

***FOOD INDUSTRY DEFENSE  
– WHERE DOES HACCP FIT?***

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# ***DEFINITIONS***

# ***FOOD SAFETY VS. FOOD DEFENSE***

- **FOOD SAFETY** –
  - PREVENTION OF UNINTENTIONAL CONTAMINATION FROM HAZARDS WITHIN SYSTEM
- **FOOD DEFENSE**
  - PREVENTION OF PURPOSEFUL CONTAMINATION FROM HAZARDS OR PERNICIOUS AGENTS FROM OUTSIDE SYSTEM

# ***TYPES OF ACTIONS AGAINST FOOD***

- **PRODUCT TAMPERING**
  - FINAL PRODUCT AT RETAIL
  - USUALLY AN INDIVIDUAL ACT
- **PRODUCT SABBOTAGE**
  - DISGRUNTLED EMPLOYEE
  - FOOD PRODUCTION CHAIN
- **TERRORIST ACTS**
  - OUTSIDE INFLUENCE
  - POLITICAL OR CAUSE MOTIVATED

# ***BIO-TERRORISM***

- **THE USE OF PERNICIOUS AGENTS WHICH IMPACT HUMANS TO CREATE TERROR**
  - **BIOLOGICAL, CHEMICAL, PHYSICAL, RADIOLOGICAL AGENTS**

# ***AGRI-TERRORISM***

- **THE USE OF PERNICIOUS AGENTS TO IMPACT ANIMAL OR PLANT HEALTH**
- **THE GENERAL AIM IS ECONOMIC DISRUPTION, BUT HUMAN HARM IS POSSIBLE**
- **RECENT NATURAL OCCURRENCES DEMONSTRATE THE POTENTIAL POWER OF AGRI-TERRORISM**
  - **FOR EXAMPLE: DIOXIN SCARE IN EUROPE**

***HAS FOOD BEEN A  
PREVIOUS VEHICLE FOR  
TERRORISM OR  
SABBOTAGE?***

# ***HISTORICAL OCCURRENCES***

- **THERE PROBABLY HAVE BEEN MANY OVER THE COURSE OF HISTORY**
- **ANCIENT WAR TACTICS**
  - **BURNING THE CROPS OR KILLING THE LIVESTOCK OF ENEMIES**
  - **CATAPULTING CADAVERS (PLAGUE VICTIMS) OVER CASTLE WALLS**
  - **IRISH SABBOTAGE OF VIKING INVASIONS FOOD STUFFS**

# ***RECENT HISTORY***

- **1970**
  - **CANADA**
    - **ASCARIS EGGS PLACED IN MEAL**
      - **IMPACT: 4 PERSONS ILL**
      - **PERPETRATOR: COLLEGE ROOMMATE**
- **1984**
  - **ENGLAND**
    - **HG-CONTAINING WEED KILLER INJECTED INTO TURKEY**
  - **UNITED STATES**
    - **SALMONELLA PLACED IN SALAD BARS**
      - **IMPACT: 751 PERSONS ILL**
      - **PERPETRATOR: RELIGIOUS CULT**

# ***RECENT HISTORY***

- **1996**
  - **UNITED STATES**
    - ***SHIGELLA* PLACED IN MUFFINS AND DONUTS**
      - **IMPACT: 12 PERSONS ILL**
      - **PERPETRATOR: LAB EMPLOYEE (GETTING BACK AT COWORKERS)**
- **2000**
  - **CANADA**
    - **COFFEE VENDING MACHINE AT LAVALLE UNIVERSITY CONTAMINATED WITH ARSENIC**
      - **IMPACT: 27 ILL**

# ***RECENT HISTORY***

- **2001**
  - **UNITED STATES**
    - **SALAD BAR IN NYC CONTAMINATED WITH HUMAN FECES AND URINE**
- **2003**
  - **CANADA**
    - **SENIOR CITIZEN**
      - **STOLE GOAT MILK AND CONTAMINATED THE REMAINDER WITH ANTIBIOTICS**
      - **BECAUSE THEY “*GOT HIS GOAT*”**

# ***IS TODAY'S FOOD INDUSTRY VULNERABLE?***

- ***THE 9/11/01 WAKE UP CALL***
- ***THE GUIDEBOOK OF JIHAD (TIME,  
OCT. 28, 2001)***
  - ***ENCYCLOPEDIA OF JIHAD***
    - **POISON DRUG AND MEDICAL SUPPLIES**
    - **CONTAMINATE FOOD SUPPLIES**
      - **“HIT THE FBI”**

