



Objectives for Today's Meeting

- Status of the new law – Importance to consumers to implement the law
- Definition of catfish
- Review Exponent's risk profile for domestic vs. imported catfish
- Respond to OMB questions regarding the risk profile
- Understand the path forward

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Excerpts from the Law

- **Food, Conservation and Energy Act of 2008**
 - Requires domestic and imported farm-raised catfish undergo FSIS inspection
 - FSIS is to define "catfish"
 - Creates voluntary grading program at AMS
 - Requires FSIS take into account conditions under which catfish are raised and transported to a processing establishment
 - Requires catfish be subject to continuous inspection
 - Requires inspection programs of exporting countries be found to be equivalent under USDA regulations before foreign catfish may be imported into the US

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Catfish

- *Siluriformes*
 - 36 families of “catfish”
 - *Ictaluridae*—US Channel Catfish
 - *Pangasiidae*—SE Asian basa, tra and swai
 - Commonly interchanged in marketplace
 - Virtually indistinguishable in the forms sold in markets
 - Completely indistinguishable in prepared forms (such as in restaurants)

See Figure 1 in Exponent Risk Profile

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Sources of Catfish Sold to US Consumers

- Imports represent 32% U.S. catfish market
 - Nearly all from SE Asia
 - Vietnam (52%) mostly *Pangasiide*
 - China (30%) mostly *Ictalurus*

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Lessons from Previous “Emerging Risks”

- Identify risks early
- Take actions early
- Effective control of production
 - Sanitary inputs (water, feed, etc)
 - Safe use of antimicrobials, antibiotics and additives
 - Sanitation in processing facilities
- Monitor to ensure systems achieve goals

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Catfish Risk Profile



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Most Likely Potential Hazards from Freshwater Aquaculture (Domestic or Imported)

- **Environmental Chemicals**
 - Water sources
 - Feeds

- **Antimicrobial/drug Residues**
 - Malachite green, Gentian violet—Long term carcinogens
 - Fluoroquinolones—Development of antibiotic resistant microbial pathogens

- **Pathogenic Microorganisms**
 - Environment, feeds, facilities
 - *Salmonella, Listeria*

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Domestic vs. Vietnamese Production Practices

	U S	Vietnam
Pond water sources	Groundwater (wells)	Filled and flushed with river water
Antimicrobial use	FDA CVM approved	Unapproved –Malachite green, gentian violet, fluoroquinolones
Feeds	Plant protein pellets, feed safety and labeling programs	Can be locally produced—fish meal and animal materials, unapproved antibiotics
Transportation pond-processor	Aerated trucks	Boats flushed with river water, trucks
Processing plants	HACCP Seafood Inspection	Equivalent HACCP
	Fresh and frozen	Frozen
Inspection	FDA or NOAA	At port of entry 2%

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Current Inspection Findings

- FDA import inspections from 1998 to 2004 have shown consistently that fish and seafood products have one of the highest rates of import refusals.
 - 27% rejections for microbial pathogens
 - Salmonella (68%)
 - Listeria monocytogenes (22%)
 - 53% rejections for decomposition and filth

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Current Inspection Findings

- The FDA this year has issued an Import Alert for farmed seafood raised in China because of the presence of potentially dangerous drugs (88 of 517 samples in 2006-7). Drugs were found in 12 of 98 samples from Vietnam.
- A recent study showed that imported catfish from Vietnam were twice as likely as domestic catfish to be contaminated by *Salmonella*, which can cause serious short-term illnesses, and in some cases, death.

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Exponent's Conclusions

- Imported fish from Vietnam and China are produced in much less controlled environments with many more opportunities for microbiological and chemical contamination.
- Vietnamese farmers use water directly from the Mekong River with most farmers using no screen against contaminants .
- Fish are frequently transported to the processing plant by boats that have tanks or cages flushed with polluted river water.

