

Food Safety Information Infrastructure: Phase 1 Mechanisms for Food Safety Information Sharing: An Overview of Existing Systems

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This draft report is a basic (and incomplete) listing of existing mechanisms for sharing or accessing food safety information, including current databases, reporting systems, electronic networks, websites, data repositories, and other information systems. These mechanisms are organized by primary data type, though many systems have multiple or overlapping functions. This list is not yet exhaustive, so if you notice a mechanism that is not in the document but should be, or have other comments, please send an email to mbatz@epi.umaryland.edu.

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1. INFORMATION GATEWAYS

Food Safety Network

<http://www.foodsafetynetwork.ca/en/>

- Originally based at University of Guelph, now based at Kansas State University
- Research, commentary, policy evaluation, and public information
- International repository of food safety related information aimed at four primary sectors
 - Consumers and the general public; Students and educators; Food industry and health professionals; Researchers
- Multiple information resources
 - Listservs – daily email lists composed of current and rapidly changing issues
 - Information Centre – phone and email based service to answer food safety questions
 - Website and database – references and summary documents
 - Food safety programs – makes available FSN-developed farm-to-fork interventions
 - Multi-media techniques – approaches to education, training, and information sharing
 - Educational initiatives – Curricular materials and classroom resources
 - Blogs – support interactive discussion between stakeholders

Foodsafe Discussion Group

<http://www.foodsafetyweb.info/foodsafe/index.php>

- Started as part of the now-defunct Foodborne Illness Education Information Center; now run out of Food Safety Web.
- International email discussion group for food safety professionals – promotes discussion about timely topics, serves as news agent to broadly share information, and facilitates question-and-answer approaches to sharing knowledge

FoodSHIELD

<http://www.foodshield.org/>

- Sponsored by the University of Minnesota National Center for Food Protection and Defense- A DHS Center for Excellence
- Searchable website that serves as a central mechanism for states and others to communicate, educate, coordinate and train
- Houses the resources that generate food safety and defense data
- Prevention plans searchable by state
 - States with prevention plans turn red
 - Can click on state to get link to state prevention plan or contact information

2. DIRECTORIES OF ACTIVITIES

Health and Human Services Data Resources

<http://aspe.hhs.gov/datacncl/datadir/>

- Links to templates that describe each data collection system from CDC, FDA, and other HHS agencies
- Contains contact information

USDA/ARS/NAL/Food Safety Research Information Office (FSRIO) Website:

<http://fsrio.nal.usda.gov/index.php>

- The Research Projects Database in FSRIO contains over 1700 research abstracts from institutions such as the USDA ARS, USDA CSREES, the NIH, the CDC and the FDA.
- Cooperative effort between USDA, FDA, CDC, NIH, public institutions, and on a voluntary basis, private institutions
- Aims to prevent duplication of food safety research

- The FSRIO website includes program and planning information, as well as food safety reports, news and information
- The website's new publication feature categorizes links to resource lists and factsheets into different food safety data types.
- The resource lists contain reports, journals/books, press releases, databases, organizations, and real-time searches on the AGRICOLA and PubMed databases.
- This database collects every type of food safety data.

USDA/CSREES Current Research Information System (CRIS)

<http://cris.csrees.usda.gov/>

- Searchable site of all of CSREES's ongoing and recently completed research and education projects
- Includes projects through the Small Business Innovation Research (SBIR), the National Research Initiative (NRI), and the Science and Education Resources Development (SERD)

USDA/CSREES National Integrated Food Safety Initiative (NIFSI) Accomplishment Reporting System

http://www.idea.iastate.edu/foodsafety/project_directory.asp

- Allows grant recipients to report project accomplishments, current impacts and unanticipated barriers to their research
- These summaries will include: Project details, director and co-investigators, partners/collaborators, objectives, components, accomplishments, and keywords

University of Georgia Center for Food Safety

<http://www.griffin.peachnet.edu/cfs/research/CurrentResearchProjects.html>

- List of externally funded research projects including funding agency and amount funded.

3. MICROBIAL CONTAMINATION (FOOD, PLANTS OR ANIMALS)

eLEXNET

<https://www.elexnet.com/elex/index.jsp>

- Produces reports on state, regional and national data collection
- Identifies potentially contaminated products and allows lab directors to anticipate which products will harm consumers
- Includes multiple analytes including pathogens and chemical residues
- Provides access to state and federal government food testing data sources for risk assessments
- Test methods information to decide which test works best for individual situations
- Members include 113 Federal, State, and Local laboratories in 50 states
 - Food testing data from USDA, FDA, DoD, state and local labs are shared over eLEXNET
 - All can communicate through eLEXNET forum
- Allows comparison of surveillance activities between states

