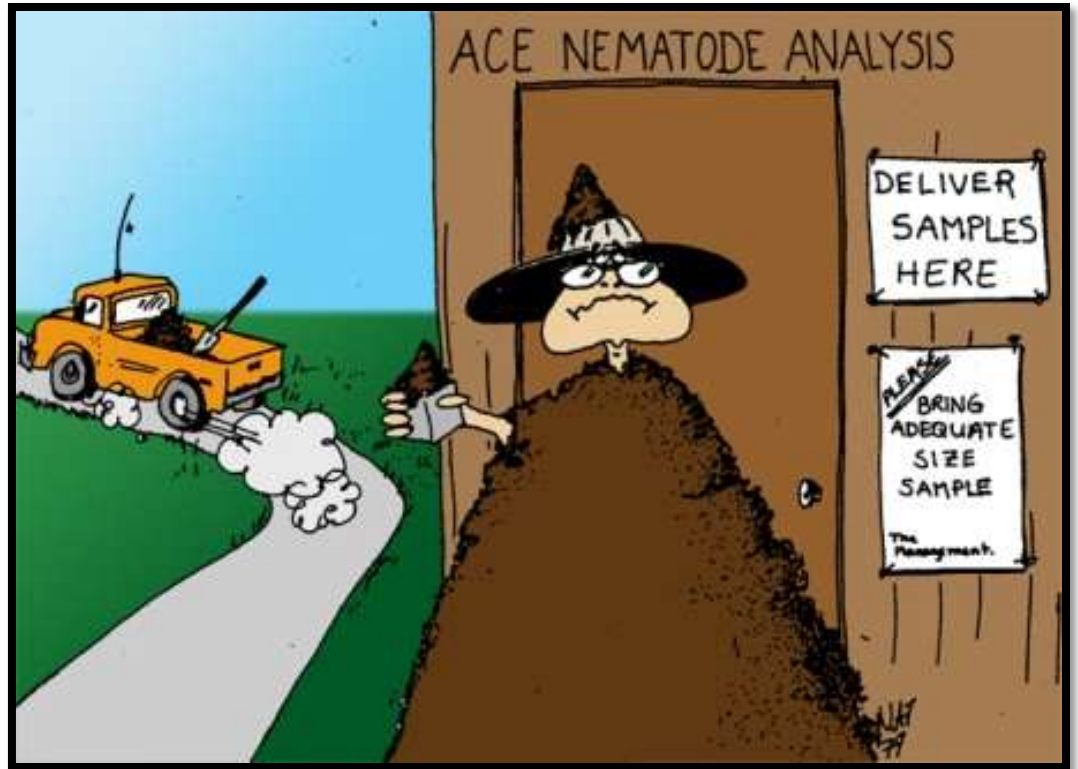


Soil Permits:
It is not a dirty word!



Bethzayda Matos, PhD
University Biosafety Officer
Environmental Health & Safety

Got Dirt?

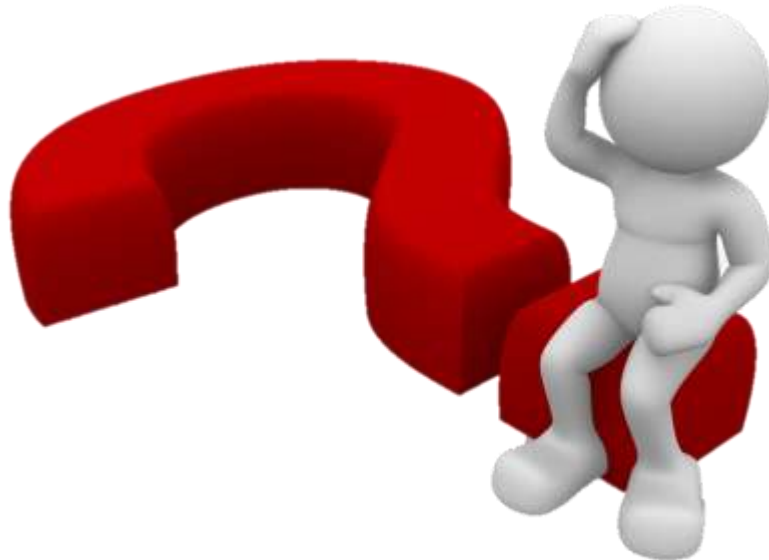
- Routine lab safety inspection, you visit Dr. Dirt's lab
- Professor of Civil, Construction & Environmental Engineering
- Research is on soil compaction

Several bins of soil in the lab labeled "Dominican Republic Soil Samples"



Would you be concerned about this soil?

