Minimum Biocontainment Standards: Plant Pathogen Containment Standards

APHIS/CDC Laboratory Biosafety Course Atlanta, GA • September 20–21, 2005 Dr. Charles L. Divan



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USDA-APHIS-PPQ biocontainment response—

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



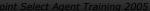


Select Agents and Toxins Regulated under both Acts

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









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





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)





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)





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





...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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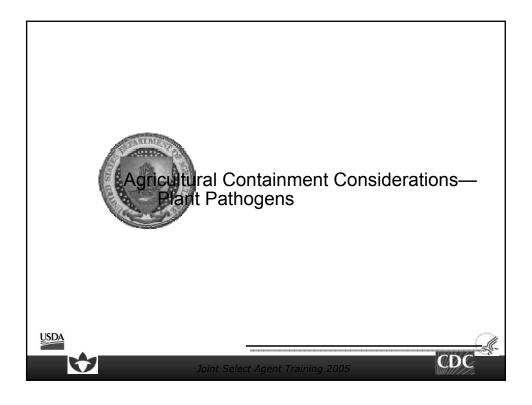
Incident response procedures

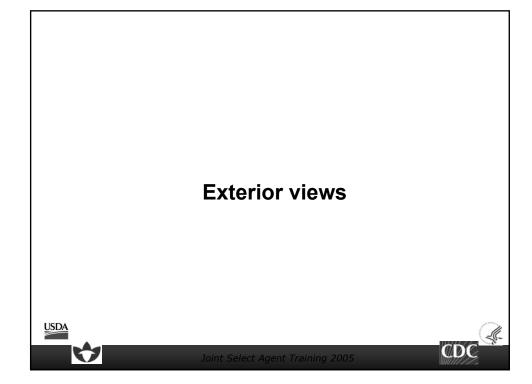
 The plan must address containment and security breaches, inventory violations, bomb threats, severe weather, and power outages.





