



Environmental Analysis Program

Pomona College
Biogeochemistry Laboratory

SOP-L015

Foreign Soil Handling and Import Permits

Standard Operating Procedure

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1. Purpose

This SOP outlines the mandatory practices for securely and safely handling, analyzing, and disposing of soils and sediments collected from outside the United States. The importation and movement of untreated foreign soil is classified by the USDA Animal and Plant Health Inspection Service (APHIS) as an extremely high-risk activity (USDA Animal and Plant Health Inspection Service, 2024b). Several levels of review and approval are required before a permit can be issued. This SOP has been written to fulfill the conditions of the EA Program’s APHIS foreign soil permit.

These practices are mandatory for all personnel working with foreign soils in the EA Teaching and Research Laboratory at Pomona College. Additionally, all persons working in the laboratory, even those not directly handling foreign soils, must read this SOP and be aware of standard operations involving quarantine materials so that a safe and secure laboratory environment is maintained.

2. Scope

- **Applies to:** All soils and sediments collected outside the United States and its territories that are imported to or processed in the EA Program laboratory
- **Does not apply to:** Domestic soils (including soils from Hawaii, Puerto Rico, and the U.S. Virgin Islands, which are not foreign countries under APHIS regulations); fully sterilized or commercially prepared soil reference materials
- **Analyses covered:** ICP-MS, EA-IRMS (total C, N, S and stable isotope ratios), texture, organic matter content, and other parameters where soils can be disposed of properly after analysis
- **Location:** Foreign soil storage in SGM 133 (designated cabinet); processing in SGM 134 (dedicated area)

3. Responsibilities

Role	Responsibility
PI (Permit Holder)	Maintain active APHIS permit; ensure compliance
Lab Manager	Oversee quarantine storage; verify sterilization
Trained Personnel	Handle soils per this SOP; log all activity
All Lab Personnel	Read this SOP; understand quarantine protocols even if not handling foreign soils

4. Definitions

- **APHIS (Animal and Plant Health Inspection Service):** The USDA agency responsible for protecting US agriculture from pests and diseases; regulates genetically engineered organisms and administers quarantine regulations; issues permits for importing soil and biological materials that could harbor plant pests or pathogens (USDA Animal and Plant Health Inspection Service, 2024b).
- **Autoclave sterilization:** Treatment of soil at 121 °C and 15 psi for at least 30–60 minutes to inactivate plant pathogens, weed seeds, nematodes, and other regulated organisms; required by USDA APHIS before foreign soil may be used in experiments outside a permitted facility.
- **CBP (U.S. Customs and Border Protection):** The federal agency that clears imported soils and plant material for entry into the United States, working alongside APHIS inspectors at Plant Inspection Stations.
- **Controlled import permit (PPQ Form 588):** A USDA APHIS document authorizing the importation of specified soil or biological material under defined containment and handling conditions; the PI must obtain this before any foreign soil enters the United States (USDA Animal and Plant Health Inspection Service, 2024b).
- **Decontamination:** A procedure that eliminates or reduces microbial contamination to a safe level with respect to transmission of infection; for foreign soils, typically achieved by autoclave or dry-heat sterilization.
- **Foreign soil:** Soil or sediment originating outside the United States and its territories; regulated by USDA APHIS under 7 CFR Part 330 because of the risk of introducing exotic plant pests, pathogens, and invasive species (USDA Animal and Plant Health Inspection Service, 2024b).
- **Permitted facility:** A laboratory or greenhouse that has been inspected and approved by USDA APHIS for work with imported soil or regulated biological materials; must meet physical containment requirements specified in the permit.
- **Plant Inspection Station (PIS):** A USDA/CBP facility at a port of entry where imported shipments are inspected and cleared by APHIS and CBP inspectors before release.
- **PPQ Form 508:** The green and yellow APHIS shipping label required for shipments of 3 lb or less that will be treated at the Plant Inspection Station.
- **PPQ Form 550:** The black and white APHIS shipping label required for shipments routed directly to a USDA-approved permitted facility.
- **Regulated article:** Any soil, plant material, or organism whose importation is controlled by USDA APHIS because of its potential to harbor or transmit plant pests or diseases.
- **ePermits:** The USDA APHIS online system for applying for and managing import permits and requesting shipping labels (USDA Animal and Plant Health Inspection Service, 2024a).

5. Safety and Hazards

5.1. APHIS Quarantine Requirement

Soil is strictly controlled under APHIS quarantine regulations 7 CFR Part 330 because it can readily provide a pathway for introducing dangerous organisms into the United States. Importation of soil from foreign sources is prohibited unless authorized by APHIS under specific conditions, safeguards, and controlled circumstances described in a valid permit and/or compliance agreement.