# ***UNIT OPERATIONS IN THE FOOD SYSTEM -- WHERE ARE WE VULNERABLE?***

- **PRODUCTION**
- **TRANSPORTATION**
- **PROCESSING**
- **TRANSPORTATION**
- **RETAIL**
  - **SUPERMARKETS**
  - **FOOD SERVICE FACILITIES**

# ***TERRORIST ACT -- CONSIDERATIONS***

- **WHO IS GOING TO DO IT?**
- **HOW ARE THEY GOING TO DO IT?**
- **WHAT ARE THEY GOING TO USE?**
- **WHAT WOULD BE THE IMPACT?**
- **WHERE CAN I APPLY CONTROL?**

# *WHO??*



- **AGGRESSORS**
- **CRIMINALS**
- **PROTESTERS**
- **TERRORISTS**
- **SUBVERSIVES**
- **DISGRUNTLED  
INSIDERS**
- **STUDENTS**

# ***WHAT?***

- **AGENTS**
  - **CHEMICAL**
    - **CHEMICAL WARFARE AGENTS**
    - **INDUSTRIAL OR AGRICULTURAL CHEMICALS**
    - **RADIOLOGICAL AGENTS**
  - **BIOLOGICAL**
    - **BACTERIA, TOXINS, VIRUSES, PARASITES**
  - **PHYSICAL**

# ***COMPARISON OF AGENTS***

- **CHEMICAL**

- **OFTEN VOLATILE**
- **DERMALLY ACTIVE**
- **RAPID ONSET**
- **NOT CONTAGIOUS**
- **HAZARDOUS MATERIAL EVENT**
- **MORE DIFFICULT TO HIDE MANUFACTURE**
- **STABLE MATERIALS**

- **BIOLOGICAL**

- **NON-VOLATILE**
- **NOT DERMALLY ACTIVE**
- **SLOWER ONSET**
- **CONTAGIOUS**
- **PUBLIC HEALTH EVENT**
- **LESS DIFFICULT TO HIDE MANUFACTURE (SHARED FACILITIES)**
- **BIOLOGICAL FACTORS**

# ***POSSIBLE BIOLOGICAL AGENTS (CDC)***

## **CATEGORY A**

- **SMALLPOX**
- **ANTHRAX**
- **PLAGUE**
- **BOTULISM**
- **TULARAEMIA**
- **HEMORRHAGIC  
FEVERS**

## **CATEGORY B**

- ***SALMONELLA***
- ***SHIGELLA***
- ***E.COLI O157:H7***
- ***VIBRIO CHOLERAEE***
- ***CRYPTOSPORIDIUM***

# *HOW?*

- **TACTICS**
  - **EXTERIOR ATTACK**
    - **VECTORS**
  - **FORCED OR COVERT ENTRY**
  - **INSIDER COMPROMISE**

# ***MODE OF DELIVERY***

- **AEROSOLS**
  - **DEPEND UPON WEATHER, OTHER FACTORS**
- **FOOD**
  - **SYSTEM VARIABLES**
- **ANIMALS**
  - **SYSTEM VARIABLES**

# ***IMPACT?***

- **DIRECT IMPACT**
  - CASES
  - OUTBREAK
  - EPIDEMIC
- **INDIRECT IMPACT**
  - PERCEIVED THREAT
    - HOAX
  - ECONOMIC IMPACT
  - RIPPLE EFFECTS

# ***WHERE TO APPLY CONTROL?***

- **MAKE APPROPRIATE CONTROL DECISIONS**
  - **PRIORITIZE**
- **MAKE APPROPRIATE SYSTEM ADJUSTMENTS**
- **APPLY APPROPRIATE RESOURCES**
- **IMPLEMENT AND SUPERVISE**

***CRITICAL FACTORS IN  
DEVELOPING A PREVENTATIVE  
PLAN***

- **EVALUATE SPECIFIC HAZARDS**
- **DETERMINE RELATIVE RISK**
- **EVALUATE ECONOMIC REALITIES**

**BLEDSON & RASCO. 2002. FOOD TECHNOL. 56:43-47**

***STEPS IN DEALING WITH BIO- &  
AGRI-TERRORISM  
(ARCHER 2002)***

- **RISK ASSESSMENT**
- **PREVENTION STRATEGIES**
- **INTERVENTION STRATEGIES**
- **CONTAINMENT STRATEGIES**
- **EDUCATIONAL STRATEGIES**

