Irradiation as a Phytosanitary Treatment

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Outline

- APHIS PPQ Overview
- General Information
- Regulatory Overview
- Program Types
Regulate the movement of any commodity capable of harboring invasive, threatening plant pests, including noxious weeds, in order to protect the “agriculture, environment, and economy of the United States”

Facilitate import, export, and interstate commerce of agricultural products and other commodities that pose a risk of harboring certain plant pests

Plant Protection Act of 2000
Approved Source Types

**Gamma**: $^{60}\text{Cobalt}$ or $^{137}\text{Cesium}$ emits photons during decay

**E-beam**: High energy electrons propelled from an electron gun

**X-ray**: High energy electrons are converted to X-rays (photons)
Phytosanitary Irradiation

APHIS treatments require minimum absorbed doses between 60-400 Gy

FDA limits fresh fruit and vegetable treatments to 1000 Gy

Radura must be visible at the point of sale for fresh fruits and vegetables
Pest Proof Packaging

As mortality is not the target response for APHIS treatments, live insects may remain after treatment.
Regulatory Summary

• Market access granted
• Framework equivalency work plan signed
• Trust fund established
• Operational work plan signed
• Commodity-specific addendum signed
Regulatory Summary

- Facility plan approved
- Facility certified
- Importer compliance agreement signed
- Importer permit granted
- Packaging approved
- Process configuration approved
Irradiation Program Types

Foreign Site Irradiation
  Offshore irradiation of US imports

Irradiation in USA
  • Port of Entry Program
    Domestic irradiation of US imports
  • Domestic Quarantine Program
    Irradiation for domestic movement
  • Export Program
    Irradiation of US exports (in development)
India

Krushak

- First certified overseas facility
- Certified 2007
- $^{60}$Co
- Mango
Thailand

Synergy Health Ltd
- Certified 2008
- $^{60}$Co
- Mangosteen and longan

Thai Irradiation Center
- Certified 2007
- $^{60}$Co
- Mangosteen and longan
Vietnam

An Phu Irradiation
- Certified 2009
- $^{60}$Co
- Dragon fruit and rambutan

Son Son Corporation
- Certified 2008
- E-beam
- Dragon fruit and rambutan
Mexico

Sterigenics
• Certified 2008
• $^{60}\text{Co}$

Benebión
• Certified 2011
• $^{60}\text{Co}$
• Guava, chile manzano and mango
South Africa

High Energy Processing (HEPRO)
- Certified 2012
- $^{60}$Co
- Grape
### Foreign Totals (in kg)

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<th>Year</th>
<th>India</th>
<th>Mexico</th>
<th>South Africa</th>
<th>Thailand</th>
<th>Vietnam</th>
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<td>2007</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>2009</td>
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<td>2012</td>
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<td>2013</td>
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<td>1,060,500</td>
<td>1,967,500</td>
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<td>843,000</td>
<td>2,293,000</td>
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Port of Entry

Sadex Corporation
- Certified 2009
- Sioux City IA
- Pakistan mangos
- E-beam
Southern Tier Rule

Southern Tier Rule

As of July 2012, establishment of port of entry phytosanitary irradiation facilities are allowed in the Southern U.S. states.

Additional Requirements:
• Approval by State Representative to the National Plant Board (State Plant Regulatory Official)
• Refrigerated Conveyance of Commodity
• Maps of Surrounding Agricultural Production Areas
• Pest Trapping or Monitoring
• Additional Facility Safeguarding
Southern States: Port of Entry

NCEBR
- Certified 2012
- College Station TX
- Mexican exports
- E-beam

Gateway America
- Certified 2013
- Gulfport MS
- South African persimmon
- $^{60}$Co
Southern States: Port of Entry

Issues
- Additional safeguarding at the facility
- Pre-approve packaging
- Process configuration approval upon arrival
Process Configuration Testing

Condition of Entry Treatment

Emergency Action

US Imports: 2013 MB Usage
Domestic Movement

Hawaii Pride
- 1st PPQ-certified facility
- X-ray
- Sweet potato and tropical fruit

Pa’ina Hawaii
- Certified 2012
- $^{60}$Co
- Sweet potato and tropical fruit
Export Program

Food Technology Service Inc.
- Mulberry FL
- Certified 2011
- $^{60}$Co
- Stone fruit exports to Mexico (never started)
Export Program

GA and SC peach exports to Mexico

Recently signed OWP allowing irradiation of commodity in US

Mexico has agreed to recognize the APHIS Port of Entry Certification of Gateway America

PPQ is hoping to expand this to other facilities in the near future.
Final Thoughts & Questions