



How do I work with Regulated Soil at the ALS?

Foreign and domestic soil samples may be regulated by the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) or the California Department of Food and Agriculture (CDFA). Use this procedure to determine if your sample is regulated and how to transfer and work with your regulated soil sample(s) at the ALS.

Section I: Determining if samples are regulated

1. A Soil Permit is required for regulated soil sample(s). As the Investigator, it is your responsibility to determine if your sample is regulated. Use the checklist and tables on page nos. 5, 6 and 7 (Attachment 1) of this document to make this determination.
2. Please contact Shraddha Ravani (SRavani@lbl.gov) or Scott Taylor (setaylor@lbl.gov) well in advance of your experiment start date to arrange for transport and use of regulated soil samples at the ALS.

NOTE: DO NOT ship your soil sample(s) to the ALS without prior approval from either Shraddha or Scott!

Section II: Shipping soil samples to the ALS

1. ALS Soil Permit **authorizes 3 lbs or less** soil per shipment.
2. Put soil samples in primary containers (e.g., tubes or vials) that are securely closed and watertight. These primary containers must be enclosed in a secondary container(s) that is durable and watertight, and then place both primary and secondary container(s) in sturdy leak-proof shipping container(s), such as insulated plastic cooler, for shipment/transport.
3. If samples are field moist, ship them on "blue ice" to keep them cold during transport.
4. Include in each container a copy of the current ALS USDA Soil Permit (provided by the ALS).
5. Seal container(s) with duct tape or similar tape to prevent spillage during transit.
6. Label each container as "Contents - Soil Samples" by attaching the label provided by USDA's Plant Protection and Quarantine (PPQ) program. Ensure that the ALS USDA Soil Permit Number is included on the label. Users must contact the Shraddha Ravani well in advance to receive the label(s) from the ALS.
7. Samples must be shipped by bonded, DOT-approved carrier. Name of the experiment lead and Experimental Safety Sheet number must be included with the shipment. The shipping bill must be manifested as "SOIL" and the ALS Soil Permit Number provided.
8. Ship container(s) to:
ALS Shipping and Receiving, Mail Stop 7-100
c/o Shraddha Ravani and Scott Taylor
Lawrence Berkeley National Laboratory
One Cyclotron Road

Section III: Upon arrival of soil samples at the ALS

1. Authorized ALS personnel will unpack shipping container(s) at the ALS Biology Lab (Bldg. 15, Room 120), and decontaminate any "blue ice" packets with 70% ethyl alcohol and any melted liquid with 10% household bleach (See section VII).
2. Any loose soil from the container will be collected in to a clear biohazardous waste bag.
3. Shipping container(s) will be decontaminated.
4. Sample container(s)/bag(s) will be labeled with the following information:
 - Name of the experiment lead
 - Experiment Safety Sheet (ESS) number
 - Date of arrival
 - Name of recipient
5. Sample(s) will be logged into the ALS Soil Inventory maintained electronically (in a Smartsheet).

Section IV: Storage of Samples

1. Soil samples will be stored in the locked storage cabinet in the ALS Biology Lab (Bldg. 15, Room 120) until they can be delivered to the appropriate beamline.
2. The key to the locked box will be kept in the ALS Control Room (Bldg. 80, Room 140) in a locked cabinet. Authorization is needed in order to retrieve the key, see Section VI.
3. If you need to transport your soil sample(s) to different locations within the ALS during your ESS-approved experiment, be sure to put the soil sample(s) in a secondary container with a duplicate label on each container.
4. See Section VI to access your samples during evening and weekend shifts.
5. Untreated samples can be stored in a locked box for up to 6 months from date of arrival.

Section V: Sample Handling

1. Experiment at the beamline can be performed only as described in the ESS.
2. After completion of experiment, the experiment lead or designee will be responsible for collecting all remaining dry soil samples in a biohazardous waste container that is lined with a clear biohazardous waste bag. This waste will be handled as described in Section VII.
3. Experiment lead or designee will be responsible for treating all liquid residues from the experiment with 10% household bleach as described in Sections VII and VIII.
4. Experiment lead or designee will be responsible for immediately collecting all soil and other contaminated materials from lab benches, equipment, chairs/lab chairs, and the floor into a clear biohazardous waste bag.
5. After you have collected all residual material, inform the ALS Soil Custodian Shraddha Ravani or Scott Taylor for disposal as biohazardous waste.
6. Experiment lead or designee will be responsible for decontaminating fixed surfaces with 10% household bleach or Cavi wipes, after collecting spilled soil.