# ***FIRST PRIORITY: CONTAINMENT***

- **ESTABLISH CRISIS  
MANAGEMENT PROTOCOL**
- **FINE TUNE RECALL  
PROCEDURES**

***A CLOSE SECOND:  
PREVENTION***

***APPROACHES TO  
PREVENTION & CONTROL***

# ***PREVENTATIVE MEASURES IN FOOD SAFETY***

- **GOOD AGRICULTURAL PRACTICES (GAPs)**
- **GOOD MANUFACTURING PRACTICES (GMPs)**
- **STANDARD OPERATING PROCEDURES (SOPs)**
- **HAZARD ANALYSIS CRITICAL CONTROL POINT (HACCP) SYSTEM**

# ***PREVENTATIVE MEASURES IN FOOD DEFENSE***

- **SIMILAR TO FOOD SAFETY MEASURES**
  - **BUT DIFFERENT**
- **MUCH MORE EMPHASIS ON RISK ASSESSMENT**

# ***FOOD DEFENSE PROGRAMS***

- **PRACTICES VS. PROGRAM**
- **PROGRAM**
  - **WRITTEN POLICIES**
  - **WRITTEN PROCEDURES**
  - **DOCUMENTATION LOGS**
  - **SELF AUDITS**

# ***FOOD DEFENSE PROGRAM SYSTEMS***

- **HACCP??**
- **DEFENSE SELF-AUDIT PROGRAM**
- **OPERATIONAL RISK  
MANAGEMENT**

# ***PIT-FALLS OF RISK-BASED DECISION MAKING***

- **EVALUATION AND DECISIONS  
BASED UPON PRIOR  
OCCURRENCES**
  - **MAY GIVE FALSE SECURITY**
- **“VULNERABILITY ASSESSMENT”**
  - **MAY BE MORE APPROPRIATE  
TERMINOLOGY**

***THE HACCP SYSTEM:  
COULD IT BE USED IN  
FOOD DEFENSE?***

- **LET'S EVALUATE THE HACCP SYSTEM**

# ***ADVANTAGES OF HACCP SYSTEM IN FOOD DEFENSE***

- **FOCUS ON FOOD SAFETY**
  - **TRAINING OF EMPLOYEES**
- **ATTENTION TO DETAIL**
- **EMPHASIS HAZARD ANALYSIS AND RISK ASSESSMENTS**
- **EXAMINES CRITICAL STEPS**

# ***DEFENSE SELF-AUDIT***

# ***WHAT TO EVALUATE IN A DEFENSE SELF AUDIT***

- **MANAGEMENT SYSTEM**
- **PHYSICAL FACILITIES**
- **EMPLOYEES**
- **COMPUTER SYSTEMS**
- **RAW MATERIALS/PACKAGING**
- **OPERATIONS**
- **FINISHED PRODUCTS**
- **OTHER???**

# ***MANAGEMENT SYSTEM***

- **DEFENSE PROCEDURES**
- **INVESTIGATION & AWARENESS PROCEDURES**
- **EMPLOYEE SUPERVISION**
- **INCOMING ACTIVITIES**
  - **SUPPLIES, PACKAGES, ETC**
- **RESPONSE AND CRISIS MANAGEMENT PLAN**
- **DOCUMENTATION / VERIFICATION**

# ***PHYSICAL FACILITIES***

- **EXTERIOR AND INTERIOR DEFENSE**
- **VEHICLE INSPECTION**
- **LABORATORY SAFETY**
- **STORAGE AND USE OF CHEMICALS**
- **OTHER EQUIPMENT**
- **DOCUMENTATION/ VERIFICATION**

# ***EMPLOYEES***

- **SCREENING, IDENTIFICATION**
- **WORK ASSIGNMENTS**
- **ACCESS AND CONTROL PROCEDURES**
- **CONTROL AND STORAGE OF PERSONAL ITEMS**
- **TRAINING**
- **DOCUMENTATION/ VERIFICATION**

