

### Activity Overview

Participants compare environmental test results to health-based standards for contamination in soil, water, and air (for details, see fact sheets for health-based standards in the Limits and Levels resource.) They post the results on the wall and determine which results are highest compared to the standard.

### When to Use It

When a group receives test results, and wants to know where contamination is the highest. The activity is based on soil, air, or water tests, but the basic idea can be adapted for any data: blood tests, public health data, vehicle traffic. If there is no “standard,” compare to typical/background levels or past data

### Suggested companion activities:

- Use after A First Look at Technical Documents.
- Use with appropriate fact sheets from Common Units and Limits & Levels.
- Follow up with Mapping Data, Finding Newsworthy Data

### Steps

- 1. Launch the activity:** We have our test results. It’s tempting to just look for the biggest numbers. But some contaminants are more toxic than others. So first, we need to compare each result with a health-based standard for that contaminant. In our case, the standard is the [name the standard, like the MCL or RSSL]. Hand out test results, participant instructions, pens, calculators, and sticky notes. Divide up the data among the group. If needed, do one contaminant together as a group.
- 2. In pairs:** Compare each result to its standard, as shown on the participant instructions. As groups finish, ask, “Who has the result that is *highest* compared to its standard?” Guide the group in posting the results on the wall, as shown in the *Facilitator Supplement*.
- 3. Debrief:**
  - What strikes you about the results?
  - What contaminants or locations should we worry about most?
  - Are there any we probably *don’t* need to worry about?

### For the facilitator: Variations

- If you only have a few sample locations, but many contaminants, make a column for each sample instead of for each contaminant. Or, group results by sample location, like “by the pond.”
- If using this activity at a workshop, you can find a full sample data set in the “data sources” section of [sfa.terc.edu](http://sfa.terc.edu)

### Smart Moves

- Use your senses.
- Play with different ways to show it and say it.

**Skill:** Comparing test results to health standards.

**Time:** 30 minutes

### Materials

*Facilitator Supplement* (one per facilitator)

*Participant Instructions* (one per person or pair)

Pads of sticky notes, different colors if possible

Pens or markers (enough for everyone)

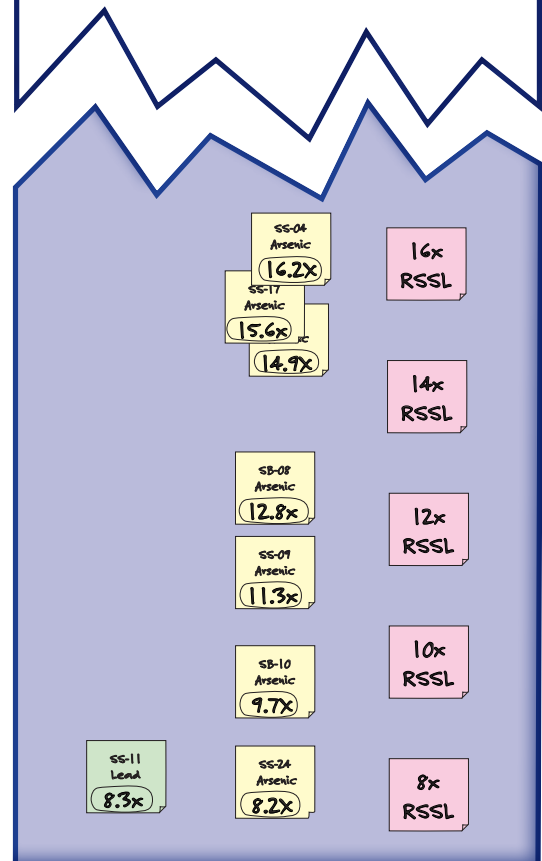
Calculators (one per pair, you can skip if participants have calculators on their phones)

### Preparation

If there are many samples or contaminants, choose the ones that seem most troubling for the group to focus on. Think of how you will divide up that data among your group.

Identify the health-based standards for each contaminant. If they are not listed in the results, look them up and bring them to the meeting.

Confirm the units for the samples match the units for the levels of concern.