FERN Methods Repository

Not available online to the public

- Repository of testing methods for biological, chemical, and radiological analytes in food
- Not available to the public
- Participants share methods on the eLEXNET system

The Microbiological Data Program (MDP):

<http://www.ams.usda.gov/science/MPO/Download.htm>

- National food-borne pathogen database program
- MDP focuses on baseline incidence data of pathogens (*Salmonella* and *E. coli*) on fresh produce
 - In 2005, over 11,500 samples collected from 11 states at a rate of 64 samples/month

- Tests cantaloupe, green onions, lettuce, tomatoes, and alfalfa sprouts for *E. coli* with pathogenic potential, *Salmonella*, and *E. coli* O157:H7.
- Samples are collected from 11 states that represent all regions of the U.S., and are analyzed by the AMS and 9 State laboratories
- With the cooperation of the CDC, FDA, USDA's ARS and NASS, and State agricultural departments, AMS manages the collection, analysis, data entry, and reporting of these food-borne pathogens.
- An electronic database stores collected data such as product information, positive and negative findings, and quality assurance control results for each set of samples.

USDA FSIS Microbiological Baseline Data

http://www.fsis.usda.gov/Science/Baseline_Data/index.asp

- Contains links to FSIS reports on estimates of the national prevalence and levels of bacteria in samples of meat and poultry.
- Each report focuses on one species/type of animal.

USDA FSIS Microbiological Results of Raw Ground Beef Products Analyzed for *E. coli* O157:H7

http://www.fsis.usda.gov/Science/ecoli_o157_summary_tables/index.asp

- Contains contamination summary information from 1994-2005 including source of contamination, number of samples analyzed from each source and number of positive samples from each source

USDA FSIS *E. coli* O157:H7 Contamination Summary

http://www.fsis.usda.gov/Science/2006_Ecoli_Positive_Results/index.asp

- Contains summary information from 2001-2006 including sample source, collection date, where collected, product status, positives this year, samples analyzed this year, total positives, total samples analyzed.

USDA- FSIS *Salmonella* Serotype Analysis

http://www.fsis.usda.gov/Science/Serotypes_Profile_Salmonella_Isolates/index.asp,

http://www.fsis.usda.gov/PDF/Serotypes_Profile_Salmonella_Tables_&_Figures.pdf

- Data collected from meat and poultry products 1998-2005
- Categorized by animal type and serotype

USDA Microbiological and Residues Contamination Information System (MARCIS)

Not available online

- Automated system run by USDA FSIS
- "Provides information on microbiological, chemical, and pathological analyses of domestic and imported meat and poultry and their processed products."
- For example, all residue data is stored in MARCIS.
- Contain FSIS field laboratory results.

USDA Pathogen Reduction Enforcement Program (PREP)

Not available online

- Schedules and records *Salmonella* compliance data.
- Contains FSIS field laboratory results

GenBank

<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Nucleotide>

- Contains DNA sequences for foodborne pathogens including *Listeria monocytogenes* sequenced by USDA ARS

NIH- NIAID- National Microbial Pathogen Data Resource Center (NMPDR):

<http://www.nmpdr.org/>

- Database “aimed at providing infectious disease researchers a single Web-based entry point to relevant organism-related data necessary for advanced study and applications, including identification of potential targets for the development of vaccines, therapeutics, and diagnostics, as well as identification of genetic polymorphisms that correlate with phenotypes such as pathogenicity, drug resistance, morbidity, and infectivity.”
- Including pathogenic vibrios, *Listeria monocytogenes*, and *Campylobacter jejuni*

DHS National Bio-Surveillance Integration System (NBIS)

Not available online

- To detect and respond to threats to our food supply chain, whether naturally occurring or intentionally introduced.
- NBIS will combine health data from CDC, agricultural data from the USDA, food data from a combination of USDA and HHS, and environmental monitoring from BioWatch to improve detection and response.

4. CHEMICAL CONTAMINATION (FOOD, PLANTS OR ANIMALS)

eLEXNET

see Microbial Contamination section

FERN Methods Repository

see Microbial Contamination section

The Food Animal Residue Avoidance Databank (FARAD):

<http://www.farad.org/>

- The Food Animal Residue Avoidance Databank is a computer-based decision support system. It is designed to provide livestock producers, extension specialists, and veterinarians with practical information on how to avoid drug, pesticide and environmental contaminant residue problems, thus keeping food products safe for consumption.
- Created by North Carolina State University, University of California-Davis, University of Florida and administered through the USDA CSREES

FDA Pesticide Program Residue Monitoring Database:

<http://www.cfsan.fda.gov/~dms/pesrpts.html>

- Contains downloadable files that represent 6,766 samples collected from the U.S. and over 100 countries through the regulatory monitoring the FDA pesticide programs beginning in 1996.
- In 2004 the PDP analyzed 13,208 samples (78.5% were fruit and vegetable commodities) for pesticides