What follow up questions would you ask?



Got dirt?

Dr. Dirt mentions that he also has soil samples from:

Canada, Florida, Hawaii, and Illinois

He is using all of these soil samples in a soil study in his lab.



**Are there any concerns about soil from within
the U.S.?**

What about Canadian soil?



Dr. Dirt tells you he is glad you came.

He is actually wrapping up this project and will need to dispose of all this soil soon.

How would you tell him to dispose of this soil?



Topics

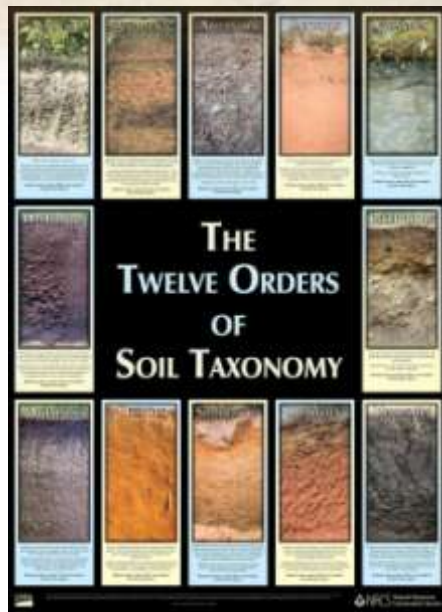


- Who regulates soil?
- Why is soil regulated?
- What is soil?
- What are the requirements for regulated soil?
- Treatment options for regulated soil?
- Case study

Types of Soil Research in Colleges at ISU:



- Engineering
 - Compaction
 - Erosion
- Agriculture & Life Sciences
 - Diseases
 - Nutrition
 - Taxonomy
- Veterinary Medicine
 - Parasites



Soil Permit Regulations

- U.S. Department of Agriculture
 - Animal and Plant Health Inspection Service (APHIS)
 - Plant Protection and Quarantine (PPQ)
 - 7 CFR 330

Soil can provide a pathway for the introduction of a variety of dangerous organisms into the United States.



USDA-APHIS-PPQ



Soil Permits &
Compliance
Agreement

Plant and Plant
Product Permits



Plant Pest Permits



USDA-APHIS-PPQ



Soil Permits &
Compliance
Agreement

Plant and Plant
Product Permits



Plant Pest Permits



Got Soil?

- Mixture of inorganic and organic materials
 - Organic materials are unidentifiable plant and/or animal parts.



- Topsoil, forest litter, wood or plant compost, humus, earthworm castings

Not Soil

- Sand
- Clay
- Talc & Chalk
- Rocks
- Volcanic pumice
- Salt
- Iron ore
- Gravel



Is Anything Exempt?



- Peat, cosmetic mud and other mud products
 - Processed to a uniform consistency
 - *Free* of plant parts or seeds
- Volcanic rock, pumice, geologic samples, drilling cores, or mud
 - Mined so it is free of organic material
- Any sediment, mud or rock from oceans of the earth

In Our Biosafety Context....