# *COMPUTER SYSTEMS*

- **ACCESS AND DEFENSE**
- **DOCUMENTATION/VERIFICATION**

# ***RAW MATERIALS***

- **RECEIVING PROTOCOLS**
- **STORAGE/INVENTORY PROTOCOLS**
- **DOCUMENTATION/VERIFICATION**

# ***OPERATIONS***

- **WATER**
- **AIR HANDLING SYSTEMS**
- **REFRIGERATION**
- **FOOD HANDLING & PROCESSING**
- **DOCUMENTATION/VERIFICATION**

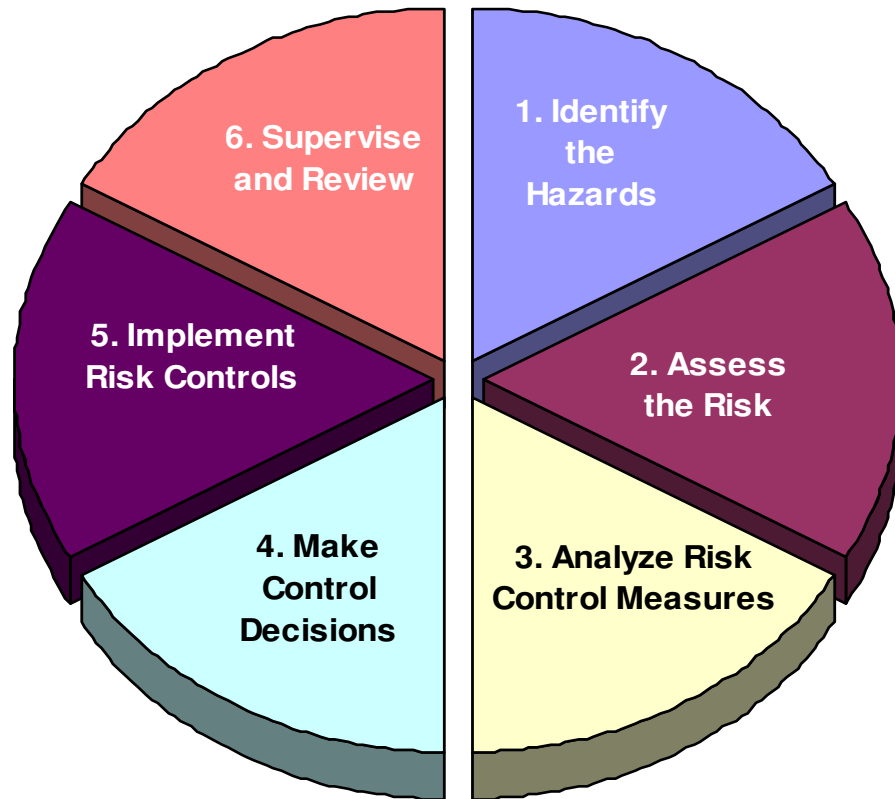
# ***FINISHED PRODUCT***

- **DISTRIBUTION**
- **PACKAGING**
  - **PROTECTION**
- **TRANSPORTATION**
- **CODING**
- **TRACEBACK & RECALL PROCEDURES**
- **DOCUMENTATION / VERIFICATION**

# ***OPERATIONAL RISK MANAGEMENT (ORM)***

- **ENDORSED BY FOOD & DRUG  
ADMIN. (FDA)**
- ***FDA GUIDELINES ON  
BIOTERRORISM***
  - **WWW.FDA.GOV**

# ***THE SIX STEPS UNDER ORM***



***WHAT ARE CONGRESS &  
THE FEDERAL  
GOVERNMENT DOING?***

# ***AGENCY COOPERATIVE EFFORTS & ACTIVITIES***

- **PULSENET**
  - **IMPROVED PUBLIC HEALTH SURVEILLANCE NETWORK**
- **PREPNET**
  - **FOOD THREAT PREPAREDNESS NETWORK**
    - **EMERGENCY RESPONSE**
    - **LABORATORY CAPABILITIES**
    - **PREVENTION AND DETERRENCE**

# ***BUSH ADMINISTRATION ACTIVITIES***

- **DEPARTMENT OF HOMELAND SECURITY**
- **STRENGTHENING OF COOPERATIVE AGENCY EFFORTS**

***CENTERS FOR DISEASE CONTROL  
& PREVENTION (CDC) & OTHER  
AGENCIES***

- **STRENGTHEN MEDICAL RESPONSE**
- **EXPANDED RESEARCH**
- **STOCKPILE OF  
PHARMACEUTICALS**
- **SMALL POX VACCINATION  
PROGRAM**
- **GUIDELINES/DOCUMENTS**
  - **WWW.CDC.GOV**

