

Beryllium and cobalt, (not shown)
were capped at the Res DEC.

3 OPTIONS FOR DETERMINING NATURALLY OCCURRING BACKGROUND

Option 1 – Default state-wide background

- Baseline values
- No sampling required

Option 2 – Site-specific background

- At least 3 samples required
- State-wide upper limit

Option 3 – Expanded site-specific background

- **More thorough evaluation**
- **LEP implementation or DEEP approval**

BACKGROUND OPTION 3

Expanded Site-Specific Background Evaluation

❖ LEP implementation or DEEP approval

- Background conceptual model supported by multiple lines of evidence
- Minimum of 10 samples

➤ LEP-implemented

- Evaluate and eliminate outliers
- Calculate UCL
- A calculated $UCL \leq \text{Res DEC}$ can be used as site specific background as long as it is supported by the data

➤ DEEP-approval

- $UCL > \text{Res DEC}$
- Alternate method used to establish background

SUMMARY



Option 1

- Can be used by anyone
- No additional sampling required
- Default statewide background

Option 2

- Can be used by anyone
- Minimum of 3 samples for background determination
- Use highest value from dataset if less than statewide upper limit

Option 3

- Requires LEP
- Minimum of 10 samples for background determination
- Eliminate outliers
- Calculate 95 UCL
- ❖ LEP-implemented:
 - Calculated 95 UCL is \leq Res DEC, use UCL as background
- ❖ DEEP-approval:
 - Calculated 95 UCL is $>$ Res DEC
 - Alt. method for background used

SUMMARY

**Metal Concentration
 \leq Natural Background = No Release**

**If detections are determined to be background
within 120 days, no reporting necessary**



The End

The image features a periodic table of elements as a background, tinted in a cool blue color. In the foreground, several glass test tubes are visible, some containing a brownish liquid. The text 'The End' is prominently displayed in the center in a white, outlined font. The periodic table elements visible include Rhodium (Rh), Nickel (Ni), Copper (Cu), Palladium (Pd), Silver (Ag), Platinum (Pt), Gold (Au), and others, with their atomic numbers and names clearly legible.