

# Department of Homeland Security Science & Technology Directorate - University Programs



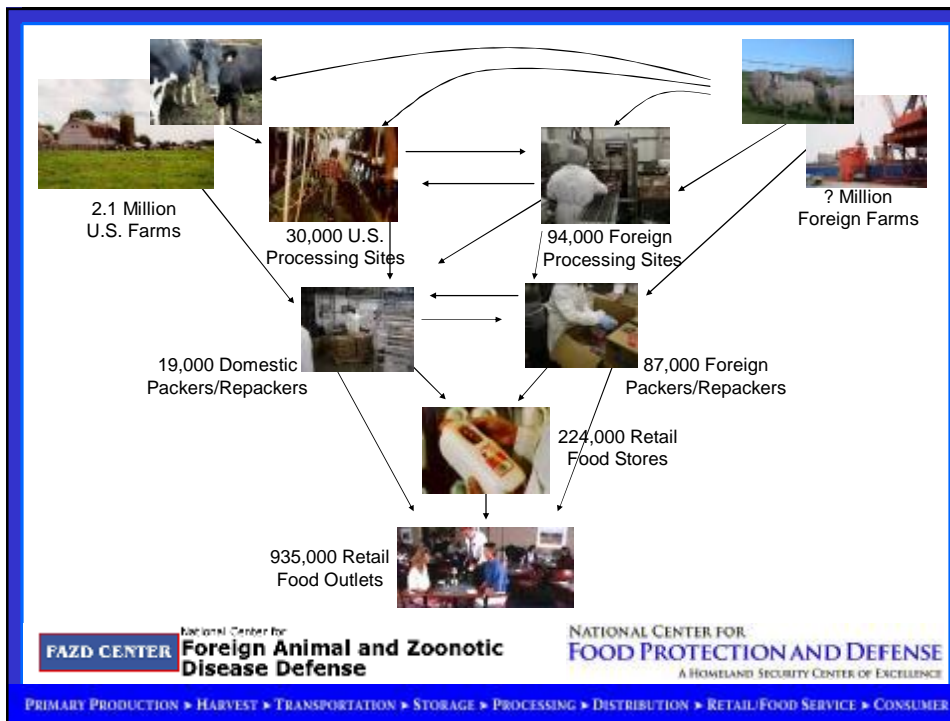
## Melamine Adulteration of Imported Protein Products

### Case Study in Food Supply Chain Risks emerging from the Globalization of the Food Supply Chain

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Developing New tools to  
Defend our Nation's Food Supply Chain

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**2007 Protein Supplement Contamination:  
A case study in Global Food System Risk!**

- In 2006 we experienced a dramatic surge in imports of protein enhancement products from China, such as Wheat Gluten and Rice Protein.
- In February, pet food products were discovered to be contaminated with melamine. Some reports suggest that 30,000+ pets have become sick or died. (Banfield Veterinary Clinic Study)
- The products were reportedly contaminated to 'enhance' the apparent level of protein, beginning by the Fall of 2006.
- Until late April Federal Agencies stated that there was no evidence human food chain was affected.
- Swine and Poultry industry routinely use expired pet food in feed. Initial checks in mid April immediately confirmed presence of melamine in livestock feed used in six states.

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- Human consumption confirmed on April 28, 2007.
- FDA & USDA have stated that there is no significant risk to those who consumed melamine or cyanuric acid contaminated pork, poultry or fish products.
- Exact extent of use of contaminated pet food in feed is not fully known and, while the risk appears low, the extent and long term consequence of human exposure is not known.
- Where else has this contaminated product gone? Has China sold the same product to other foreign suppliers of food products to the US market, such as Thai shrimp farmers? Chain says no. How do we know?
- This event demonstrates a potentially significant vulnerability that results from the global nature of our food and agriculture systems.