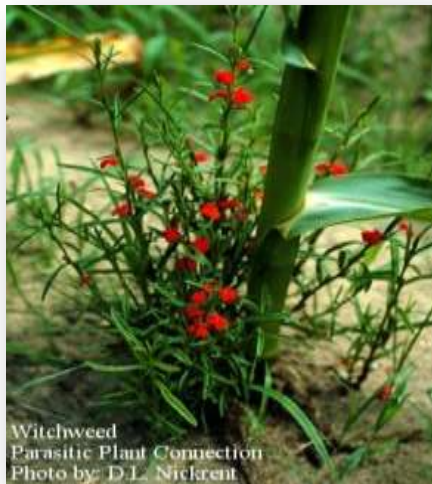
Purple loosestrife

- Soil can harbor:
 - Animal and plant pests
 - Bacteria
 - Virus
 - Fungi
 - Nematodes
 - Arthropods
 - Noxious weed seeds and propagules



Pest Alert

- Fire Ant
- Golden Nematode
- Karnal Bunt
- Witchweed
- Mexican Fruit Fly



Where can we find soil?

- Earth moving equipment
- Personal gear (shoes)
- Tents and pegs
- Digging tools
- Backpacks
- Vehicles
- Storage containers
- Crates and pallets
- Souvenirs (rocks, soil, manufactured wooden articles)



What's regulated?

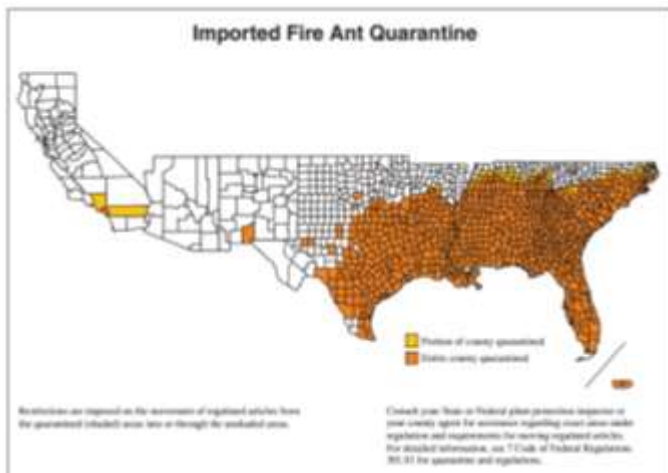
- Untreated foreign soil
- Hawaii and US territories
 - Puerto Rico, Guam



Permit



Compliance Agreement



- Untreated domestic soil from designated quarantine areas

Compliance Agreement

What's not regulated?

- Soil from non-quarantined parts of continental U.S.
 - Quarantine areas constantly being updated by USDA APHIS
- Most (but not all!) parts of Canada
- Soil that has been properly treated
- Check with USDA APHIS



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- ▶ User Fees
- ▶ Wildlife Damage Management

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Plant Health

Imported Fire Ants

Determine the quarantine status of your area by typing your zip code below.



[Check your zip code now](#)

If the response is: "Portion of Zip Code Quarantined", please review the CFR below to find a written description of the quarantine boundaries in that State and County.

- 7 CFR 301.81 (as of 1-1-08)

Contact:

Charles Brown
Program Manager
301-851-2119
E-mail: Charles.L.Brown@aphis.usda.gov

Last Modified: March 8, 2008

Call your local USDA
office.

Related Topics

- [Overview](#)
- [Plant Pest Program Information](#)
- [Pest Detection](#)
- [CPHST](#)
- [Pest Identification](#)
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Review

Foreign
soil

Domestic
soil/Canada



Permit



Compliance
Agreement



Non-Quarantine



Quarantine
Area



Compliance
Agreement

How can soil be treated?