FAO and WHO's Acrylamide in Food Network

<http://www.acrylamide-food.org/>

- Operated by JIFSAN
- Inspired by June 2002 FAO/WHO Consultation on the health risks of Acrylamide in Food Aims to be a global resource and inventory of ongoing research on acrylamide in food.
- Includes formal research, surveillance/monitoring and industry investigations
- Contains discussion forum for active researchers and others in the field in order to identify gaps and overlaps in available research/information, and invite suggestions for improvement

NERL Human Exposure Database System (HEDS)

Not available online to the public

- National Exposure Research Laboratory (NERL) is joint effort between CDC and EPA ORD
- Contains human health effects measured through pesticide exposure studies

USDA/FDA National Residue Program:

http://www.fsis.usda.gov/Science/2003_Red_Book/index.asp

- Results listed in “Red Books”
- Include the results of monitoring, surveillance, and inspection.
- Planning process in “Blue Books”

FDA FEEDCON

Not available online

- Compilation of state monitoring data on pesticides and industrial chemical residues in foods and animal feeds

USDA NASS Agricultural Chemical Use Database

<http://www.pestmanagement.info/nass/>

- Data available on commodity acreage and agricultural chemical use
- Can search by commodity, year, state, active ingredient
- Information available from 1990-2004

USDA Pesticide Data Program (PDP)

<http://www.ams.usda.gov/science/pdp/Download.htm>

- Run by USDA AMS
- National pesticide residue database program that manages the collection, analysis, data entry, and reporting of pesticide residues on agricultural commodities
- Emphasis on commodities highly consumed by infants and children.
- Samples are collected from all regions of the country close to the point of consumption,
- Analyzed by nine State and two Federal laboratories.
- Samples tested include fresh fruit and vegetables, processed products, milk, corn syrup, juices, grains, poultry, and beef.
- In 2004, PDP analyzed 13,208 samples (78.5% were fruit and vegetable commodities) for pesticides

Pesticide Recordkeeping Program:

Not available online

- Requires all private pesticide applicators to keep records of their use of federally restricted use pesticides for 2 years
- These records are then entered into a database to analyze agricultural pesticide use.

EPA Pesticide Fate Database

<http://cfpub.epa.gov/pfate/home.cfm>

- Contains information on 188 pesticides that chemical manufacturers submitted to EPA in order to register/reregister their product
- Includes:
 - basic physical and chemical properties;
 - biotic and abiotic degradation half-lives in soil and water under various controlled and natural environments, mobility, bioconcentration factors in fish for food use pesticides;
 - release of antifoulants in the aquatic environment;
 - leaching of preservatives from the treated woods.¹
- “May be used to:
 - model or predict the fate of pesticides in the environment
 - develop exposure characterizations that describe the potential exposure of plants, animals, and water resources to pesticide residue”²

¹ http://epa.gov/scienceforum/2004/oeiposter/Liu_Larry.pdf

EPA National Pesticide Information Retrieval System:

<http://aboutnpirs.ceris.purdue.edu/>

- 6 databases that require a subscription
- Run by Center for Environmental and Regulatory Information Systems (CERIS) at Purdue University.
- Contains information on:
 - Pesticide product labels
 - Registration support
- Residue tolerances
- Data obtained from:
 - Fact sheets
 - Safety data sheets
 - Federal Register

EPA Pesticide Products Database

<http://ppis.ceris.purdue.edu/htbin/ppisprod.com>

- Cooperative effort between National Pesticide Information Retrieval System, EPA OPP and California Dept of Pesticide Regulation
- Information on 90,000 products
- Data include: “product number and name, company number and name, registration date, cancellation date, existing stocks date, and reason (if cancelled), product manager name and phone number and chemical ingredient information”³

EPA EXtension TOXicology NETwork (Exttoxnet)

<http://exttoxnet.orst.edu/>

- Cooperative effort of University of California-Davis, Oregon State University, Michigan State University, Cornell University, University of Idaho
- Information on toxicology and health and environmental effects of pesticides

CDC ATSDR Toxicological Profiles

<http://www.atsdr.cdc.gov/toxpro2.html>

- Produced by The Agency for Toxic Substances and Disease Registry (ATSDR)
- Rank 275 hazardous substances based on frequency of occurrence at National Priorities List sites, toxicity, and potential for human exposure
- A toxicological profile is created for the 275 substances
- Each profile contains:
 - Public health information including information on how it effects health and the environment
 - Chemical and physical information
 - Production, import, use and disposal information
 - Potential for human exposure
 - Analytical methods

FPA Database on Pesticide Residues and Food Consumption

Not available online

- Food Products Association (FPA)
- Contains over 10 million data points obtained from industry and government sources.

