ENVIRONMENTAL
HEALTH COUNCIL

Report of Results and Recommendations of Soil Evaluation of the School Grounds Adjacent to Educational Institution N° 30468, "Andrés Avelino Cáceres," Pomacancha District, Jauja Province, Junín Department, Peru

Sample Collection Date: July 4, 2024

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The Environmental Health Council (EHC) is a U.S.-based nonprofit organization dedicated to identifying, evaluating, and remediating the effects of environmental toxins on affected communities. We work through a combination of scientific assessment, advocacy, and collaboration with communities and authorities to promote environmental and public health.

Within the framework of the EHC's objectives, the soil adjacent to the school grounds of Educational Institution N° 30468, in Pomacancha District, Jauja Province, Junín Department, Peru, was sampled and evaluated. The technical evaluation aimed to

- Determine whether contamination from colonial and/or national period refining operations had left behind heavy metal pollution (known as "legacy contamination") and to establish the levels of lead (Pb), mercury (Hg), and arsenic (As) in the soils.

- Compare them with the Environmental Quality Standards (ECAs) established by the Peruvian government (Supreme Decree N° 011-2017-MINAM) for residential/park soils.

- Determine the potential health risk to the student and professional community.

- Propose technical recommendations based on the findings.

Three soil samples were collected in Pomacancha (POMA-R-1 through POMA-R-3). POMA-R-1 and POMA-R-2 were collected adjacent to Educational Institution N° 30468. POMA-R-3 was collected southwest of the school approximately 0.2 km away.
Soil samples were analyzed using a portable field X-ray fluorescence (XRF) spectrometer (Niton xl3t GOLDD+), with measurements in ppm (mg/kg), to evaluate the

presence of heavy metals such as lead (Pb), mercury (Hg), and arsenic (As) in soil near the school.

The analysis prioritized heavy metals and metalloids of high toxicological relevance typically associated with mining activities: Arsenic (As), Lead (Pb), and Mercury (Hg).

The ECAs for soils for residential/park use ware established by Supreme Decree N° 011-2017-MINAM and are as follows:

- **Arsenic (As):** 50 mg/kg (ppm)
- **Mercury (Hg):** 6.6 mg/kg (ppm)
- **Lead (Pb):** 140 mg/kg (ppm)

Soil Sample Results:

The attached table presents the results of the soil assessment.

- **Arsenic (As):** The result from the sample POMA-R-1 shows contamination at 105 ppm, exceeding the ECA by 2.1 times.

- **Mercury (Hg):** Mercury was not detected above the detection limit of about 5 ppm in sample POMA-R-1 or in POMA-R-2. Mercury was detected at 9 ppm in sample POMA-R-3, which may be related to historic ore milling.

- **Lead (Pb):** The result from sample POMA-R-1 shows contamination at 332 ppm, exceeding the ECA by 2.37 times.

Areas of Concern

Contamination was detected in two of the three heavy metals analyzed (arsenic and lead), located just outside of the perimeter of the school, representing a potential risk of exposure to students and staff at the school. The results also suggests that there may be more widespread contamination on or around the school grounds that warrant further research.

- **Arsenic (As):** The concentration of 105 ppm exceeds the established ECA by more than double. Arsenic is a highly toxic metalloid with proven carcinogenic and neurotoxic effects.

- **Lead (Pb):** The concentration of 332 ppm represents a considerable exceedance of the ECA. Lead is particularly dangerous for children, as it affects neurological and cognitive development.

- **Mercury (Hg):** Not detected near the school, indicating levels below the detection limit of the equipment, which is favorable but does not exclude the need for additional assessment.

Conclusions

1. A critical area was identified outside (exterior perimeter) of Educational Institution N° 30468 that exceeds the ECAs established in Supreme Decree N° 011-2017-MINAM (Environmental Quality Standards for soils of residential/park use).

2. Significant exceedances were detected: arsenic at 2.1 times the ECA and lead at 2.37 times the ECA.

3. There is a potential health risk to the school community, especially considering the toxicity of arsenic and lead. Because the dataset is very limited, additional assessment on the school grounds is needed to better understand the potential risk of exposure to the school community.

Recommendations

1. Immediately restrict access to the exterior perimeter area of the school where the contaminated soil was found.

2. Conduct additional sampling and analisis in different areas adjacent to and on the school grounds where there is exposed soil.

3. Inform educational and health authorities of the findings.

Attachments

Table – Soil Results
Figure – Sample Locations

Table of Soil Sample Results near Educational Institution N° 30468
Pomacancha, Peru

Sample ID	Sample Date	Site Address	As (ppm)	Hg (ppm)	Pb (ppm)
POMA-R-1	7/4/2024	Pomacancha, Jauja, Junín, PER	105	ND	332
POMA-R-2	7/4/2024	Pomacancha, Jauja, Junín, PER	10	ND	34
POMA-R-3	7/4/2024	Pomacancha, Jauja, Junín, PER	11	9	69
ECA			50	6.6	140

Note:
ppm - parts per million or milligrams per kilogram (mg/kg)
ECA - Environmental Quality Standard per MINAM, Supreme Decree No. 011-2017
ND - Not detected
Red shaded cells indicate that the sample result is above the respective ECA

Pomacancha Sample Locations

11/7/2025

Peru Colonial Site Assessment

World Imagery

Low Resolution 15m Imagery

Citations

1:1,200

0 0.01 0.02 0.04 mi

0 0.01 0.03 0.06 km

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

The EHC