Section VI: Procedure for evening and weekend experiment shifts

1. If you need to work with your soil samples during evening or weekend shifts, please get prior e-mail authorization from the ALS Soil Custodian(s) Shraddha Ravani or Scott Taylor to collect your soil samples. With the e-mail authorization, the on-duty Operator in the ALS Control Room will give you your soil sample from the locked storage box.
2. Follow the same procedures on Sample Handling as described above in Section V.

Section VII: Procedure for disposal of all residual soil and other contaminated material in clear biohazardous bags

1. Experiment lead or designee will be responsible for placing the residual soil and other contaminated material in a labeled biohazardous waste container that is provided by the ALS; make sure that the waste container is lined with a clear biohazardous waste bag. Seal the biohazardous waste bag tight using tape, rubber band, or bag tie.
2. Inform Shraddha Ravani or Scott Taylor to dispose of the biohazardous waste bag(s).
3. Authorized ALS staff will transport your waste soil in the biohazardous waste bag to the ALS medical/biohazardous waste pickup container (gray barrel) located near the exit door in Room 118 of the ALS Bio Lab in Bldg. 15.

Section VIII: Procedure for disinfecting liquid materials before disposal

1. Add a sufficient amount of household bleach to the biohazardous liquid to create a 10% concentration of bleach. This mixture may be made by adding 100 ml of bleach for each liter of liquid waste (or 1.5 cups bleach per gallon).
2. The bleach should remain in contact with the liquid waste material for approximately 20 minutes to ensure adequate germicidal action, prior to disposal via a laboratory sanitary sewer sink drain.

Section IX: Transferring samples from LBNL

Regulated soil samples cannot leave the ALS or be returned to their source institution without prior approval from the ALS USDA permit holder, Shraddha Ravani. Other institutions receiving any regulated soil samples must have a USDA Soil Permit that covers the soil sample to be transferred.

Section X: Resources

1. For questions and concerns, contact:
Shraddha Ravani, saravani@lbl.gov, (510) 486-6568
Scott Taylor, setaylor@lbl.gov, (510) 486-4545

2. Primary links for US and California requirements and information on soil:

- USDA-APHIS Soil Circular “How to Import Foreign Soil and How to Move Soil Within the US”
http://www.aphis.usda.gov/plant_health/permits/organism/soil/downloads/soil-circular.pdf
- USDA-APHIS Plant Pest Program Information
- http://www.aphis.usda.gov/plant_health/plant_pest_info/index.shtml
- USDA-APHIS Plant Health and Soil Permits
- http://www.aphis.usda.gov/plant_health/permits/index.shtml
- CDFA Plant Quarantine Manual (two links)
<http://pi.cdfa.ca.gov/pqm/manual/pdf/Contents.pdf>
http://pi.cdfa.ca.gov/pqm/manual/htm/pqm_index.htm#interior
- CDFA Plant Health and Prevention Services Permits and Regulations Program
<http://www.cdfa.ca.gov/plant/permitsandregs.html>

ATTACHMENT 1

How to Determine If a Soil Sample Is Regulated

Use the checklist and tables below to determine if a soil sample to be transferred to LBNL is regulated by:

- US Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), or
- California Department of Food and Agriculture (CDFA)

Regulated versus Not Regulated Soil Questions	Yes	No
1. Is your soil sample treated in such a way that all potential microbes are killed (e.g., sterilized by autoclaving or fixation)? If yes, your soil is not regulated. STOP here.		
2. Is your untreated sample considered regulated soil? Review the USDA circular on soil “How to Import Foreign Soil and How to Move Soil Within the United States” and answer the questions below.		
a. Does your sample meet the USDA definition of “what is soil” and is not “exempt?” If yes, proceed to step 3.		
b. Does your sample meet the USDA definition of “what is not soil” or qualify as being “exempt?” If yes, your soil is not regulated. STOP here.		
3. Is your soil from a regulated location? Review locations in the USDA circular on soil and links in the “Quarantine Areas” tables below, then answer the questions below.		
a. Is your sample from a regulated location (i.e., all foreign sources, Hawaii, all US territories, or locations in Canada or US States that are under federal or California quarantine)? If yes, your soil is regulated.		
b. Is your sample from a location that is not regulated (i.e., parts of the US States that are not under federal or California quarantine)? If yes, your soil is not regulated.		