FDA-CSFAN Total Diet Study

<http://www.cfsan.fda.gov/~comm/tds-toc.html>

- Tests 261 “table-ready” foods per year for radionuclides, residues of pesticides, industrial chemicals, toxic and nutritional elements, and folate

² <http://cfpub.epa.gov/pfate/home.cfm>

³ http://www.epa.gov/pesticides/science/models_db.htm

- Used to estimate the dietary intakes of those analytes by the U.S. population
- Includes data summaries and individual results for each food from 1991 on
 - Sorted by food or contaminant

EFSA Database on Polycyclic Aromatic Hydrocarbons (PAH)

http://www.efsa.europa.eu/en/science/data_collection/pah.html

- Run by European Food Safety Authority (EFSA)
- Contains information on:
 - “the respective levels and relative proportions of benzo[a]pyrene and other carcinogenic PAH, in particular the 15 EU priority PAHs and the additional PAH identified by JECFA in various foods
 - The effects on PAH levels of different production and processing methods used for e.g. edible oils and fats and for smoked and dried foods
 - Environmental sources of PAH contamination”
- Password protected database located on the EFSA Extranet

5. PATHOGEN CHARACTERISTICS

ComBase (Combined Database for Predictive Microbiology)

<http://www.combase.cc/>

- Collaboration between the United Kingdom (Food Standards Agency and Institute of Food Research), the United States (USDA ARS Eastern Regional Research Center), and Australia (Australian Food Safety Centre of Excellence)
 - Essentially based upon UK FSA’s FoodMicro Model, US ARS’s Pathogen Model Program (PMP), and UK IFR’s development of database structure to combine micro data
 - Additional data from European research, ARS, and the literature was added
 - Launched in 2003, Australia joined in 2006
- Data and predictive tools on microbial responses to food environments
 - ComBase Browser: thousands of microbial growth and survival curves collated in research establishments and from publications
 - ComBase Predictor: tool for industry, academia, and regulatory agencies
- Freely available via web-based software
- Registered users can upload their own data to ComBase
- The Journal of Food Protection (JFP) is now encouraging authors of accepted manuscripts related to survival, growth, and inactivation of spoilage and pathogenic microorganisms to submit their data to ComBase

National Antimicrobial Resistance Monitoring System- Enteric Bacteria (NARMS)

http://www.fda.gov/cvm/narms_pg.html

<http://www.cdc.gov/narms/>

<http://www.ars.usda.gov/Main/docs.htm?docid=6750>

- Collaboration between CDC, USDA (FSIS and ARS) and FDA (CVM), established in 1996
- Monitors selected enteric bacterial organisms for changes in susceptibilities to antimicrobial drugs important in human and animal medicine; Studies trends and temporal relationships
- Isolates are collected from humans (CDC), animals (USDA), and retail meats (FDA)
 - Also has animal feeds pilot study
- Goal: “to prolong the lifespan of approved drugs by promoting prudent and judicious use of antimicrobial drugs and to identify areas for more detailed investigation.”⁴
- “Provides a national source of enteric bacterial isolates that are invaluable for research such as diagnostic test development, discovering new genes and molecular mechanisms associated with resistance, studying mobile gene elements, and for virulence and colonization studies.”

⁴ http://www.fda.gov/cvm/narms_pg.html

6. PUBLIC HEALTH SURVEILLANCE

CDC Healthy People 2010

<http://wonder.cdc.gov/data2010/focus.htm>

- Gathers data from across the country
- 467 Healthy People 2010 objectives are tracked by 190 data sources; including National Hospital Discharge Survey (NHDS), the National Notifiable Disease Surveillance System (NNDSS), Medical Expenditure Panel Survey (MEPS), the National Hospital Ambulatory Medical Care Survey (NHAMCS), and Continuing Survey of Food Intake by Individuals (CSFII).
- “*Healthy People* is the most comprehensive source of health data in the nation.”

CDC FoodNet

<http://www.cdc.gov/foodnet/>

- Conducts active surveillance in 10 sites to document cases of foodborne illness caused by *Campylobacter*, *Cryptosporidium*, *Cyclospora*, Shiga toxin-producing *E. Coli* (STEC) including *E. coli* O157, *Listeria*, *Salmonella*, *Shigella*, *Vibrio* and *Yersinia*.
- Performs case-control studies
- FoodNet data is published annually in the FoodNet annual report. This data is available through PubMed by doing a search of “FoodNet” or annual reports are located on the CDC website and FoodNet information is published in Morbidity and Mortality Weekly Reports (MMWR)