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- The primary issue is not the toxicity of the melamine, cyanuric acid, amilorine and amiloride contaminates.
- The issue in this case is that adulterating substances found their way into our pet and human food supply chains and were not detected until there was morbidity and mortality in pets.
- Global channels of food/feed ingredient movement into the US are not adequately monitored.
- Even if they were more closely monitored, in this case one would have had to be looking specifically for melamine to have detected it.
- Actual extent of livestock feed applications for pet food products were not fully appreciated by some federal and state agencies
- The many in the private sector were unaware of the risk exposed by this event and the scale of the risk this vulnerability presented to the firms who were directly and/or indirectly involved.

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- By early May 2007 it became evident that the contaminated pet food materials had spread into the feed of a wide variety of food animals:
  - Swine
  - Poultry
  - Farm Raised Fish
- It also became evident that not all of the protein products shipped by the Chinese firms were, indeed, the products reflected by the labels:
  - The rice protein was actually wheat flour
  - Not all of the wheat Gluten was actually wheat gluten – it was wheat flour!
- Finally, in May the Chinese admitted that, despite earlier statements to the contrary, the Chinese firms involved had not only been responsible for the contamination, they had done so intentionally! It became clear that this was a case of international economic fraud.

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- The consequences have been substantial for the US:
  - Nearly all grain imports from China are delayed and require testing by CBP or FDA prior to admittance to the US
  - Feed and grain imports from Canada have been held up for testing by CBP prior to release for use in the US.
  - Many grain product imports from other nations must now undergo pre-admittance testing by CBP or FDA.
  - Cattle operations in the northern tier of states who depend upon Canadian sourced feed products have had deliveries delayed or cancelled.
  - The sampling and testing load on CBP has exceeded their capacity for timely tests and results.
  - The event has seriously strained relations with China and impacted trade with many other nations.

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- The consequences have also been substantial for key Federal Agencies:
  - FDA has had a difficult time addressing the developing situation and in communicating an effective message with the public.
  - The sampling and testing demands upon FDA and CBP have strained resources – and this is a relatively small bio-event!
  - Border personnel within CBP were not prepared or equipped at many port of entry points for the inspection, sampling and testing tasks recommended by FDA.
  - CBP's laboratory capacity was quickly exceeded and 'time to result' for many samples stretched into more than a week, with cargoes sitting at border points awaiting clearance for more than a week.

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**2007 Protein Supplement Contamination:  
A case study in Global Food System Risk!**

What have we learned So Far?

- A global supply chain vulnerability was exposed within the food and agriculture infrastructure where there was no effective surveillance and detection system available.
- The complexity of the food, feed and animal production chain made it difficult for focused agency staff to assess the situation
- Investigations of food and agriculture contamination/adulteration events within the global supply infrastructure present unique challenges and foreign governments may or may not be cooperative.
- The sampling and testing demands, even for modest scale events, placed upon FDA and CBP during global supply chain events will quickly exceed the capacity now in place!
- NIMS FAILURE and turf issued complicated response and coordination with the states and industry.

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What have we learned So Far?

