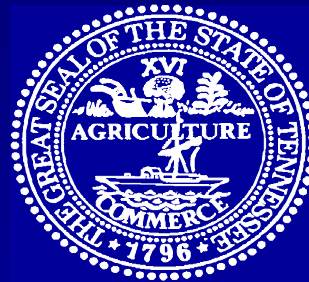


# **Foodborne Disease**

## **“Attribution”**

### **State and Local Perspective**



**Timothy Jones, M.D.**  
**Tennessee Department of Health**





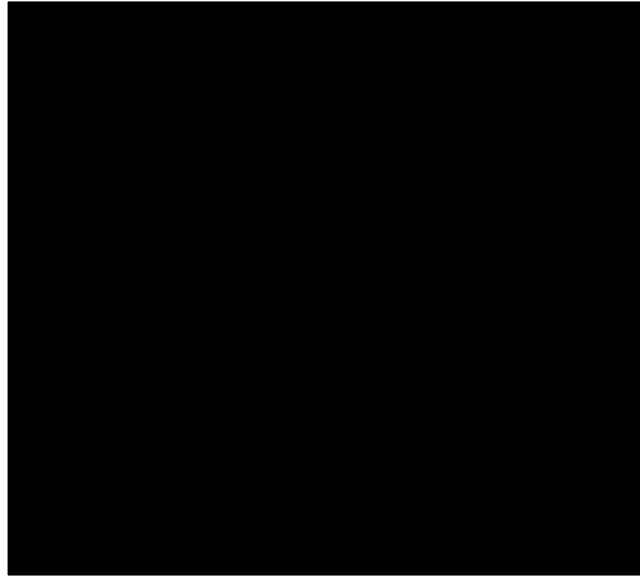


Price sign with various items and prices:

ITEM	PRICE	ITEM	PRICE
...	1.99	...	3.99
...	1.49	...	1.50
...	0.99	...	1.99

<b>WHO</b>	<b>JECFA</b>	<b>SALMSURV</b>	<b>GSFS</b>
<b>FAO</b>	<b>JMPR</b>	<b>IHR</b>	<b>GAO</b>
<b>PPS</b>	<b>JEMRA</b>	<b>CDC</b>	<b>RCED</b>
<b>APHD</b>	<b>OIE</b>	<b>BPRO</b>	<b>DOJ</b>
<b>WHA</b>	<b>IPCS</b>	<b>FoodNet</b>	<b>FBI</b>
<b>UNEP</b>	<b>INTOX</b>	<b>NARMS</b>	<b>OCI</b>
<b>IUFOST</b>	<b>GEMS</b>	<b>HACCP</b>	<b>FERRET</b>
<b>IUPAC</b>	<b>IAEA</b>	<b>FDA</b>	<b>OIG</b>
<b>WMO</b>	<b>OCHA</b>	<b>USDA</b>	<b>ARS</b>
<b>OECD</b>	<b>GPHIN</b>	<b>FSIS</b>	<b>OEP</b>

**\*The Deputy Assistant to the Assistant Deputy Administrator for District Enforcement Operations agreed with this report...**



# Attribution

- Understand contributing factors
- **Food Attribution: partition the burden of illness to specific food commodities**
- **Prioritize hazards and interventions**
- **Target efforts to reduce risk reduction**
- **GOAL: Reduce the burden of illness**

# Attribution at Different Levels

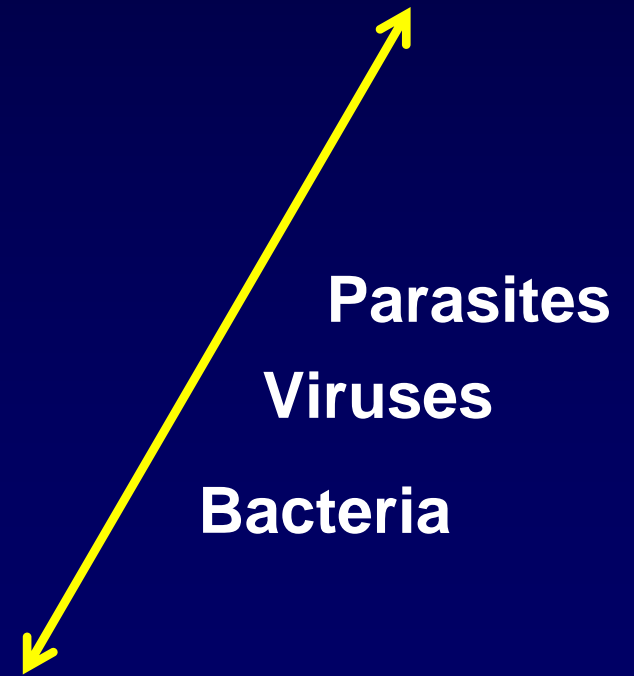
Can partition at various in the food supply