***U. S. DEPT. OF AGRICULTURE  
(USDA) [WWW.USDA.GOV]***

- ***DEFENSE APPROPRIATIONS ACT  
(2002)***
  - ***\$328 M TO USDA FOR BIOSECURITY***
- ***EST. USDA HOMELAND SECURITY  
COUNCIL***
  - ***SUB-COUNCIL -- FOOD SUPPLY AND  
AGRICULTURE PRODUCTION (PFSAP)***

# ***ANIMAL & PLANT HEALTH INSPECTION SERVICE (APHIS)***

- **GUIDANCE DOCUMENT**
  - ***PROTECTING THE HEALTH OF FARM  
ANIMALS AND CROPS***

# ***FOOD SAFETY & INSPECTION SERVICE (FSIS)***

- **ACTION TEAM**
  - ***FOOD BIOSECURITY ACTION TEAM (FBAT)***
- **GUIDELINE DOCUMENT**
  - ***FSIS SECURITY GUIDELINES FOR FOOD PROCESSORS***

***WHAT IS CONGRESS UP TO  
WITH REGARD TO  
BIOTERRORISM?***

***PUBLIC HEALTH SECURITY  
AND BIOTERRORISM  
PREPAREDNESS AND  
RESPONSE ACT (2002)***

# ***PROVISIONS OF THE “ACT”***

- **AMENDED FDCA AT SECT 304(h) & 80S(m)**
- ***PROTECTION AGAINST ADULTERATION***
  - **BUDGETARY**
- ***ADMINISTRATIVE DETENTION AUTHORITY***
- ***PRIOR NOTICE OF IMPORTED FOODS***
- ***FACILITY REGISTRATION***
- ***MAINTENANCE AND INSPECTION OF RECORDS***
- **NOTIFICATION AND NETWORKING WITH STATE AGENCIES**
- **GRANTS FOR INSPECTION ASSISTANCE**
- **REPEAT OFFENDERS = FELONY**
- **PROHIBITION OF PORT-SHOPPING**

# ***ADDITIONAL BIOTERRORISM ACTIVITIES***

- ***STRATEGIC PARTNERSHIP  
PROGRAM AGROTERRORISM  
INITIATIVE (SPFA)***
  - ***DEPT. OF HOMELAND SECURITY***
  - ***FDA***
  - ***USDA***
  - ***FBI***

# ***IMPACT OF SPFA***

- **FDA INSPECTION PROCESS/DATA COLLECTION**
- ***CARVER + SHOCK***

# ***CARVER + Shock***

- **COMMISSIONED BY HOMELAND SECURITY COUNCIL**
  - **COLLABORATIVE EFFORT OF USDA/FSIS AND HHS/FDA**
- **THE PROCESS**
  - **EVALUATE AND RATE SEVEN FACTORS THAT AFFECT THE DESIRABILITY OF A TARGET**

# ***CARVER + Shock = 7 FACTORS***

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- **CRITICALITY**
  - PUBLIC HEALTH OR ECONOMIC IMPACT
- **ACCESSIBILITY**
  - PHYSICAL ACCESS TO TARGET
- **RECUPERABILITY**
  - ABILITY OF THE SYSTEM TO RECOVER FROM THE ATTACK
- **VULNERABILITY**
  - EASE OF ACCOMPLISHING THE ATTACK
- **EFFECT**
  - AMOUNT OF ACTUAL DIRECT LOSS FROM AN ATTACK
- **RECOGNIZABILITY**
  - EASE OF IDENTIFYING TARGET
- **SHOCK**
  - COMBINED MEASURE OF THE PHYSICAL, HEALTH, PSYCHOLOGICAL & ECONOMIC EFFECTS OF AN ATTACK

# ***SOURCES OF INFORMATION***

- **FOOD AND DRUG ADMINISTRATION**
  - **WWW.FDA.GOV**
- **US DEPT. OF AGRICULTURE**
  - **WWW.USDA.GOV**
- **US DEPT. OF TRANSPORTATION**
  - **VOLPE NATIONAL TRANSPORTATION SYSTEMS CENTER**
    - ***SECURITY OF MILK TRANSPORT IN THE U. S. PROJECT FINAL REPORT – DOT-VNTSC-TSWG-04-01***
    - **WWW.DOT.GOV**