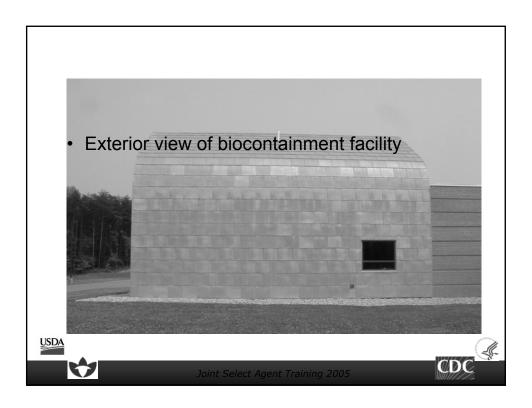




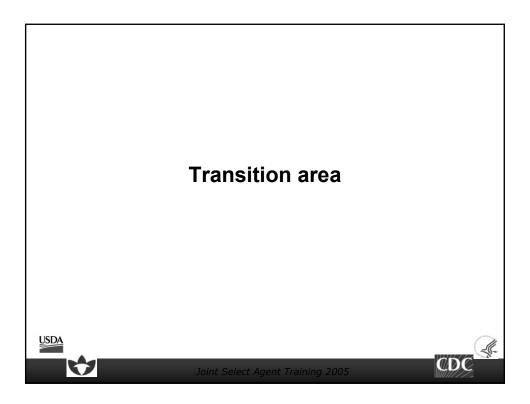






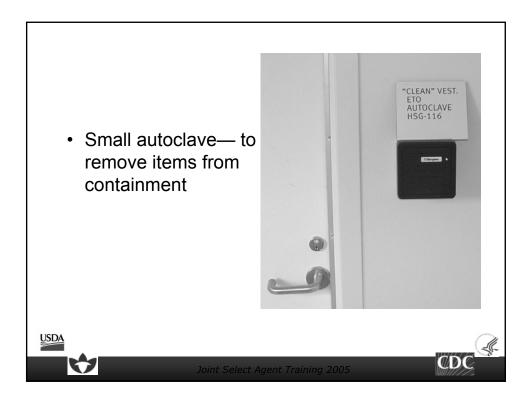






• Airlock—to move items into containment

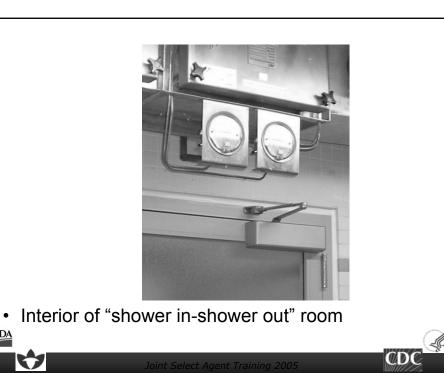
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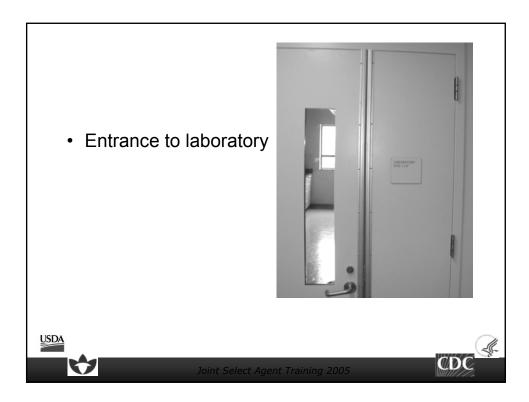
• Detail of exit button to leave containment area