1. Point of consumption attribution
2. Point of processing attribution

Limit to domestic infections



# Pathogens



# Food Vehicles

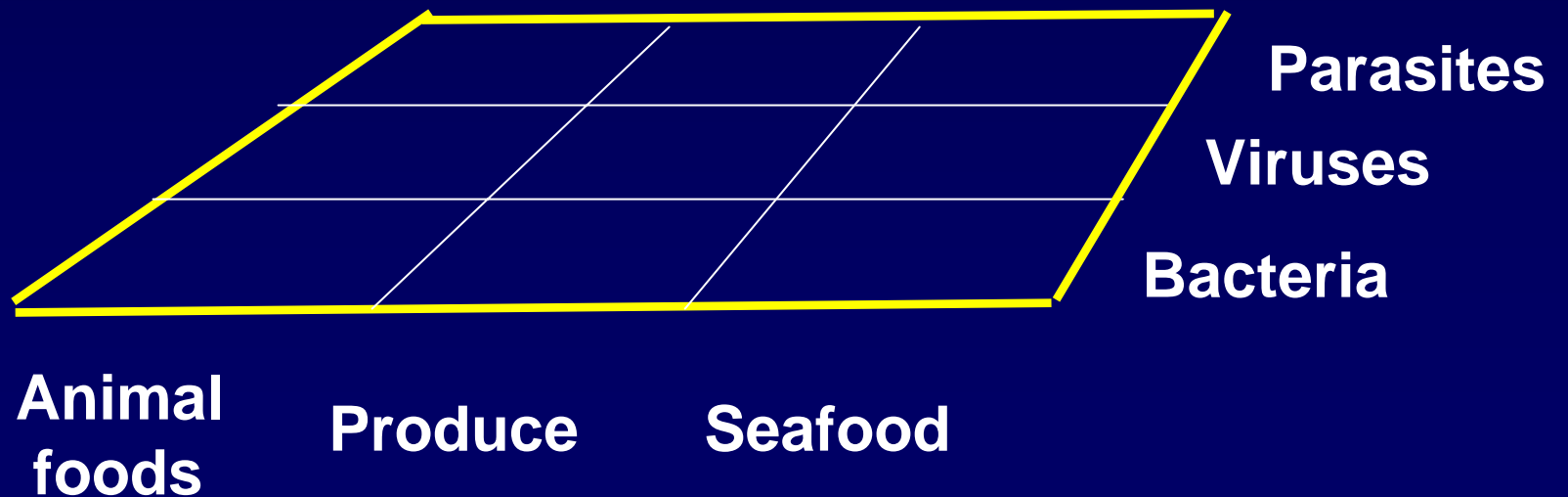