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Most Important RISKS

- Antimicrobials include antibiotics, anti-fungus treatments and other drugs used to treat fish grown in polluted water or overcrowded conditions have been found including.
 - Malachite green
 - Gentian violet,
 - linked to human bladder cancer and induces renal, hepatic and lung tumors in mice.
 - Fluorquinolones

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Risks from Domestic vs. Imported catfish

	U S	Vietnam
Catfish production	Microorganisms –wildlife, feed	Environmental contaminants – water Microorganisms -- wildlife, water, feed Unapproved antimicrobials – water, feed
Catfish processing	Microorganisms— <i>Salmonella, Listeria</i>	Microorganisms— <i>Salmonella, Listeria</i>
Storage & transportation	Proper temperatures for fresh and frozen storage	Proper frozen storage
Home or foodservice	Cross-contamination Inadequate cooking	

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Inspection

- **FDA-NOAA**
 - Seafood HACCP
 - MOU FDA and NOAA
 - Port of Entry Inspections 2%

- **FSIS** (present program for red meats and poultry)
 - In-plant, continuous inspections
 - Foreign inspection and certification for equivalency
 - Microbial standards, sampling programs and baseline surveys

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Benefits of USDA FSIS Oversight

- USDA's Food Safety and Inspection Service directs more regulatory resources to their regulated foods -- than FDA in setting standards for microbial hazards, testing for contamination , testing production facilities and evaluating individual facilities.
- In the last 11 years, the USDA's regulatory program decreased *Salmonella* prevalence in all classes of products it inspects.

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Benefits of USDA Oversight (continued)

- Reduction in prophylactic use of antibiotics that are not allowed
fluoroquinolones
- Safety cannot be inspected into a product at the port of entry, regulatory programs must ensure effective controls are implemented at production and processing to prevent hazards from being in final product

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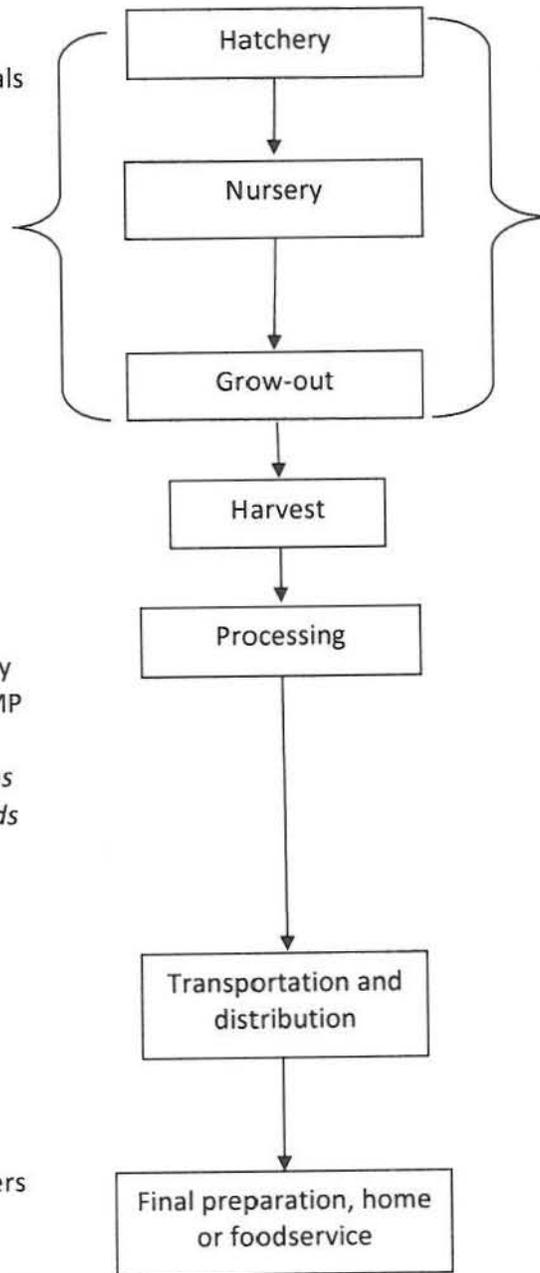


Q&A

- Questions,
- Discussion
- Path forward

UNITED STATES

- Approved antimicrobials
- Water testing



- Temperature control
- Adherence to federally mandated HACCP, GMP and SSOP
- *Continuous inspections*
- *Performance standards*

- Temperature control

- Guidance to consumers on safe handling practices
- Cooking according to US Food Code recommendations

VIETNAM

- Approved antimicrobials
- Filter water or use sedimentation ponds
- Water testing

- Temperature control
- Good hygienic and sanitation practices

- Temperature control

- Guidance to consumers on safe handling practices
- Cooking according to US Food Code recommendations