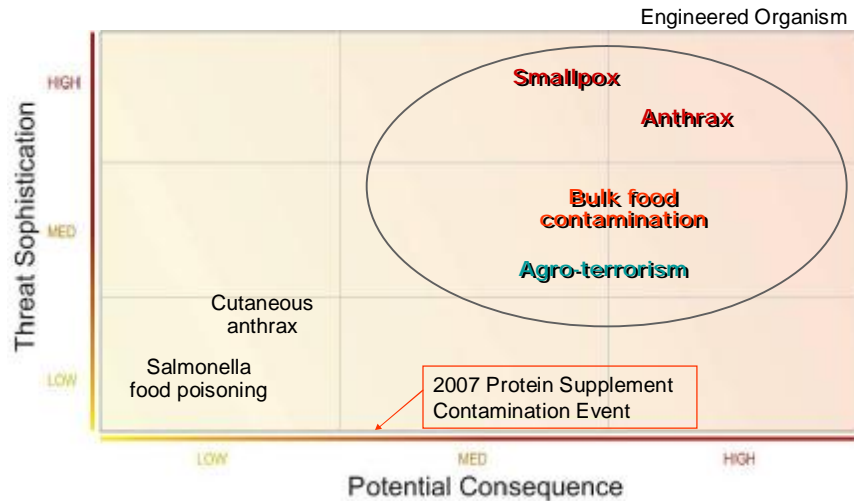
- CBP will have to carry out the inspection, surveillance, sampling and testing of critical imports from the global supply chain recommended by FDA in the face of even modest events – Yet they are not yet adequately equipped, staffed or trained to do so!
- Public confidence in the food supply chain, particularly as it relates for the global components of that supply chain, is fragile and requires careful, accurate and pro-active risk communications.
- There are food and agriculture infrastructure vulnerabilities that we do not yet fully understand because they are unique to the global aspects of our national food supply chain and they have not been adequately documented and studied
- Need for trace back and supply chain verification

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## DHS initial emphasis on high consequence threats



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And in the midst of all of this.....

Tainted toothpaste from China is discovered in Mexico, the Caribbean and in toothpaste with counterfeit labels at a US Port of Entry!

Several popular lines of toys, manufactured in China for American firms, are found to have been produced using a lead based paint, resulting in a major toy recall across the nation!

Virtually everyday, CBP discovered mislabeled products, shipped from China, that contain tainted or prohibited materials!

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## National Policy Implications

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- § This event demonstrates a potentially significant vulnerability that results from the global nature of our food and agriculture systems. Wheat gluten and Rice Protein supplements are examples of broadly used ingredients that are routinely obtained via the same export/import channels.
- § The issue is not simply the toxicity of the melamine, cyanuric acid, amilorine and amiloride contaminants. It is that these adulterating substances found their way into our pet food and human food supply chains and were not detected until there was morbidity and mortality in pets.
- § These channels of ingredient product movement from foreign sources into the US were not monitored in detail or spot inspected and melamine contaminated product would not be identified through normal sampling. The actual uses of the ingredients and their broad distribution into our food supply chains were not understood or appreciated by the SSAs involved or the states.
- § The Private sector was unaware of the risk exposed by this event and the scale of the risk this vulnerability presented to the firms directly and indirectly involved.

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## National Policy Implications continued

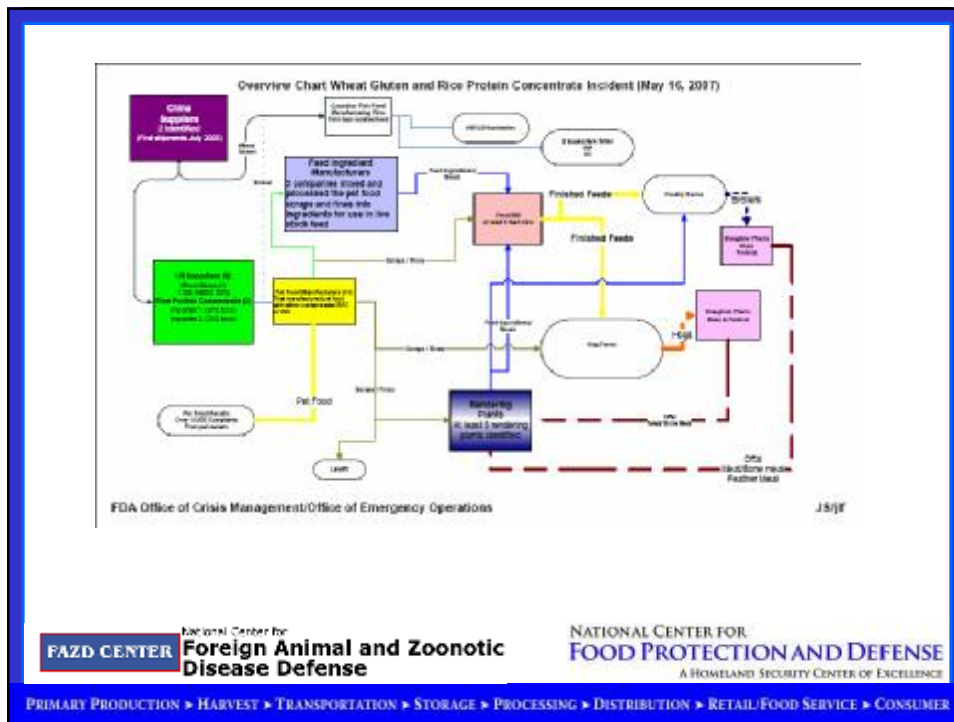
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- § We lack adequate documentation of the critical components of the nation's food supply chain 'systems', including the vital transportations components and product distribution systems.
- § This event demonstrates that our current approach to this sector within the tier based national asset database is insufficient and could not have provided any warning or assisted with a rapid situation assessment or event mitigation.
- § The event clearly demonstrates the need for a comprehensive assessment of the system vulnerability to asymmetric events. Only by good fortune was the current event discovered before it could be exploited by those with more than a simple financial payoff as their goal.
- § This situation defines the food and agriculture infrastructure protection role CBP, IP, OHA, IA and S&T: locate weaknesses and vulnerabilities in our critical infrastructures, and in partner ship with the SSAs to either fix them or implement steps to mitigate them (HSPD-7, HSPD-9 and HSPD-10, as well as the NIPP).