**Animal  
foods**

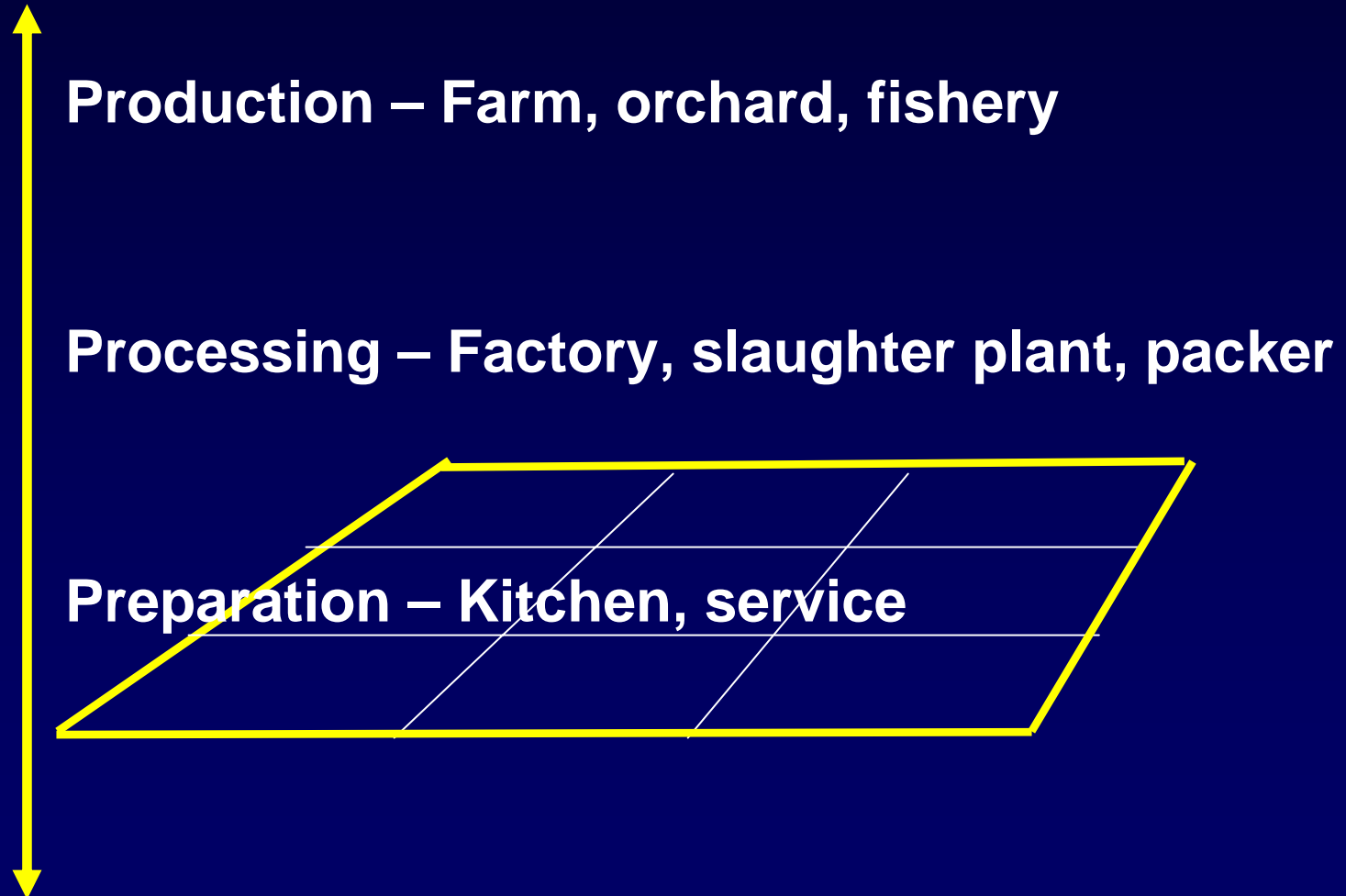
**Produce**

**Seafood**

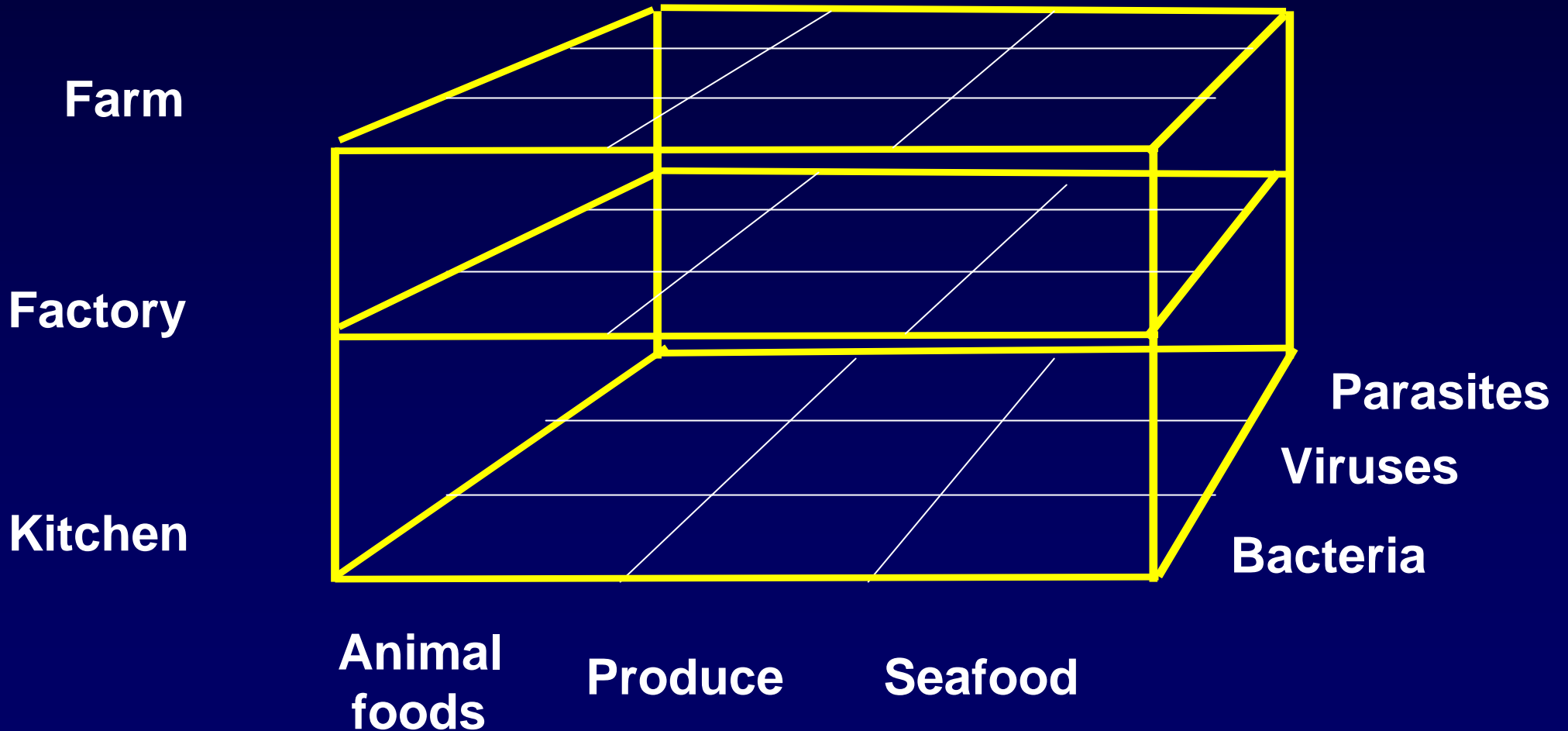
# Pathogens – Food Vehicles