Figure 4 Comparison of interventions for US and Vietnamese catfish

Text in italics represents changes introduced by the 2008 Farm Bill

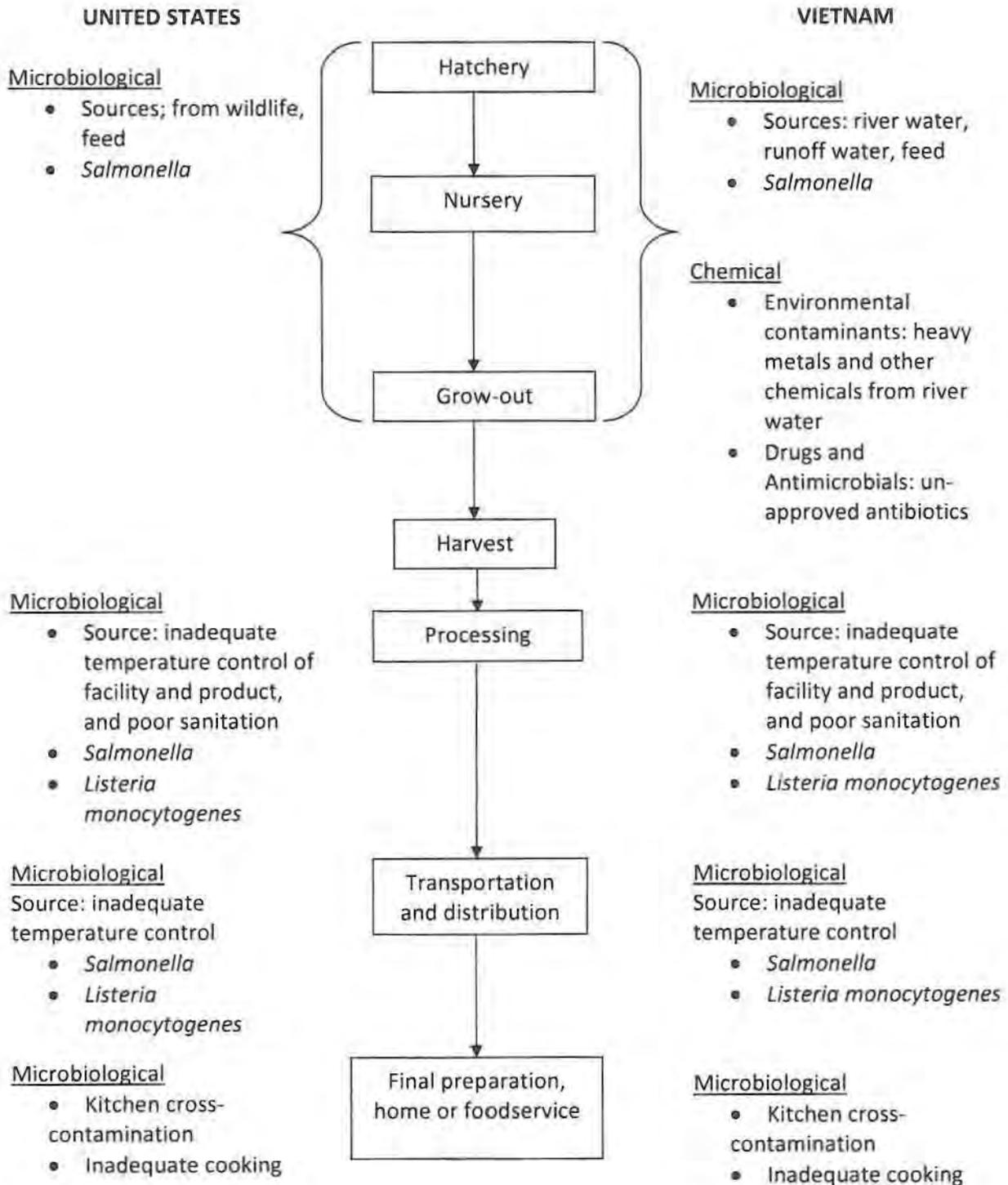


Figure 3 Hazard comparison of US and Vietnamese catfish

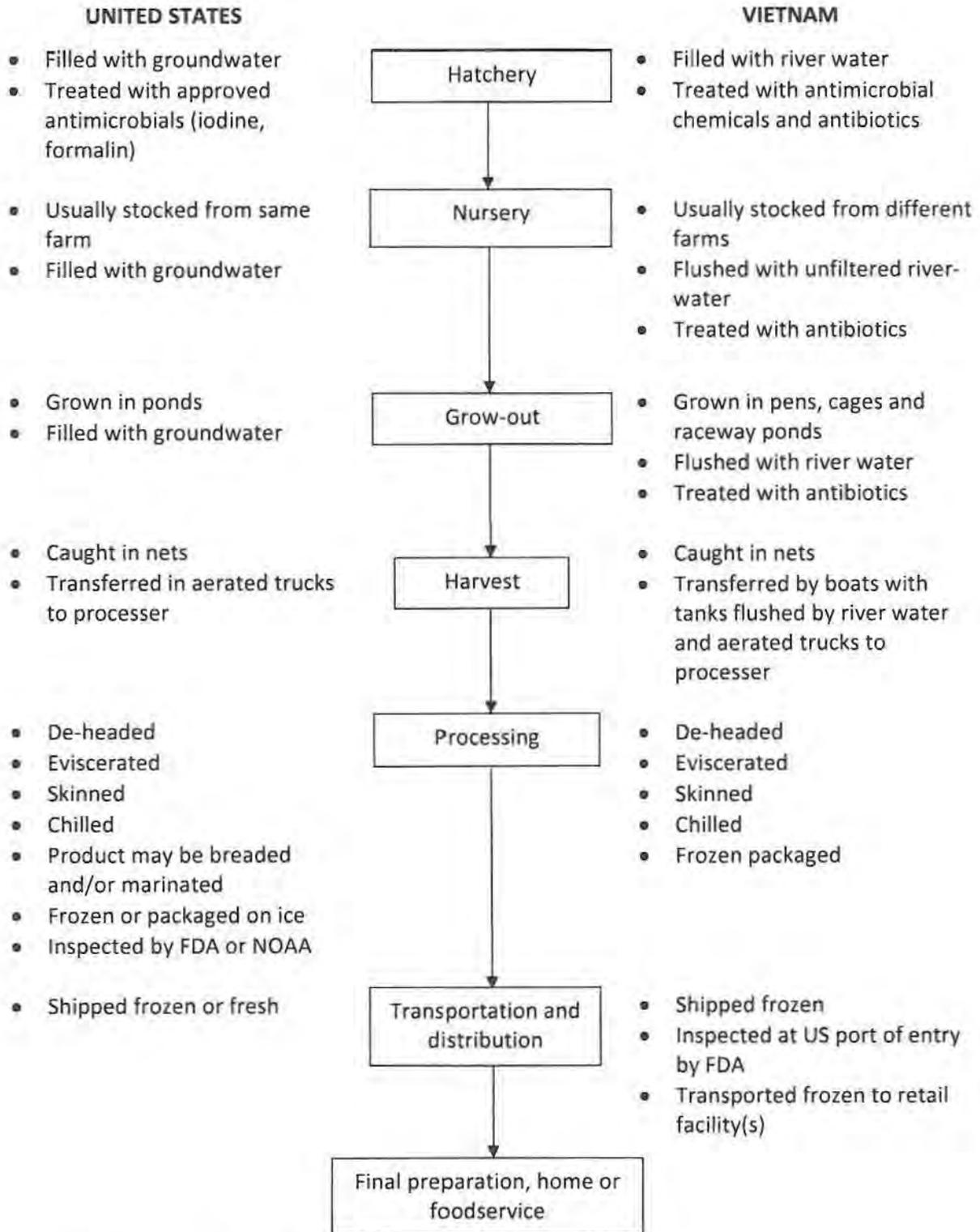


Figure 2 Comparison of US and Vietnamese product pathways

Order	Family	Genus species	Common name
Siluriformes	Ictaluridae	<i>Ictalurus punctatus</i>	Channel catfish
		<i>Ictalurus furcatus</i>	Blue catfish
		<i>Ictalurus melas</i>	Black bullhead
		<i>Ameiurus catus</i>	White catfish
		<i>Ameiurus nebulosis</i>	Brown bullhead
		<i>Pylodictis olivaris</i>	Flathead catfish
	Siluridae	<i>Silurus glanis</i>	European catfish
	Clariidae	<i>Clarius gariepinus</i>	African catfish
	Pangasiiidae	<i>Pangasianodon gigas</i>	Giant catfish
		<i>Pangastus bocourti</i>	Bass

Figure 1 Taxonomy of Catfish showing 4 of the 36 Families

The scope of use of a common name is governed by usage and other non-scientific criterion.

Because of the interchangeability of these species in the marketplace, it is necessary for regulatory control to cover all species raised, processed and marketed in similar ways in order to protect the public.