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What have we learned?

- This was a very unsophisticated act, yet the consequences have been substantial and not yet fully understood!
- Event such as this provide potential 'roadmaps' to those with even more dire intent, so we must address such newly identified vulnerabilities rapidly.
- This event clearly suggests that we are not prepared to effectively manage and rapidly mitigate the effects of a major bio-event within the food supply infrastructure!

So, where do we go from here?

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# Import Safety Becomes a National Focus

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## Executive Order On Import Safety, July 18, 2007

- § Establishing An Interagency Working Group on Import Safety
  
- § Ensure that the executive branch takes all appropriate steps to promote the safety of imported products.

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## Executive Order On Import Safety, July 18, 2007

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### Membership and Operation of Working Group.

- § (a) The Working Group shall consist exclusively of the following members, or their designees who shall be officers of the United States appointed by the President or members of the Senior Executive Service:
  - § (i) the Secretary of Health and Human Services, who shall serve as Chair;
  - § (ii) the Secretary of State;
  - § (iii) the Secretary of the Treasury;
  - § (iv) the Attorney General;
  - § (v) the Secretary of Agriculture;
  - § (vi) the Secretary of Commerce;
  - § (vii) the Secretary of Transportation;
  - § (viii) the Secretary of Homeland Security;
  - § (ix) the Director of the Office of Management and Budget;
  - § (x) the United States Trade Representative;
  - § (xi) the Administrator of the Environmental Protection Agency;
  - § (xii) the Chairman of the Consumer Product Safety Commission

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### Sub Working Groups

- § HHS Sub Working Group
  - § Members: State, HHS, DHS, DOC, CPSC, USDA
  - § Interview import safety agencies to determine mission, activities and recommendation
- § DHS Sub Working Group
  - § CBP, Coast Guard, ICE, OHA, I & A, S&T, Policy, NPPD, Public Relations, TSA
  - § Concentrate on DHS mission, activities and recommendations
- § Other agencies have comparable sub working groups

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### Sub Working Group Deliverables

- § Identify Department authorities and programs
- § Address cooperation with foreign governments and industry (manufacturers, importers & Retailers) regarding the import process and supply chain verification of exported goods and the need for additional initiatives
- § Address means to promote all appropriate steps by Industry to enhance the safety of imported products
- § Identify specific recommendations to enhance the safety of imports
- § Framework report delivered September 10, 2007
- § Import safety Action Plan now in development and input from industry is essential