Noncompliance can result in permit revocation, fines, and legal action (USDA Animal and Plant Health Inspection Service, 2024b).

5.2. Required PPE

- ☐ Standard laboratory coat
- ☐ Nitrile gloves
- ☐ Lab safety goggles
- ☐ Closed-toe shoes

5.3. Storage Restrictions

- Foreign soils must be stored only in the designated quarantine cabinet in SGM 133
- Foreign soils must be processed only in the dedicated area in SGM 134
- Soils must never be opened or processed outside these designated areas

5.4. Chemical Hazards

If chemicals are used during analysis (e.g., acids for digestion), review the Safety Data Sheets before beginning. For isopropyl alcohol used in decontamination, work in a well-ventilated area and keep away from ignition sources.

5.5. Emergency Procedures

Refer to [SOP-L002 Laboratory Safety](#) and [SOP-L003 Hazardous Materials Handling](#). For spills of foreign soil, see §11 (Spill Cleanup).

6. Personnel and Training Requirements

All personnel working with foreign soils must complete the following before handling any quarantine material:

1. Complete [SOP-L002 Laboratory Safety](#) training, including the annual Pomona College lab safety course
2. Read the USDA/APHIS Compliance Agreement (current agreement number on file with the PI)
3. Read the current Foreign Soil Permit (permit number on file with the PI) (USDA Animal and Plant Health Inspection Service, 2024b)
4. Read this SOP in full
5. Complete [SOP-L105 Drying Ovens](#) training (required for sterilization procedures)
6. Be signed off by the PI or lab manager

! All Lab Users

Even personnel who do not work directly with foreign soils must read this SOP so they understand the quarantine protocols in effect in SGM 133 and SGM 134. This is a condition of the APHIS permit.

i APHIS Contact

For questions about the permit, shipping, or compliance, contact the local APHIS Plant Protection and Quarantine office. Verify current contact information with the PI before each import event, as personnel assignments may change.

7. Required Materials

Item	Location	Notes
Drying oven (capable of 250 °C)	SGM 134	See SOP-L105
Foreign Soils Log Book	SGM 133	Stored with quarantine cabinet
Quarantine cabinet (labeled)	SGM 133	Lockable; red “Quarantine Soil” tags
Refrigerator or freezer (if required)	SGM 133	Designated area for foreign soils
Whirl-Pak bags and Ziplock bags	SGM 133	For sample containment
Isopropyl alcohol	SGM 134	For decontamination of surfaces and equipment
Red tags (“Quarantine Soil – Unsterilized”)	SGM 133	
Green tags (“Quarantine Soil – Sterilized”)	SGM 133	
PPQ Form 508 and/or PPQ Form 550 labels	On file	Requested through ePermits (USDA Animal and Plant Health Inspection Service, 2024a) or by email

8. Sample Collection and Import

8.1. Equipment Decontamination at the Collection Site

All field equipment must be thoroughly cleaned and disinfected of all soil residues at the collection site before packing for transport. Acceptable methods:

- Soak in isopropyl alcohol for one hour, or
- Soak and wash in hot water with detergent for 30 minutes

8.2. Shipping Foreign Soils

1. Pack soil and sediment samples in sturdy, leak-proof containers. Declare contents as “Soil samples.”
2. The primary container must be securely closed and watertight.
3. Enclose the primary container in a second, durable, watertight secondary container. Each container must be capable of containing the soil independently.
4. Attach the appropriate APHIS shipping label to the exterior of each shipping package (USDA Animal and Plant Health Inspection Service, 2024b):
 - **PPQ Form 508** (green and yellow): For shipments of 3 lbs or less that will be treated at the PIS
 - **PPQ Form 550** (black and white): For shipments routed directly to the USDA-approved facility (Pomona College)

Label Placement

Packages without APHIS shipping labels on the exterior may be refused entry even if labels are enclosed inside the package.

5. Each label is individually numbered with a distinctive barcode. The permit holder must request the appropriate labels at the time of permit issuance.
6. Additional labels can be obtained through the “My Shipments/Labels” feature in ePermits (USDA Animal and Plant Health Inspection Service, 2024a) or by emailing BlackWhiteGreenYellowlabelrequest@aphis.usda.gov.

8.3. Waybills

- **PPQ Form 508 shipments** require two waybills: one international waybill to direct the shipment to the PIS, and one domestic waybill (placed inside the package) to direct the shipment from the PIS to the permit holder.
- **PPQ Form 550 shipments** require one waybill to direct the shipment to the permit holder.

The waybill must include: carrier account number or postage, permit holder name, permit number, label number, delivery address, and telephone number. If the waybill address does not match the permit address, the package may be refused entry by CBP.

