Citizen-Science Project Collecting Data on St. Croix's Air, Water & Soil Quality

Client Sample ID: DEMO - for reference ONLY
Lab Sample ID: DEMO - for reference ONLY
Date Collected: April 2025
Date Received by Lab: April 2025
Percent Solids: 87.4%
Matrix: Solid
Project: Community Soil Testing – St. Croix
Laboratory: Eurofins Buffalo

✅ General Summary

This soil sample presented **no detectable petroleum-based organic contaminants (PAHs)** and showed **elevated levels of arsenic**, with **moderate concentrations of other naturally occurring metals**. The soil is generally usable for residential and gardening purposes, but the **arsenic level warrants some caution** depending on land use, especially in areas intended for food production or frequent contact by young children.

🧪 Metals – Key Takeaways

Metals were analyzed using EPA Methods 6010C and 7471B. The **arsenic level was 11.5 mg/kg**, notably above typical natural background concentrations and higher than other samples from this project. While it remains below many state regulatory thresholds (e.g., EPA's 0.39 mg/kg soil screening level is not a hard limit for all uses), the elevated presence suggests historical environmental exposure and **should be considered if edible plants are to be grown**.

Lead was measured at 15.9 mg/kg, which is **well below** the EPA's 400 mg/kg threshold for residential soils. **Cadmium**(0.30 mg/kg), **chromium** (29.6 mg/kg), and **barium** (571 mg/kg) were all within acceptable ranges and not considered hazardous at these concentrations. **Selenium** and **silver** were both detected at trace levels—1.1 mg/kg and 0.37 mg/kg respectively—with "J" qualifiers, indicating estimated values below standard reporting thresholds. **Mercury** was also present at a very low concentration (0.035 mg/kg), well within safe limits.

Quick Definitions:

- **Arsenic** – a toxic element; elevated levels can be absorbed by crops.
- **Lead, cadmium** – common urban metals; low here and not hazardous.
- **Chromium, barium** – natural elements; safe at these levels.
- **Selenium, silver, mercury** – detected in trace, non-hazardous amounts.

🧬 SVOCs – Semivolatile Organic Compounds (PAHs)

The sample was tested for PAHs using EPA Method 8270D. These compounds are typically formed during **incomplete combustion of fossil fuels or organic matter**.

All tested PAHs—including **benzo[a]pyrene, chrysene, fluoranthene, and naphthalene**—were **not detected** above the reporting limit of 190 µg/kg. This indicates the soil has **no measurable contamination from combustion sources or petroleum byproducts**. Surrogate recovery values for 2-fluorobiphenyl (88%), nitrobenzene-d5 (82%), and p-terphenyl-d14 (102%) confirm data validity and high-quality lab performance.

Quick Definition:
PAHs (Polycyclic Aromatic Hydrocarbons) are toxic compounds associated with burning fuel or waste. Their absence signals **no combustion or fossil fuel contamination** in this soil.

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✅ Summary and Recommendations

The soil sample collected is **free of PAHs and contains low to moderate levels of most metals**, but the **elevated arsenic concentration** should be noted. While not dangerously high, arsenic can accumulate in plants—particularly root crops—and is worth addressing through **raised beds, clean compost use, and regular hand washing** if gardening is planned.

This soil remains suitable for general landscaping, educational, or low-contact applications. If used for food production, consider **adding clean soil or organic amendments** to reduce exposure and improve overall safety. Regular monitoring is a good best practice in such areas.