# The Food Processing Continuum



# A Food Safety Box



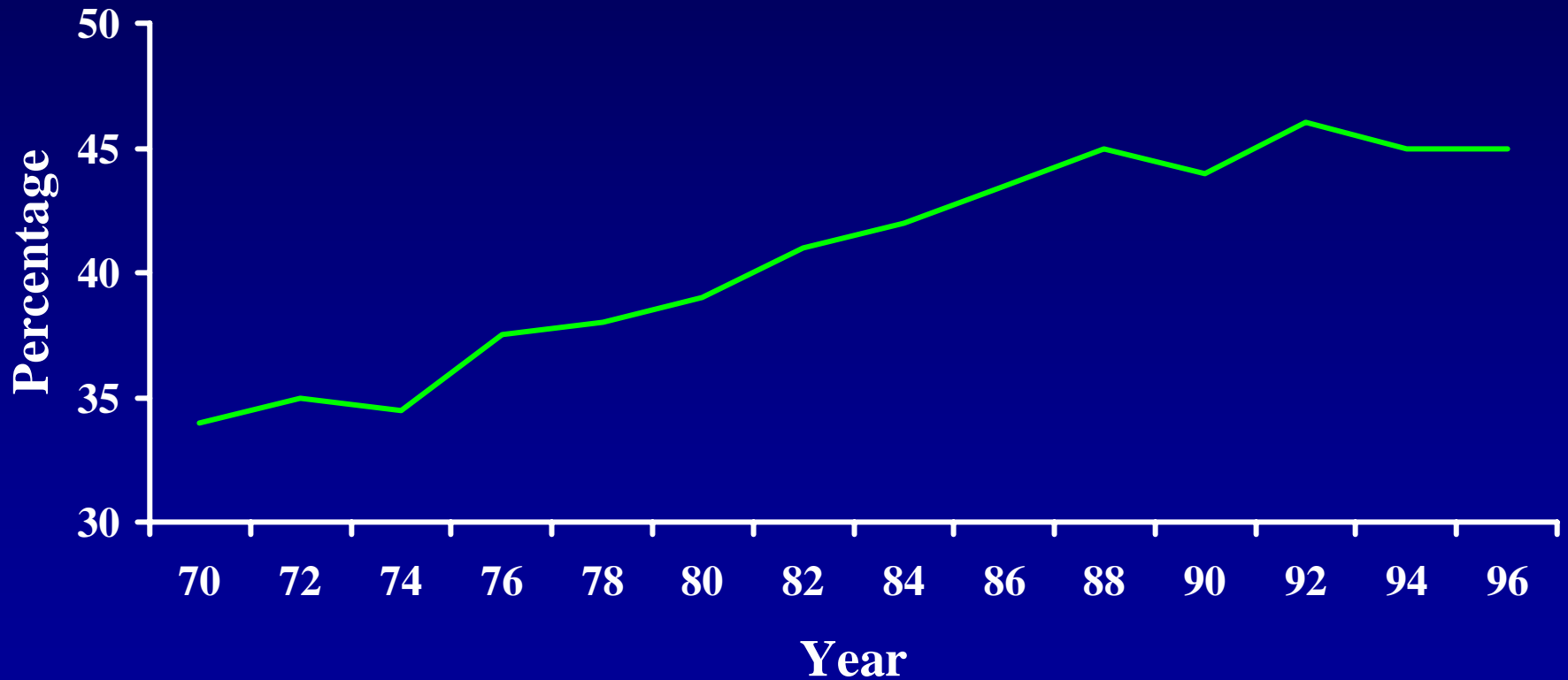
# Outbreaks Account for Small Proportion of Confirmed Illnesses Reported