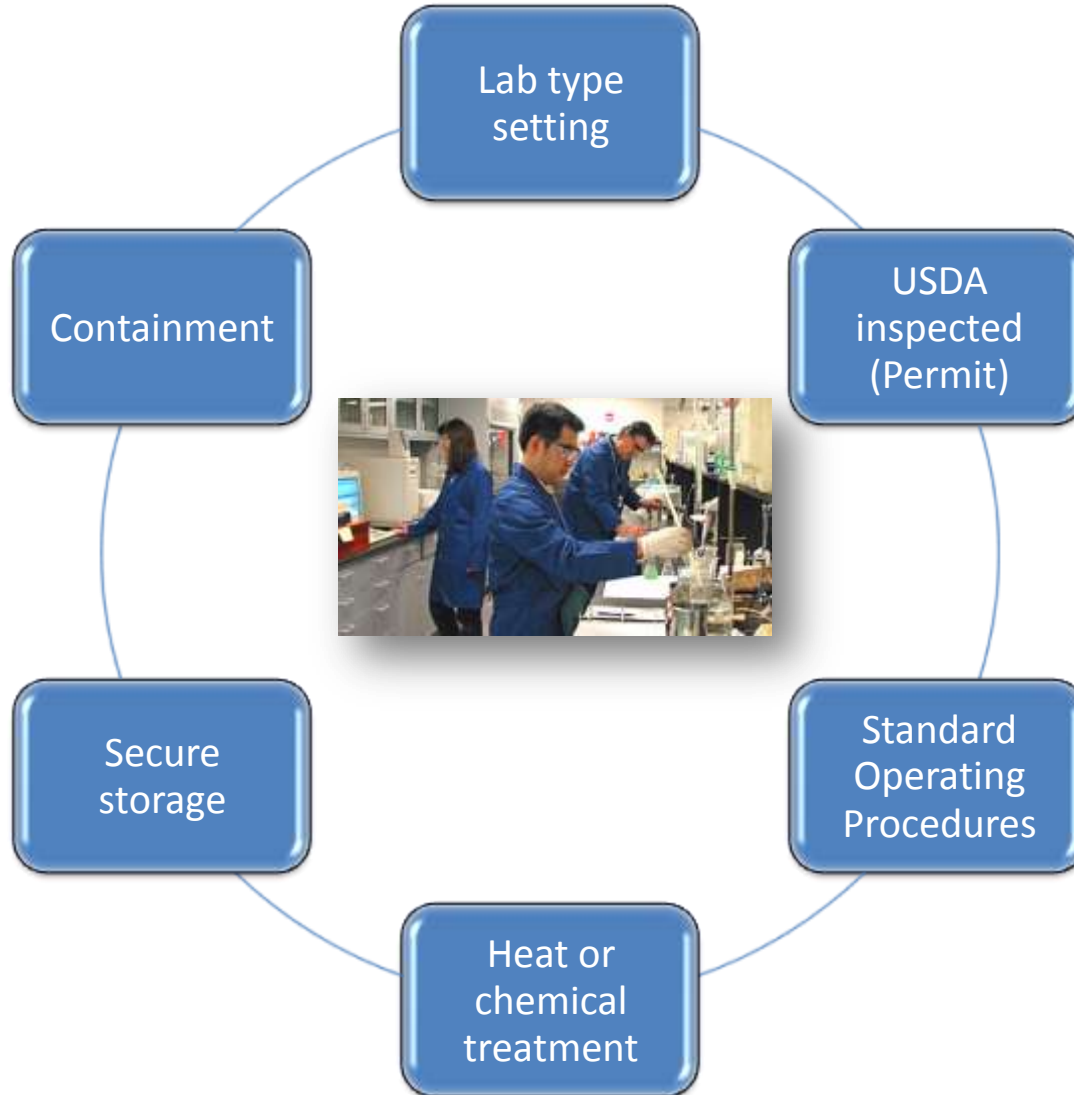
- **Three categories of treatments are authorized for soil:**
 - 1- Dry heat at 250F for at least two hours
 - 2- Steam heat at the same temperature for 30 minutes at 15 lbs/p.s.i. pressure
 - 3- Other treatments and conditions such as:
 - destructive analysis
 - acid washing
 - incineration



You want to import soil?

1. PPQ treats soil at port of entry
 - ≤ 3 lbs shipment of soil only
2. Become an authorized soil lab
 - Requires PPQ 525A Permit and Soil Compliance Agreement
3. Treat soil at another authorized soil laboratory
 - Soil lab that has a valid soil permit/compliance agreement

What is a Soil Laboratory?