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### DHS Mission Import Safety Mission

- § DHS leads the unified national effort to secure America and enhance the safety of imported products.
- § DHS has an interagency leadership role and partners with federal, state, local and territorial governments, and the private sector to enhance the Nation's protective posture across all critical infrastructures.
- § CBP is responsible for protecting our nation's borders in order to prevent terrorists and terrorist weapons from entering the U.S, while facilitating the flow of legitimate trade and travel.
- § CBP protects American consumers and the environment against the introduction of hazardous, toxic or noxious products and diseases that threaten our nation's food supply infrastructure into the U.S.



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### Overarching Themes

- § Protect the United States from terrorism and public from unsafe products while continuing to facilitate legitimate trade
- § Engage our foreign trading partner governments in our import safety efforts via increased cooperation and exchange of best practices and information
- § Push out safety assurance and supply chain verification beyond our borders
- § Engage the Private Sector in developing the solutions.



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## Executive Order On Import Safety

July 18, 2007



§ Via C-TPAT we are confident in ~ 49% of imports.

§ But this only addresses 5-10% of food imports!

§ *We need confidence in > 50% of all imports so we can more appropriately focus our limited resources!*

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## Executive Order On Import Safety

July 18, 2007

### Strategic Framework and Action Plan

§ Strategic Framework: Protecting American Consumers Every Step of the Way

§ A Strategic Framework for Continual Improvement on Import Safety

§ The Import Safety Working Group developed a strategic framework for ensuring import safety.

§ Issued September 10, 2007

§ Action Plan to Implement Strategic Framework

§ By Mid-November, the Import Safety Working Group will provide a follow-up Action Plan.

§ Action Plan will include short-and long-term recommendations for ensuring import safety in the United States.

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## Elements of the Strategic Framework

- § Outlines an approach that can improve the safety of imported products while facilitating legitimate trade.
- § Shifts the primary emphasis from Intervention to Prevention.
- § Moves from “snapshot” to “video”.
  - § From an assessment at the border to an assessment that spans the full import life cycle.

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## Strategic Framework

Prevention      Intervention      Response

- § Some agencies and members of the import community have already begun this shift from “snapshot” to “video”, from Intervention to Prevention. Others have nearly completed the transition.
- § The shift needs to rapidly encompass all who participate in the import supply chain.

## Organizing Principles/Keystones

- § Prevention—Prevent harm in the first place
  - § Safety must be built into manufacturing and distribution processes every step of the way.
  - § Federal government will need to work with the import community to better identify vulnerabilities and determine effective controls.
- § Intervention—Intervene when risks are identified
  - § Federal, State, Local and foreign governments, along with the import community, must adopt more effective techniques for identifying potential import hazards.
- § Response—Respond rapidly after harm has occurred
  - § Act swiftly to limit potential exposure and harm if an unsafe imported product enters domestic commerce.
  - § Need robust, collaborative system of response.

## Building Blocks

- § **Advance a Common Vision** --Shared vision and shared goals for import safety across the Federal government.
- § **Focus on Risks Over the Import Life Cycle** --Focus on most important safety risks throughout the import life cycle—from overseas production to point of final consumption or use in U.S.
- § **Increase Accountability, Enforcement and Deterrence** —Targeted investigation and enforcement can send a clear message to the trade community and in doing so, provide proper incentives and deterrence.
- § **Build Interoperable Systems** —Complete the implementation of interoperable data systems that exchange import product information.
- § **Foster a Culture of Collaboration** —Foster collaboration among government, the private sector, and with external partners.
- § **Promote Technological Innovation and New Science** —Develop and apply new science to improve the effectiveness and efficiency of the U.S. import safety system.

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Effective Import Safety.....

§ Prevent unsafe products from being loaded into cargo containers

§ **INSTEAD OF**

§ Consumers pulling these products from their cupboards and children's toy boxes



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**QUESTIONS ?**

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