8.4. Hand-Carrying Soils into the United States

Permitted articles may be hand-carried into the U.S. only if (USDA Animal and Plant Health Inspection Service, 2024b):

1. Hand carrying was requested in the permit application and authorized in the permit conditions
2. The permit conditions list the specific steps that must be followed
3. If someone other than the permit holder will hand-carry, that person must be identified on the permit
4. The authorized hand-carrier must follow all permit conditions pertaining to hand-carried shipments

9. Receiving, Storage, and Logging

9.1. Receiving

1. Transport soils directly to the Biogeochemistry Lab quarantine cabinet in SGM 133. Under no circumstances may soils be opened or processed until they reach the quarantine cabinet.
2. Open containers only inside the designated closed room area in SGM 133 or SGM 134. Take all precautions to prevent the escape of any potential pest that may be in the soil.

9.2. Logging

Upon arrival at Pomona College, log every sample in the Foreign Soils Log Book. Each entry must include:

Field	Description
Sample number	Year and consecutive number (e.g., 18-01)
Date of arrival	YYYY-MM-DD
Origin (provenance)	Country, region, site name
Collector name/initials	Who collected the sample in the field
Mass (grams)	As received
Reason for collection	Research project or study name
Storage location	SGM 133 cabinet shelf, refrigerator, or freezer
Sterilization status	Unsterilized (red tag) on arrival

9.3. Labeling and Storage

1. Samples remain sealed in original Whirl-Pak bags within Ziplock bags until processed.
2. Store bags on shelf trays within the closed quarantine cabinet. Samples must not be left on tables or elsewhere when not in use.
3. All stored, unsterilized soils must be labeled with red tags stating “Quarantine Soil – Unsterilized.”
4. Sterilized samples must be labeled with green tags stating “Quarantine Soil – Sterilized.”
5. Any individual sample being processed outside its storage cabinet must also be clearly labeled to indicate sterilization status.

10. Treatment, Sterilization, and Disposal

10.1. Sterilization Method

Soil samples must be sterilized by dry heat treatment at 250 °C for 24 hours, or by one of the other approved methods documented in the Foreign Soils Log Book.

! All Residues Must Be Sterilized

All residues from processing (including ash, rinse water filter residues, and equipment rinse material) must be sterilized using the same methods as the soil itself.

10.2. Disposal

After sterilization, soils may be disposed of in standard solid waste. Document disposal date, mass, and method in the Foreign Soils Log Book.

11. Mass Accounting and Audit

Periodically verify that the sum of all samples used in analyses and the remaining inventory agrees with the original imported mass within 10% (APHA et al., 2012).

i Note

Discrepancies exceeding 10% must be investigated and documented.

12. Quality Control

- Verify that the APHIS Foreign Soil Permit is current and has not expired before any import activity.
- Confirm that APHIS shipping labels match the current permit number.
- Audit the Foreign Soils Log Book at least once per semester to verify all entries are complete and mass accountability is within 10% (APHA et al., 2012).
- Report any anomalies (missing samples, mass discrepancies, permit questions) to the PI immediately.

13. References

- USDA Animal and Plant Health Inspection Service (2024b)
- USDA Animal and Plant Health Inspection Service (2024a)
- APHA et al. (2012)

APHA, AWWA, & WEF. (2012). *Standard methods for the examination of water and wastewater* (22nd ed., p. 1360). American Public Health Association.

USDA Animal and Plant Health Inspection Service. (2024a). *ePermits: Permits for importing regulated articles*. <https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/permits/epermits>

USDA Animal and Plant Health Inspection Service. (2024b). *Importing soil and earth: Regulations under 7 CFR part 330*. <https://www.aphis.usda.gov/plant-pests-diseases/permits/soil>

14. Related SOPs

SOP	Title	Relationship
L002	Laboratory Safety	Required prerequisite
L003	Hazardous Materials	Chemical spill response
L105	Drying Ovens	Sterilization at 250 °C
L112	Autoclave Sterilization	Alternative sterilization method

15. Training Record

Before handling foreign soils independently, personnel must:

1. Read this SOP in full
2. Complete [SOP-L002 Laboratory Safety](#) training
3. Complete [SOP-L105 Drying Ovens](#) training
4. Read the current APHIS Compliance Agreement and Foreign Soil Permit (copies on file with the PI) (USDA Animal and Plant Health Inspection Service, 2024b)
5. Complete the annual Pomona College lab safety course
6. Demonstrate proper logging, labeling (red/green tags), and sterilization procedures under supervision
7. Be signed off by the PI

16. Appendix A: Sample Numbering Convention

Each sample receives a number consisting of the two-digit year and a consecutive number for that year. For example, 18-34 indicates the 34th sample logged in 2018. The numbering resets to 01 at the start of each calendar year.