Quarantine Areas in the Continental United States Where Soil is a Federally (USDA-APHIS) Regulated Article

(Updated August 2012)

Use the table below to determine which areas in the continental US “soil” is considered a regulated article by USDA-APHIS. Review quarantined areas for each listed pest.

Regulated Domestic Pest	General Regulated Areas	USDA-APHIS links to areas or maps	Sample from this area?
Fire Ants	Southern California, New Mexico, Southern US	Map Zip code lookup	
Fruit Flies	Texas	County lists and maps	
Witchweed	North & South Carolina	Regulated, infested, suppressive areas	
Golden Nematode	New York	Regulated Area Map of New York	
Pale Cyst Nematode	Idaho	Regulated fields map of Idaho	

Background Information:

USDA-APHIS establishes domestic quarantine notices (see [7 CFR 301](#)) for specific pests and specific regulated articles such as soil. The pests listed above have quarantine areas that include soil as a regulated article. *Phytophthora ramorum* (Sudden Oak Death) is not listed above because CDFA does not regulate soil for this pest according to CDFA Stephen Brown email to Bruce King on 6/8/12).

Quarantine Areas Within and Outside California
Where Soil is a California (CDFA) Regulated Article
 (Updated August 2012)

Use the table below to determine which areas within and outside California “soil” is considered a regulated article by CDFA. Review the general quarantined areas for each listed pest, and consult the specific section of the [CDFA Plant Quarantine Manual](#) as needed to see more specific quarantine areas and conditions.

California Interior Quarantine (Within California) for Soil			
Regulated California Pest	General Regulated Areas	CDFA Plant Quarantine Manual section	Sample from this area?
Ozonium Root Rot	California Counties: Imperial, Riverside, and San Diego	Section 3401	
Mediterranean Fruit Fly	California Counties: Orange, Riverside, San Diego	Section 3261. Soil within drip area of plants that produce host fruit	
Mexican Fruit Fly	California County: San Diego	Section 3417. Soil within drip area of plants that produce host fruit	
Olive Fruit Fly	California County: Los Angeles	Section 3431. Soil within drip area of plants that produce host fruit	
Karnal Bunt Disease	California Counties: Imperial, Riverside	Section 3430	
Red Imported Fire Ant	California Counties: Orange, Los Angeles, Riverside	Section 3432	
California Exterior Quarantine (Outside California) for Soil			
Regulated California Pest	General Regulated Areas	CDFA Plant Quarantine Manual section	Sample from this area?
Ozonium Root Rot	Arizona, Arkansas, Louisiana, Nevada, New Mexico, Oklahoma, Texas, Utah	Section 3261	
Caribbean Fruit Fly	Puerto Rico and Florida	Section 3252. Soil within drip area of plants that produce host fruit	
Colorado Potato Beetle	All US States, Districts, and territories except Alaska, Hawaii, and Nevada	Section 3264. All soil in association with plants or tubers of tomato, pepper, eggplant, Irish potato	
Plum Curculio and Blue Berry Maggot	Utah and all states and districts east of and including the states of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma and Texas	Section 3266. Soil within drip area of plants that produce host fruit	
Burrowing and Reniform Nematode	Alabama, Arkansas, Florida, Georgia, Hawaii, Louisiana, Mississippi, North Carolina, South Carolina, Texas, and Puerto Rico	Section 3271. See specific counties	

Japanese Beetle	Entire states of Alabama, Arkansas, Colorado, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, Wisconsin, and District of Columbia. In Canada, entire provinces of New Brunswick, Nova Scotia, Ontario, Prince Edward Island, and Quebec	Section 3280. Humus, compost, and all growing media (e.g., soil)	
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