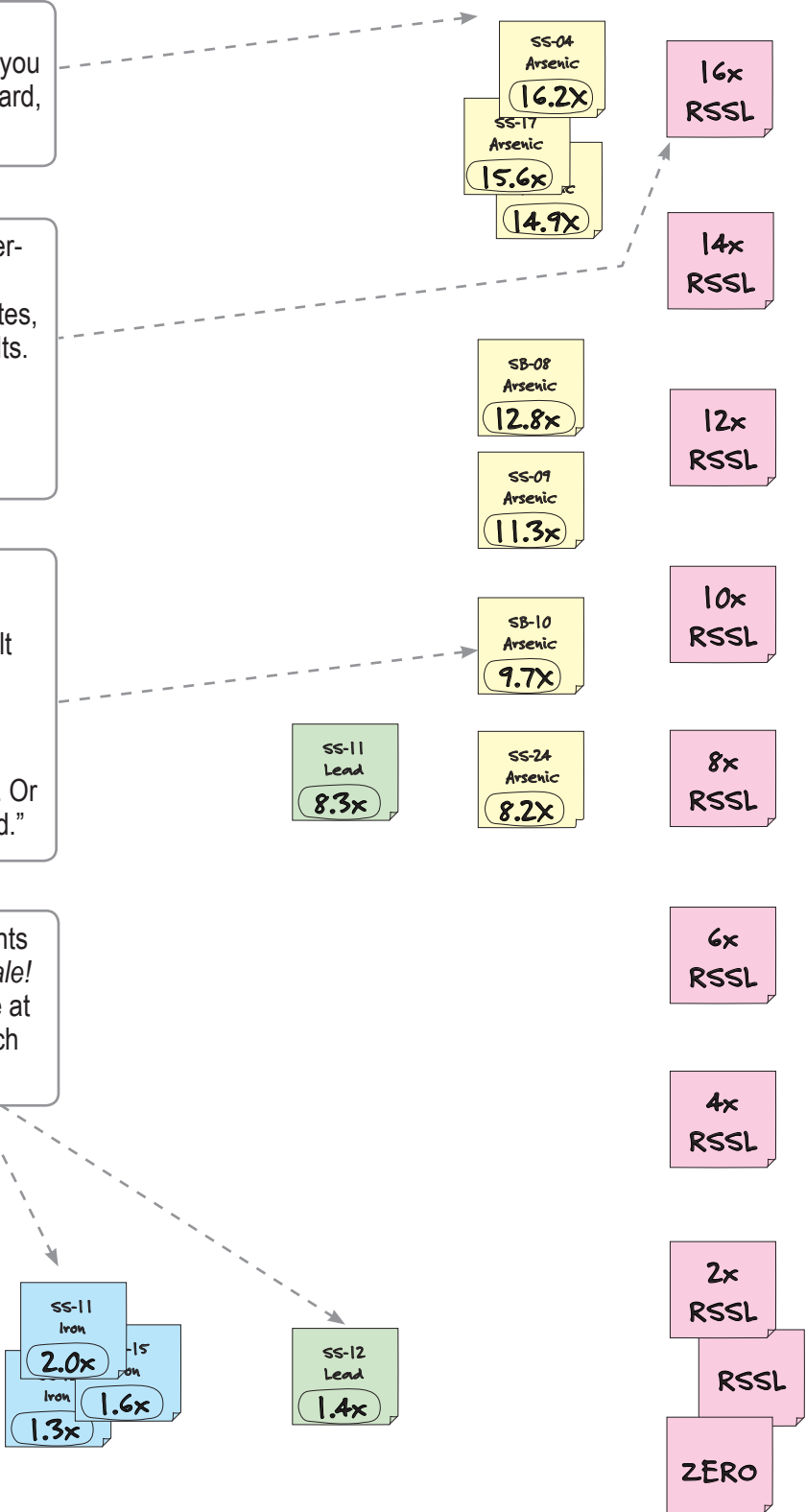
Placing the Notes

1. Take the highest level compared to standard. Stick it on the wall as high as you can. If no result is higher than the standard, use the standard as the highest point.

2. Using the floor as zero, make a number-scale that divides the space between. If possible, use different-colored sticky notes, so people don't confuse scale with results.  
Note: if you can identify the highest level before the activity, you can make up the scale in advance.

3. Place the other test results for that contaminant in a column. Use the scale to help guide how high or low each result should go.  
If there are few samples but many contaminants, make a column for each sample instead of for each contaminant. Or group them by location, like "by the pond."

4. Place results from different contaminants in different columns, using the same scale! Don't put the highest result for each one at the top, or you won't be able to see which contaminant is most over the standard.



Strategies for Comparing to Standards

Here's a way to look at environmental test results, to figure out which are the most severe.

1. Choose just one contaminant in one sample. (Here, it's the arsenic level in sample SB-08.)
2. What level of the contaminant did they find in the sample? Write it on a sticky note.
3. What is the health-based standard for that contaminant? Write it on your sticky note.
4. Divide the sample level by the level of concern. Write the result on your note. Circle it.
5. Repeat the steps above for other contaminants and other samples.
6. Put the sticky notes in order from low to high on the wall or table.

SAMPLE LOCATION	SB-08	EPA R3
SAMPLE NUMBER	R01-081020GL-0020	Residential Soil Screening Levels *
SAMPLE DEPTH	12 inches	
PARAMETER		
Aluminum	6,800	77,000
Arsenic	5.0	0.39
Barium	20	15,000
Cadmium	ND	70
Calcium	590	NL
Chromium	16	280
Cobalt	5.8	23
Copper	13	3,100
Iron	15,000	55,000
Lead	18	400
Magnesium	2,600	NL
Manganese	400	NL
Nickel	20	1,600
Silver	ND	390
Vanadium	14	550
Zinc	41	23,000
Mercury	ND	6.7

All results in milligrams per kilogram (mg/kg)

**SB-08:**  
**Arsenic**  
Found: 5.0 mg/kg  
RSSL: 0.39 mg/kg  
 $5.0 \div 0.39 =$   
**12.8x** the RSSL



SS-04 Arsenic 16.2x

SS-17 Arsenic 15.6x

SS-02 Arsenic 14.9x

SB-08 Arsenic 12.8x

SS-09 Arsenic 11.3x

SB-10 Arsenic 9.7x

SS-24 Arsenic 8.2x