Outbreaks (2.6%)



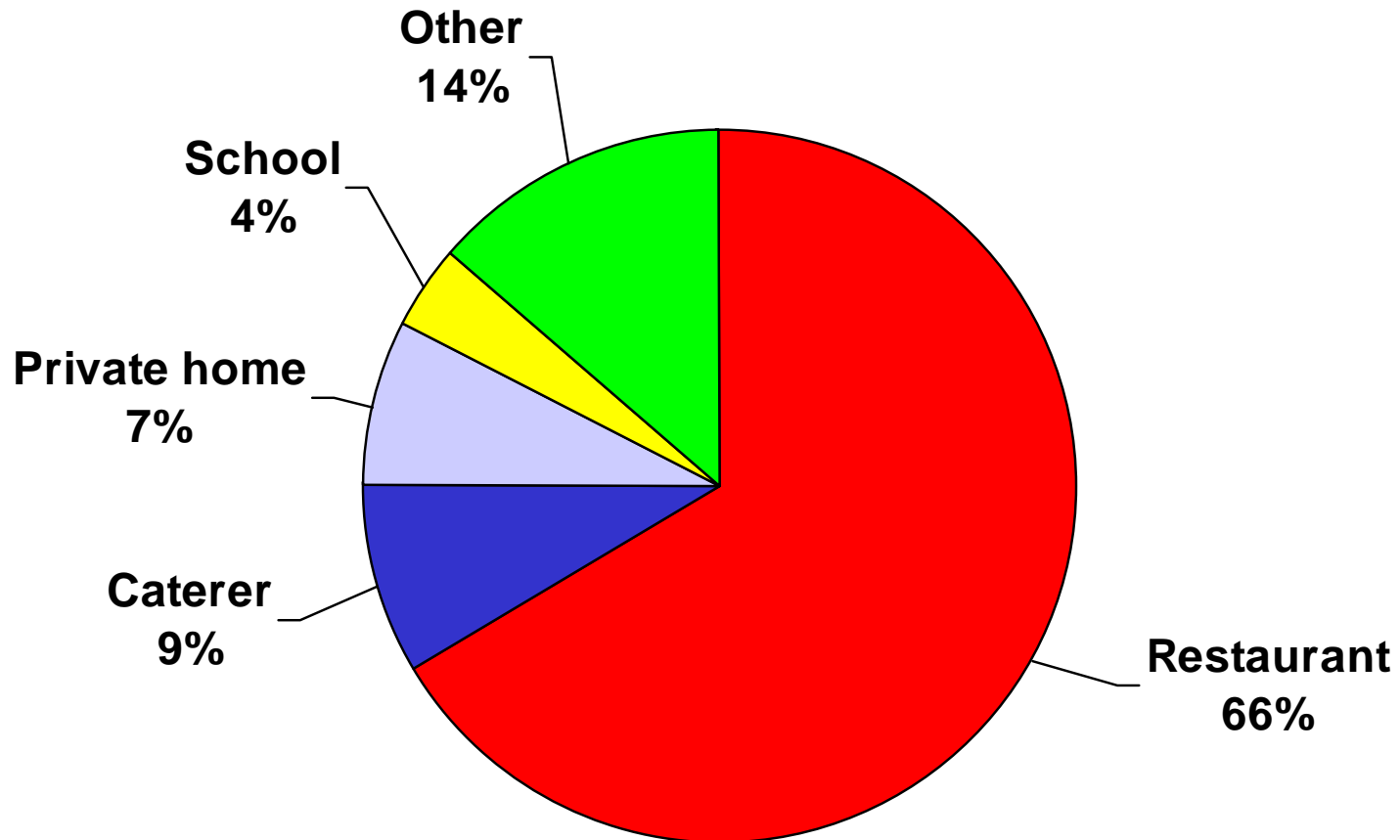
1999

# Food Expenditures Away from Home



-Bender, Postgrad Med, 1999

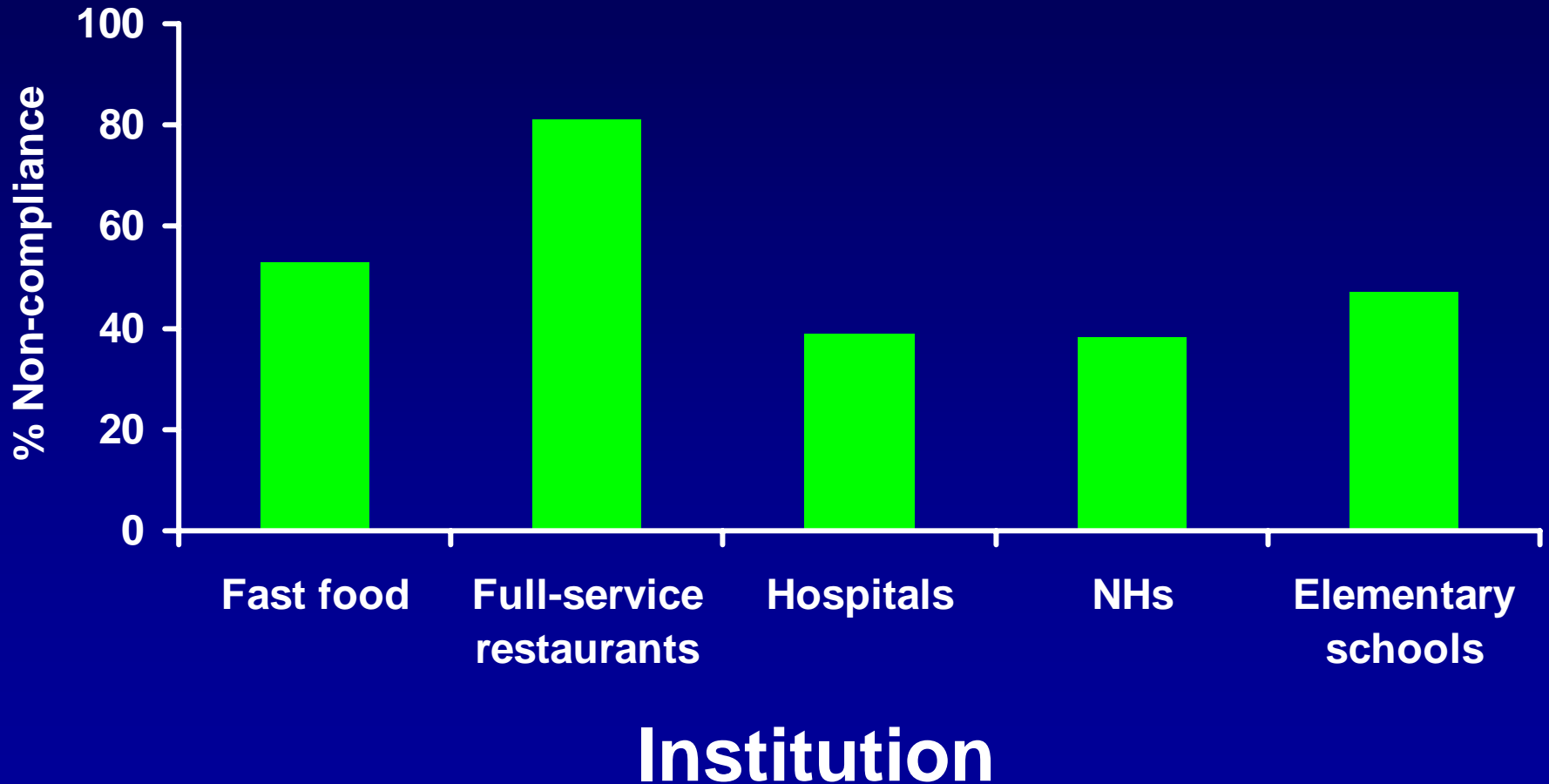
# Location of Outbreaks



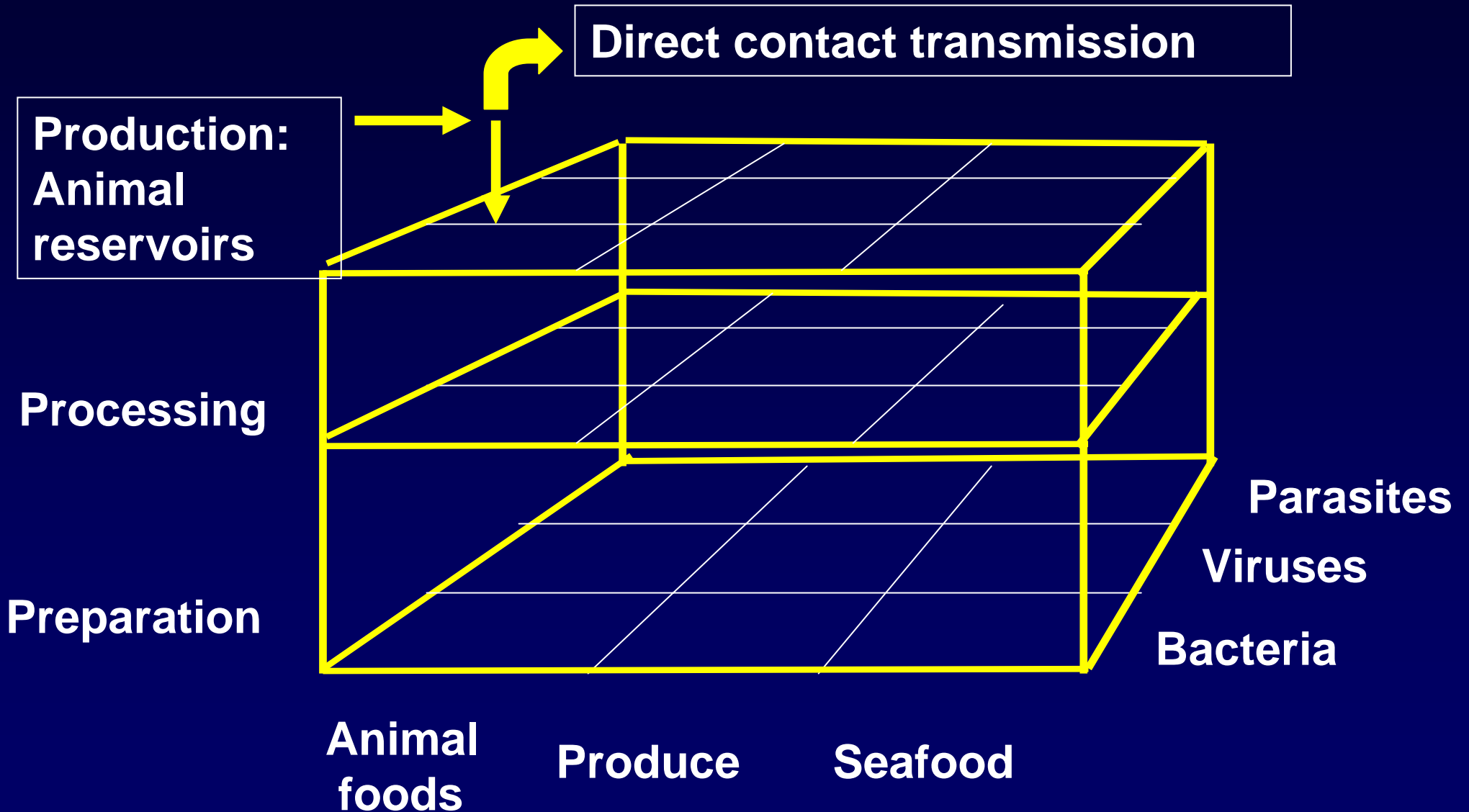




# Inadequate Handwashing



# Attribution: Outside the Box



# Direct contact transmission



# Indirect Transmission





# Local Value

- **Focus list of suspects**
- **Help in patient education**
- **Guide collection of data**
- **Focus interventions**





# Point of consumption attribution

## Data sources

- **Outbreak investigations**
  - difficulty of complex food items