Want to find an approved soil lab in your state?



http://www.aphis.usda.gov/plant_health/apps/ifars.php?ndx=3&fltr=IA&sn=iowa

APHIS Inspected Facilities Authorized to Receive Soil

Last Modified: 09/12/2014

Keyword Search: Search

Iowa Facilities	Contact	City, State	Exp Date
Iowa State Highway Commission		Ames, IA	Domestic Only
Iowa State University	Dr. Ann Elizabeth Russell	Ames, IA	1/22/2017
Iowa State University	Dr. Ann Elizabeth Russell	Ames, IA	1/22/2017
Iowa State University	Dr. David White	Ames, IA	3/17/2017
Iowa State University	Paul Richmond	Ames, IA	2/27/2017
Iowa State University	Prof. Klaus Schmidt-Rohr	Ames, IA	3/25/2017
Maxim Technologies		Des Moines, IA	Domestic Only
Solum, Inc.	Bradly Roetman	Ames, IA	4/17/2016
The University of Northern Iowa	Chad Heinzl	Cedar Falls, IA	2/14/2017
The University of Northern Iowa	Chad Heinzl	Cedar Falls, IA	2/14/2017
University of Iowa, Department of Anthropology	James G. Enloe	Iowa City, IA	1/14/2016
University of Iowa, Department of Anthropology		Iowa City, IA	Domestic Only
USDA-ARS	Dr. Jerry L Hatfield	Ames, IA	3/27/2017
Southern Laboratories		Mobile, AL	Domestic Only
University of Alabama	Prof. Alexander Douglas Hurn	Tuscaloosa, AL	4/8/2017

What if I plan to extract biological organisms from the soil?

- Prohibited under a PPQ 525-A permit.
- Requires a PPQ 526 Permit + PPQ 525-A permit



How does EH&S get involved?

- Permit Specialist
 - Biotechnology Regulatory Services
 - Veterinary Services
 - Plant Protection Quarantine
- Assistance during USDA inspection
- Reminder of permit is about to expire
- Guide thru e-permits process
- Incinerator



Incinerator



- Alternate method of disposal
 - Cannot autoclave
 - Cannot use chemicals to decontaminate
- Burns 1080 lbs. per hour
- Temperatures range from 1300-2000 degrees F
- EH&S has a USDA permit + Soil Compliance Agreement

USDA Permit + Compliance Agreement

- Annual Training
 - Review of procedures and SOPs
 - Permit conditions
 - Reporting Spills and Releases
- Movement within campus is in ISU owned vehicle
- Provide a copy of Client's permit

EH&S requirement for burning

- Double bagged and within a sturdy, leak-proof container
- Outside container must sustain 13 feet drop into hopper without rupturing



CASE STUDY



Case Study: Iowa-Brazil

Mr. Soil is the lab manager of the Soil Analysis lab at your University.

Mr. Soil has a USDA Soil Permit + Soil Compliance Agreement to receive soils from different parts of the world.

He gets contacted by a company (Save the World, INC.) to perform soil analysis for a project in Brazil.

Can Mr. Soils provide this service using the permit he already has?



Mr. Soil designates Dr. Beet to travel to Brazil and oversee the collection and shipment of the soil sample.

Dr. Beet gives oral instructions on how to package and ship the samples.



Do you think oral instructions were adequate here?

The first shipment goes well. Mr. Soil finds a new job and leaves the University. However, Dr. Beet carries on with the project and prepares to receive the second samples shipment and he does not travel to Brazil because the local technicians will collect and ship the soil. Dr. Beet sends Mr. Soil's permit to accompany shipment.

Can Dr. Beet continue to use Mr. Soil's permit?



**The shipment container arrives at U.S. Customs and Border Patrol.
The package is damaged and leaking.**

Customs and Border inspector contacts the USDA.

USDA contacts Mr. Soil and he said he had left that employer.

**What do you think
happened to the
shipment of soil?**

**What do you think
happened to Mr. Soil?**



Lessons Learned:

Permit conditions not followed

- Mr. Soil did not notify USDA of leaving position and location (cancel permit)
- Written SOPs not shared with technician in Brazil
- Laboratory personnel (Technician, Faculty) not trained on permit conditions
 - Shipment occurs without valid permit
 - Double leak proof, sturdy container not used for shipment



Acknowledgements

- Biosafety Staff



Thanks!

www.ehs.iastate.edu