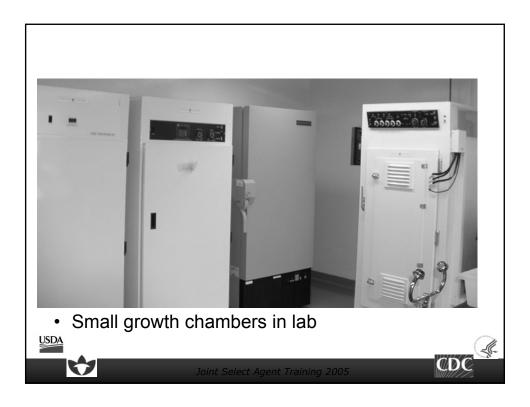


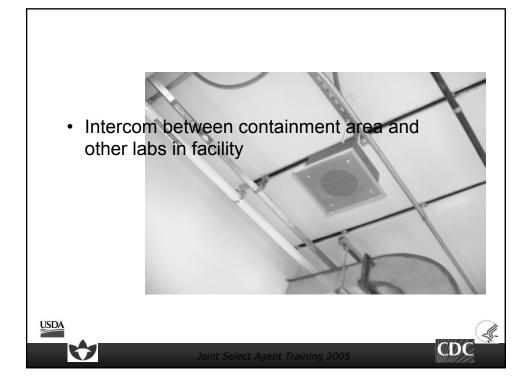


Research area Solution Select Agent Training 2005

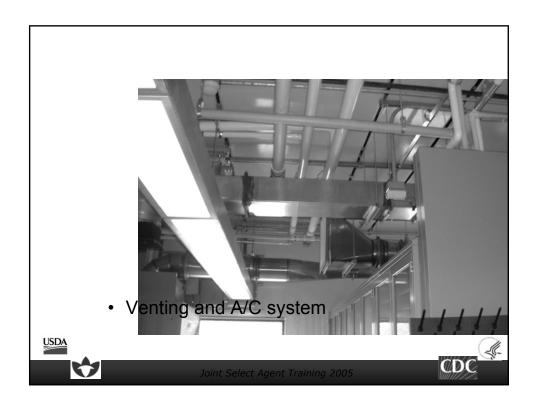


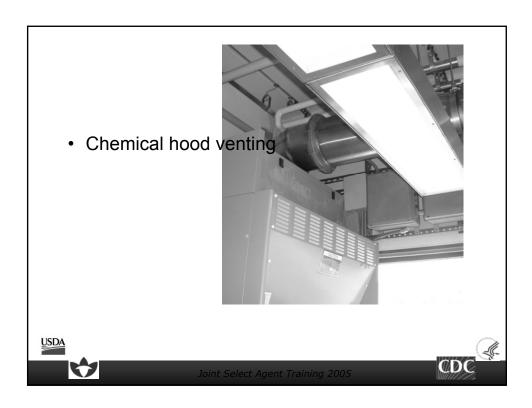


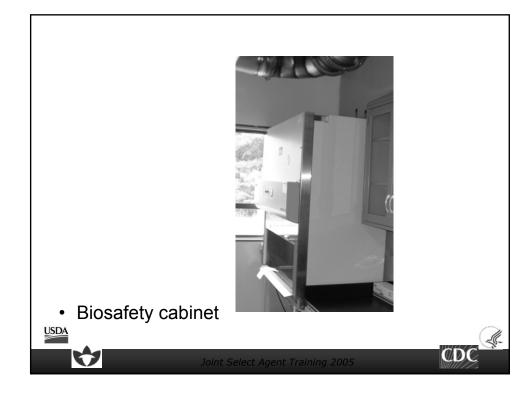






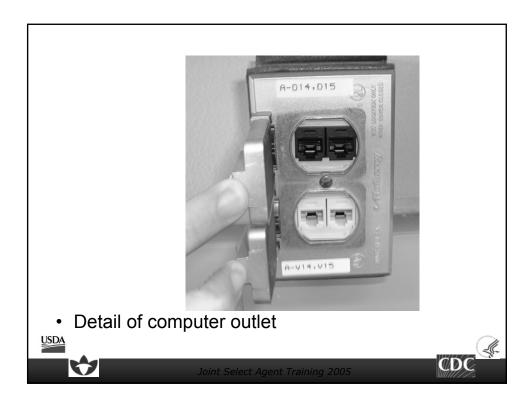








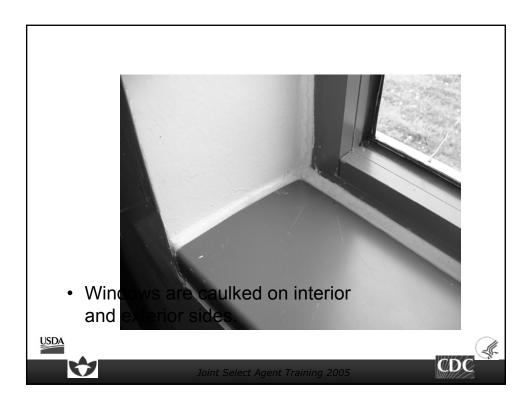












Biocontainment greenhouse







Biocontainment greenhouse







Each greenhouse section is separate.





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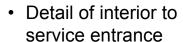
Transitional area for large equipment













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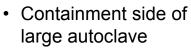


 Exterior view of large airlock



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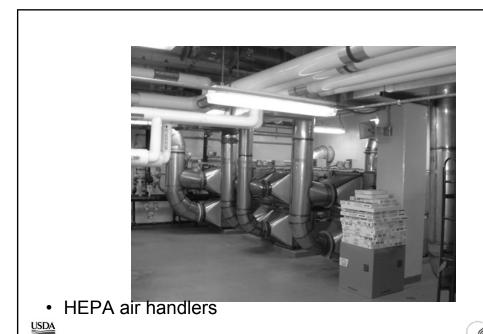


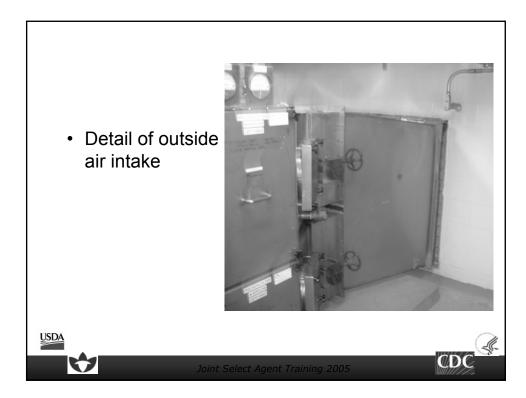
Facility mechanical section

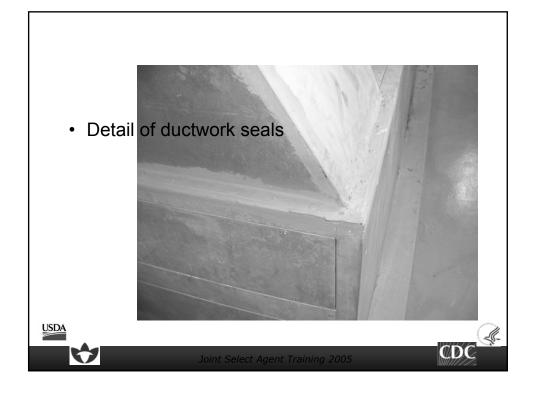




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Takeaway points—



- 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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