- **Sporadic case-control studies**
  - intensive studies

# Point of processing attribution

## Data sources

### Comparison of molecular libraries

- requires isolates from food supply (HAACP)
- Danish Zoonoses Center

**FoodNet : CDC, USDA-FSIS, Univ. of MN**

# FN Sporadic case-control studies

- *Campylobacter*
- Fluoroquinolone-resistant *Campylobacter* x 2
- *Escherichia coli* O157 x2
- *Shigella*
- *Listeria monocytogenes*
- *Salmonella* Enteritidis x2
- *Salmonella* (reptile)
- *Salmonella* (infant)
- *Salmonella* Newport
- *Salmonella* Heidelberg
- *Salmonella* Typhimurium
- *Cryptosporidia*
- *Salmonella/Campylobacter* (infants)

# Outbreaks: direct animal contact

## Outbreaks

- 1995-2003: over 30 outbreaks
- thousands ill, kidney failure, death

## Enteric pathogens

- *E. coli* O157, *Salmonella*, *Campylobacter*

## Animals reservoirs

- cattle, sheep, goats, poultry, reptiles

## Transmission

- direct and indirect animal contact



# Problem? Just Call...

Open-faced meat sandwich producers are inspected daily by the USDA. If it's closed face, they're inspected by the FDA once every 5 years...

If it's beef broth it's regulated by the FDA, and if it's chicken broth it's the USDA, unless they're dehydrated, in which case chicken is FDA and beef is USDA...