CDC PulseNet

<http://www.cdc.gov/pulsenet/index.htm>

- Created so “scientists at public health laboratories throughout the country could rapidly compare the PFGE patterns of bacteria isolated from ill persons and determine whether they are similar.”
- PulseNet is a national network of public health and food regulatory agency laboratories that share pulse field gel electrophoresis DNA “fingerprints” of foodborne outbreaks
- Once a scientist enters the information into the electronic database, the CDC is able to upload them onto its national database.
- CDC database managers search the data regularly, looking for clusters of patterns that are indistinguishable
- All certified PulseNet participants have direct access to the national CDC database

CDC CaliciNet

- Proposed system under development: “Electronic system developed to rapidly “fingerprint” strains of Calicivirus that may cause foodborne outbreaks.”⁵
- Health Department labs are notified immediately if their strain matches another
- Will assist in food product traceback

CDC Electronic Foodborne Outbreak Reporting System (eFORS):

http://www.cdc.gov/foodborneoutbreaks/us_outb.htm

- Contains information on over 8,000 outbreaks
- Allows for communication between states, local health departments, county health departments and the CDC
- Used by all 50 states
- Allows CDC to monitor foodborne outbreaks and compare outbreaks from one year to another
- FoodNet uses this system to report results to CDC
- Summary tables from 1990-2004 are online

⁵ <http://www.cdc.gov/foodsafety/fsactivities.htm>

CDC Foodborne Outbreak Response and Surveillance Unit Website:

<http://www.cdc.gov/foodborneoutbreaks/index.htm>

- Goal: provide foodborne disease outbreak information to public health officials, researchers and general public
- Includes listing of U.S. Foodborne Disease Outbreaks from 1990-2004 with a searchable database from 1990-1995; some additional breakdowns of outbreaks

CDC Laboratory Information Tracking and Reporting System (LITS):

<http://www.cdc.gov/ncidod/dbmd/litsplus/default.htm>

- Laboratory data management and specimen tracking system to integrate laboratory and epidemiologic data in public health laboratories
- Can enter, edit, analyze and report laboratory test results
- Now combined with PHLIS

CDC DPDx

<http://www.dpd.cdc.gov/dpdx/Default.htm>

- Goal: Provide information to strengthen diagnosis of parasitic disease
- Aimed for laboratorians and pathologists
- Contains:
 - Image Library- culture images, illustration of life cycle, molecular diagnosis images
 - Parasites and Health Section- lists parasites and diseases; includes information on causal agent, life cycle, geographic distribution, clinical features, lab diagnosis, treatment
 - Diagnosis Procedures- categorized by specimen type (e.g. stool, blood)
 - Diagnostic Assistance- CDC contact information

CDC BioSense⁶

- Began November 2003
- Goal: “early detection of intentional and natural infectious-disease outbreaks”
- Follows “86 geographic regions (50 states, two territories, and 34 major metropolitan areas) to access pre-diagnostic health data on a near real-time basis”
- Part of the Public Health Information Network (PHIN) DHS/DHHS biosurveillance initiative; Available to state and local public health departments
- Uses statistical algorithms and analytical visualizations to analyze data from:
 - “Ambulatory-care clinics within the Department of Veterans Affairs (VA) and Department of Defense (DoD) systems provide ICD-9 coded diagnoses
 - Certain over-the-counter (OTC) pharmacy sales collected June-November 2004 from >10,000 pharmacies representing 23% of national market share & 20% of U.S. ZIP codes
 - Data on laboratory tests received from Laboratory Corporation of America, Inc. (LabCorp), representing 33,674 (77%) of 44,008 U.S. ZIP codes
- “Because the sources are consistent across the country, data monitors can compare multiple locations by using the same types of data. Data-sharing efforts could lessen the surveillance burden for state and local health departments and clinical personnel”
- Organizes incoming data into 11 syndromes that are indicative of the clinical presentations of critical biologic terrorism-associated condition (syndromes NOT diseases)

CDC National Electronic Telecommunications System for Surveillance (NETSS):

<http://www.cdc.gov/epo/dphsi/netss.htm>

- Computerized public health surveillance information system in which states report nationally notifiable diseases to the CDC each week
- Reporting for National Notifiable Disease Surveillance System, collects information on:

⁶ Sokolow L, Grady N, Walker D, et al. Deciphering data anomalies in BioSense. In: *Syndromic surveillance: reports from a national conference, 2004*. MMWR 2005;54(Suppl):133--9.

