

Minimum Biocontainment Standards: Plant Pathogen Containment Standards

APHIS/CDC Laboratory Biosafety Course
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USDA-APHIS-PPQ biocontainment response—

- The need for research of foreign pathogens balanced by the need to protect American agriculture.



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Select Agents and Toxins Regulated under both Acts

- Agricultural Bioterrorism Protection Act, 2002
- Plant Protection Act, 2000



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Plant Protection Act

- Provides a permit system for research
- Regulates economic and environmental plant pests (not human health)
 - pathogens
 - arthropods
 - parasitic and other weeds
 - nematodes

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Types of Facilities

- Laboratories
- Growth chambers
- Greenhouses

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Final Rule March 18, 2005

Agricultural Bioterrorism
Protection Act, 2002

Possession, Use, and Transfer of Select Agents and Toxins;
Final Rule

7 CFR 331 and 9 CFR 121 (USDA, APHIS)
42 CFR 73 (Health and Human Services, CDC)

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PPQ Select Agents

- *Liberobacter africanus* (Huanglongbing = Greening disease, Citrus)
- *Liberobacter asiaticus* (Huanglongbing = Greening disease, Citrus)
- *Peronosclerospora philippinensis* (Philippine downy mildew, Corn)



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PPQ Select Agents

- *Ralstonia solanacearum* R3 B2 (Bacterial wilt brown rot, Potato)
- *Sclerophthora rayssiae* var. *zeae* (Brown stripe downy mildew, Corn)



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PPQ Select Agents

- *Synchytrium endobioticum* (Potato wart or Potato canker, Potato)
- *Xanthomonas oryzae* pv. *oryzicola* (Bacterial leaf streak, Rice)
- *Xylella fastidiosa* (Citrus variegated chlorosis, Citrus)



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Containment requirements...

...include the same requirements
as the Plant Protection Act



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...add these specific others:

Physical aspects

- The facility must have biosafety (biocontainment) and physical security plans
- An appropriate security system must be in place



http://www.aphis.usda.gov/programs/ag_selectagent/index.html



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Incident response procedures

- The plan must address containment and security breaches, inventory violations, bomb threats, severe weather, and power outages.



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Agricultural Containment Considerations— Plant Pathogens

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Exterior views

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- Electronic access key pad



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- Secondary gate and fence



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- Exterior view of biocontainment facility



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- Service entrance for agricultural containment facility



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Transition area

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- Airlock—to move items into containment



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- Small autoclave—to remove items from containment



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- Containment side of small autoclave



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- Men's "shower in-shower out" room



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- Interior of "shower in-shower out" room



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- Interior of “shower in-shower out” room



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- Detail of exit button to leave containment area



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Research area



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- Preparation room/office



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- Entrance to laboratory



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- Pressure indicators on all doors



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- Small growth chambers in lab



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- Intercom between containment area and other labs in facility



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- Security motion detector



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- Venting and A/C system



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- Chemical hood venting



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- Biosafety cabinet



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- Biosafety cabinet



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- All electrical outlets are sealed.



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- Detail of computer outlet



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- Access key pad within containment area



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- Foot pedal for sink operation



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- All drains have specialized traps.



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- Windows are caulked on interior and exterior sides.

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Biocontainment greenhouse

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- Biocontainment greenhouse



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- Each greenhouse section is separate.



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- Detail of sink vent and trap



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**Transitional area for
large equipment**

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- Airlock for large equipment transfer



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- Airlock can be fumigated as needed.



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- Detail of interior to service entrance



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- Exterior view of large airlock



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- Containment side of large autoclave



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- Work/dirty preparation autoclave room



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Facility mechanical section

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- HEPA air handlers

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- Detail of outside air intake



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- Detail of ductwork seals



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Takeaway points—



- Biocontainment requirements for the Ag Bioterrorism Protection Act are the same as those for plant pest permits.
- There are additional legal, procedural, and security sensitive information (SSI) requirements for Select Agents and Toxins.

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