# Collaborating Federal Agencies



U.S. Food and Drug Administration



CENTER FOR FOOD SAFETY AND APPLIED NUTRITION



United States Department of Agriculture



Agricultural Research Service

*the in-house research arm of the U.S. Department of Agriculture*



United States Department of Agriculture

Food Safety and Inspection Service



Cooperative State  
Research, Education, and Extension Service



ECONOMIC RESEARCH SERVICE  
United States Department of Agriculture

*The Economics of Food, Farming, Natural Resources, and Rural America*

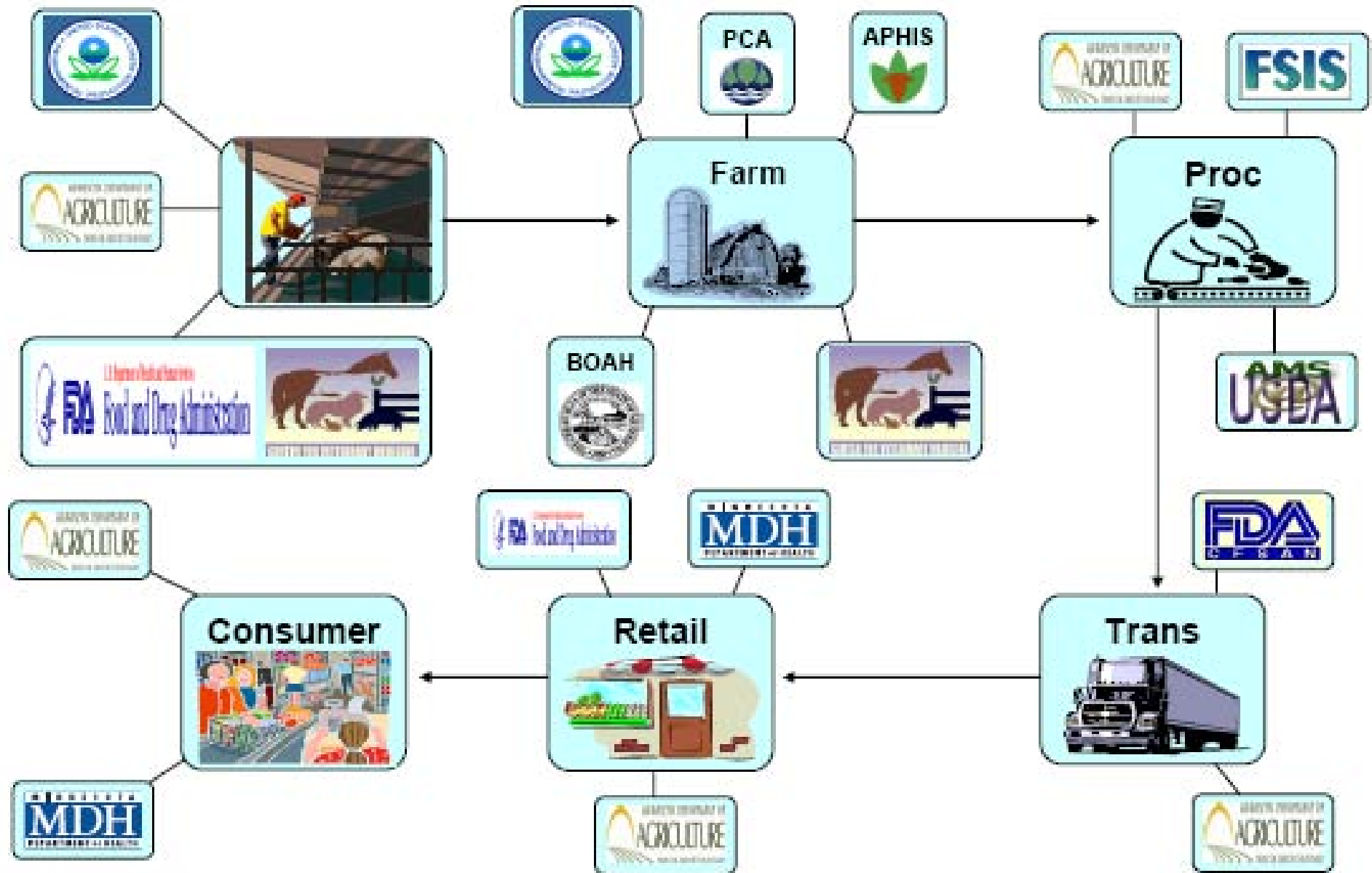


[aphis.usda.gov](http://aphis.usda.gov)

National Center for  
Food Protection and Defense

Primary Production • Harvest • Transportation • Storage • Processing • Distribution • Handling/Retail-food Services • Consumer

# Effective response requires collaboration





# Food Safety Oversight

- **14 separate federal entities**
- **Administer >35 separate food safety laws**
- **28 congressional committees involved**
- **>70 MOUs to sort it all out...**

*Where is this?*

**USA? PERU?  
MEXICO? CHILE?**