- Botulism, cholera, cryptosporidiosis, cyclosporiasis, *E. coli*, hepatitis A, listeriosis, salmonellosis, shigellosis, trichinosis, and typhoid fever, as well as 47 other pathogens or diseases, which are not considered to be foodborne
- Viral Hepatitis Surveillance Program
- Summary results published in MMWR
- Secure system so only states and CDC have access
- Includes date, county, age, sex, and race/ethnicity and disease-specific epidemiologic information

CDC National Electronic Disease Surveillance System (NEDSS)

<http://www.cdc.gov/nedss/>

- Goal: To “provide a standards-based, integrated approach to disease surveillance and to connect public health surveillance to the burgeoning clinical information systems infrastructure.”⁷
- Used to “identify and track emerging infectious diseases (including potential bioterrorism attacks), investigate outbreaks, and monitor disease trends.”⁸
- Part of PHIN that integrates other CDC surveillance databases and interfaces with clinical databases such as hospital clinics and labs;
- Covers 140 diseases, replaces disease specific databases, including many foodborne diseases
- Data reported by state and local public health departments and other health care settings

CDC Public Health Laboratory Information System (PHLIS):

<http://www.cdc.gov/ncidod/dbmd/phlisdata/default.htm>

- Contains National Salmonella Surveillance System and National Shigella Surveillance System as well as Salmonella Outbreak Detection Algorithm
- Surveillance systems collect all reports of Salmonella or Shigella isolates from human sources in every U.S. state
- Summary data is posted online

CDC Epidemic Information Exchange (Epi-X):

<http://www.cdc.gov/mmwr/epix/epix.html#ancMenu>

- Web-based communications network where CDC, state and local health departments, poison control centers, and other public health professionals can discuss disease outbreaks and health events that may involve multiple jurisdictions
- Since began in 2000, had over 1,000 reports of outbreaks
- Over 1,200 users

CDC Sentinel Counties Study of Viral Hepatitis

- Intensive study of Viral Hepatitis in 6 counties
 - Jefferson County (Birmingham), Alabama; Denver County (Denver), Colorado; Multnomah County (Portland), Oregon; Pinellas County (St. Petersburg), Florida; Pierce County (Tacoma) Washington; and San Francisco County (San Francisco), California⁹
- All patients in sentinel counties signs and symptoms of viral hepatitis are investigated
- Counties representative of US as a whole
- Since 1982
- Information published in MMWR and www.cdc.gov/hepatitis

CDC Viral Hepatitis Surveillance Program:

<http://www.cdc.gov/ncidod/diseases/hepatitis/resource/index.htm>

- Collects clinical, serologic, and epidemiologic data on risk factors for acquiring Hepatitis.
- Information collected by the Hepatitis Branch, Division of Viral and Rickettsial Diseases.
- Reported through NETSS

⁷ http://www.cdc.gov/nedss/Security/Security_InfoNB_Sys_Sites_V01.pdf

⁸ http://www.cdc.gov/nedss/Security/Security_InfoNB_Sys_Sites_V01.pdf

⁹ <http://aspe.hhs.gov/dataacnl/datadir/cdc4.htm#hep>

CDC *Vibrio* Surveillance System

- Since 1988 CDC has kept a database on *Vibrio* infections in humans
- FDA, CDC and Gulf Coast States began reporting system in 1998, other states also report
- Collect information on:
 - underlying illness,
 - history of seafood consumption and exposure to seawater in the seven days before illness,
 - conduct tracebacks of implicated oysters
 - CDC serotypes all *V. parahaemolyticus* isolates received from state health departments, and screens for cholera toxin production and the O1, O139 and O141 serogroups in *V. cholerae* isolates.
- Results written into summary reports on CDC website

CDC Creutzfeldt-Jakob Disease Surveillance System

Not available online; information at <http://aspe.hhs.gov/datacncl/datadir/cdc4.htm#cj>

- National Center for Health Statistics compiles national multiple-cause-of-death data
- Physicians, pathologists, other health care workers and state and local health departments report suspected cases of prion disease¹⁰
- “The purpose is to collect brain autopsy material from persons with hemophilia and other bleeding disorders who died and who had received care in treatment centers anywhere in the U.S. This material is then examined for the purpose of CJD to help determine whether the disease can be transmitted through blood or blood products.” Methods of data collection for this system include notification of case(s)/events, and others.
- Data are originally collected by federal treatment centers

CFSAN Adverse Reaction Monitoring System (ARMS)

Not available online

- CFSAN system that collects reports of adverse effects from food.

Center for Science in the Public Interest (CSPI) Outbreak Alert

http://www.cspinet.org/foodsafety/outbreak_report.html

- Database of foodborne outbreaks compiled from numerous sources including:
 - CDC outbreak reports
 - Queries and contacts with state public health agencies
 - Scientific and medical journals
 - Newspaper and media reports
- Attributes outbreaks to food categories
- “CSPI is currently working towards putting the data in a searchable online database for public access.”

