UNITS OF MEASUREMENT VALUES IN BROWNFIELD REPORTS

Environmental reports use different types of measurements to describe a property, environmental samples, and cleanup activities. Here are what some of the most common measurements mean.

MEASURING MASS(AMOUNT)

Kilograms(kg), Grams (g), Milligrams(mg), Micrograms(ug)

- Describes how much of something exists
- kg > g > mg > ug
- 1 kg = 1000g = 1,000,000mg = 1,000,000,000ug
- Example: 5000mg of copper = 0.005kg = 5 g

MEASURING VOLUME(AMOUNT)

Liters(L), MilliLiters(mL), MicroLiters (uL)

- Describes the volume of a liquid
- L > mL > uL
- 1 L = 1000mL = 1,000,000uL
- Example: 5000uL of Water = 5mL = 0.005L

MEASURING CHEMICALS IN SOIL

Parts Per Million (mg/kg or ppm)

- Represents a "concentration" of contaminant in soil.
- Commonly used for soil sample results
- Typically in units of mass/mass (mg/kg)
- 1 mg/kg = 1 ppm and can be used interchangeably
- A higher number means a higher concentration = more of that chemical was detected
- Example: One colored grain mixed into one million grains of sand

MEASURING CHEMICALS IN WATER

Parts Per Billion (ppb) & Parts Per Million(ppm)

- Represents a "concentration" in water
- Commonly used for groundwater and surface water sample results
- Typically, in units of mass/volume
- Parts per billion: 1ug/L = 1 ppb
  - Example: One drop of food coloring in a pool
- Parts per million: 1mg/L = 1ppm
  - Example: One drop of food coloring in a tub
- 1ppm = 1000ppb

WHERE ARE SAMPLES COLLECTED?

Soil : Tests for contaminants in surface and subsurface soil
Groundwater: Tests for contaminants in water samples collected from monitoring wells
Surface Water: Tests samples from streams, ponds, or drainage areas

MEASURING THE AMOUNT OF SOIL REMOVED

Cubic Yards (yd^3)

- A cubic yard measures the volume of soil or other material
- One cubic yard is about the size of a household washing machine
- A large dump truck typically carries 10–15 cubic yards of soil
- Cleanup reports often describe how much contaminated soil was excavated or replaced

MEASURING SAMPLE DEPTH

Feet (ft)

- Brownfield reports often describe how deep a sample was collected. For example: "Soil sample collected from 4–6 feet below ground surface"
- Depth helps environmental professionals understand where chemicals are located underground

MEASURING BROWNFIELD SITE SIZE

Acres (ac)

- An acre measures the size of land such as a brownfield site
- One acre is about the size of a football field without the end zones

IMPORTANT TO REMEMBER

- ✓ Measurements themselves do not determine whether a site is safe.
- ✓ Sample measurements are usually taken in muliples and in several locations to ensure correctness.
- ✓ Environmental professionals compare sample results to state or federal standards to decide whether additional investigation or cleanup is needed.
- ✓ Brownfield assessment and cleanup occurs prior to redevelopment to protect people and the environment.
- ✓ Sometimes a laboratory reports a result as ND (Non-Detect). Sometimes laboratory equipment cannot read concentrations below a certain value or "detection limit." It does not necessarily mean a chemical is completely absent, though typical detection limits are well below standard regulation concentrations.

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