Florida Department of Health EpiCom:¹¹

<https://www.epicomfl.net/>

- EpiCom Exchange- forum for members to share public health information such as Florida cases of *E. coli* O157:H7
- EpiCom Alert- Communication system to notify members of suspected public health threats
- Quick way for state and local public health employees to communicate and identify outbreaks

Pennsylvania Electronic Disease Surveillance System PA-NEDSS:

<http://www.dsf.health.state.pa.us/health/cwp/view.asp?Q=230681>

- Electronic system -- Mandatory since 2003 -- to report disease cases and investigative findings to the Pennsylvania Department of Health
- Links 426 hospitals and clinics, 236 laboratories, 629 physicians, and 663 public health staff
- Aims to improve timeliness and accuracy of disease reporting

¹⁰ GAO Report <http://www.gao.gov/new.items/d01973.pdf>

¹¹ <http://www.astho.org/pubs/HITandPHEmergenciesIB.pdf>

- Cut average time to report a case after diagnosis from 8.4 days to 1.5 days

WHO Salm-Surv¹²:

http://thor.dfvf.dk/portal/page?_pageid=53,1&_dad=portal&_schema=PORTAL

- Created January 2000 to “enhance the capacity and quality of *Salmonella* surveillance, serotyping and antimicrobial resistance testing throughout the world, leading to local interventions that reduce the human health burden of *Salmonella* and other foodborne diseases”
- Passive surveillance system that asks member countries to report annually:
 - Number of *Salmonella* isolates identified & number serotyped
 - Top 15 *Salmonella* serotypes identified
 - Sources of *Salmonella* isolates (e.g., human, non-human)
- Provides information on *Salmonella* serotype frequency nationally, regionally or globally
- 893 members representing 86 countries

7. RISK MODELS AND ANALYSIS

Foodrisk.org (formerly known as the Food Safety Risk Analysis Clearinghouse)

<http://www.foodrisk.org/databases.cfm>

- Project of JIFSAN (Joint Institute for Food Safety and Nutrition), between the University of Maryland and FDA.
- Formed to collect and catalogue data and methodology pertaining to food safety risk analysis and offered by the private sector, trade associations, federal and state agencies, and international sources.
- Vast number of databases on food safety from around the world available to the public.
- Serves as repository for risk analysis models and the datasets that support them

USDA/FSIS Risk Assessments

http://www.fsis.usda.gov/Science/Risk_Assessments/index.asp

- Contains risk assessments for BSE, *E. coli* O157:H7, Ready-to-Eat Meat and Poultry Products, Shell Eggs and Egg Products and others.

EPA Integrated Risk Information Surveillance System (IRIS)

<http://www.epa.gov/iris>

- Searchable database of human health effects that may result from exposure to environmental substances
- Used in risk assessments, decision-making and regulatory activities

Cumulative and Aggregate Risk Evaluation System (CARES)

http://www.infoscientific.com/software_main.htm#cares

- State-of-the-art software program designed to conduct complex exposure and risk assessments for pesticides, such as assessments required under the 1996 Food Quality Protection Act (FQPA).
- Aims to develop strategies and priorities for the collection of microbial food safety data to be used in risk assessments.
- Uses other databases to evaluate risk from foods as well as water and residential source risks
- Uses a population generator based on the U.S. Census so CARES can match individual and population attributes to generate a risk profile

¹² <http://www.who.int/salmsurv/FAQ1/en/index.html>

8. FOOD CONSUMPTION

USDA ERS Food Availability

<http://www.ers.usda.gov/data/foodconsumption/FoodAvailIndex.htm>

- Excel spreadsheets or query option of amount of food available for human consumption in the United States
- Available for several hundred types of food
- Only available on national level

EPA/USDA-ARS Food Commodity Intake Database (FCID)

Available on CD ROM

- Contains data on edible amount of agricultural food commodities in each food reported in the Continuing Survey of Food Intakes by Individuals (CSFII)
- Developed to estimate human exposure to pesticide residues through contaminated food
- Contains over 500 food commodities¹³

USDA ERS Nutrient Availability

<http://www.ers.usda.gov/data/foodconsumption/NutrientAvailIndex.htm>

- Excel spreadsheets on estimates of the amounts per capita per day of food energy and 27 nutrients and food components available in the U.S. food supply
- Summaries of the nutrients and other food components available per capita per day in the U.S. food supply between 1909 and 2004, and the nutrients contributed by the major food groups, per capita per day for 1970 and 2000 are available

USDA ERS Food Guide Pyramid Servings

<http://www.ers.usda.gov/data/foodconsumption/FoodGuideIndex.htm>

- Excel spreadsheets that adjusts aggregate food supply data, excluding nonedible food parts and food lost through spoilage, plate waste, and other losses in the home and marketing system to find the remaining supply and convert it into daily per capita servings
- Includes average daily calories (per capita) available in the U.S. food supply Separated into categories such as servings; calories; meats, poultry, and fish; dairy products; fats; fruit; vegetables; grains; and sugar.

9. INSPECTIONS

FDA Bioresearch Monitoring (BIMO) program

- FDA's Office of Regulatory Affairs (ORA)
- Monitors the food system by collecting data from inspections and data audits.

State and local restaurant inspection listings

- Many state and local jurisdictions are putting restaurant scores or inspection results online for public access
- Spies Online has an incomplete listing to state and locality lists nationwide
<http://www.spiesonline.net/restaurant-inspection.shtml>
- State website examples
 - Florida publishes restaurant disciplinary activity reports
<http://www.myflorida.com/dbpr/hr/rdars/index.shtml>
 - South Carolina restaurant scores
http://www.scdhec.net/health/envhlth/food_protection/scores.htm

¹³ <http://www.ers.usda.gov/publications/aer820/aer820b.pdf>

- Tennessee statewide restaurant inspection scores
<http://tn.state.gegov.com/tennessee/>
- County website examples:
 - DeKalb County, GA, restaurant scores (requires registration)
<http://atlanta.digitalhealthdepartment.com/dekalb/>
 - King County (Seattle), WA searchable database of restaurant inspections
<http://www.decadeonline.com/main.phtml?agency=skc>
 - Washoe County (Reno), NV searchable database of restaurant inspections
<http://www.rgj.com/rails/inspections/>
- City and locality website examples
 - Austin, TX, restaurant inspection scores
<http://www.ci.austin.tx.us/health/restaurant/search.cfm>
 - Boston, MA, searchable database of restaurant inspections
<http://www.cityofboston.gov/isd/health/mfc/search.asp>
 - New York City, NY, restaurant inspection results (requires registration)
<http://www.nyc.gov/html/doh/html/rii/index.shtml>

USDA FSIS Eligible Foreign Establishment List:

<http://www.fsis.usda.gov/Regulations & Policies/Eligible Foreign Establishments/index.asp>

- List of foreign establishments that allowed to export meat, poultry and egg products into the U.S.

National Advisory Committee on Meat and Poultry Inspection Reports

<http://www.fsis.usda.gov/Regulations & Policies/National Advisory Committee on Meat & Poultry>

- NACMPI meets with the Secretary of Agriculture to update on food safety issues
- Reports are subcommittee analyses on food safety issues, including recommendations.

DHS - Customs and Border Protection Databases

<http://www.cbp.gov>

- Customs and Border Protection have many duties including keeping harmful pests and diseases out of the United States
- Databases process “more than two billion online and batch database requests daily against more than four terabytes of data. With peak activity of more than 51,000 transactions per second”¹⁴

10. RECALLS, VIOLATIONS, AND ADVISORIES

USDA FSIS Recalls

http://www.fsis.usda.gov/Fsis_Recalls/index.asp

- Open Federal Case Listings:
 - http://www.fsis.usda.gov/Fsis_Recalls/Open_Federal_Cases/index.asp
 - Recalled establishments; Includes a press release for each recalled food
- USDA FSIS Open Retail Recall Cases:
 - http://www.fsis.usda.gov/Fsis_Recalls/Open_Retail_Recall_Cases/index.asp
 - Recalls for privately owned retail outlets
- USDA FSIS Recall Case Archive
 - http://www.fsis.usda.gov/Fsis_Recalls/Recall_Case_Archive/index.asp
 - Archive when “Open” cases are completed

USDA FSIS The Meat, Poultry and Egg Product Inspection Directory:

<http://www.fsis.usda.gov/Regulations & Policies/Meat Poultry Egg Inspection Directory/index.asp>

- Contains a list of establishments that are regulated by FSIS.

¹⁴ <http://www3.ca.com/Press/PressRelease.aspx?CID=53663>

USDA FSIS Residue Violator Alert List

http://www.fsis.usda.gov/PDF/Residue_Violators_List.pdf

- Repeat violators of drug, pesticide, or chemical violations are listed here

Residue Violation Information System (RVIS)

- Violation information is then passed on to here.
- Aids FSIS and FDA's regulatory follow-up on violations and tracking of residue violators.

EPA National Listing of Fish Consumption Advisories:

<http://epa.gov/waterscience/fish/advisories/index.html>

- State, tribal & federal advisories from the U.S. and 12 Canadian provinces & territories

11. ANIMAL HEALTH OR DISPOSITION

USDA FSIS Animal Disposition Reporting System:

http://www.fsis.usda.gov/Science/Animal_Disposition_Reporting_System/index.asp

- "Contains slaughter totals and disposition summaries for federally inspected livestock and poultry slaughter establishments"
- Data from 1998-2002 can be found online

USDA- APHIS National Animal Disease Program Surveillance:

<http://www.aphis.usda.gov/vs/nahps/surveillance/>

- Includes:
 - Bovine Disease Programs
 - Ovine & Caprine Disease Programs
 - Bison and Captive Cervidae Disease Program
 - Porcine Disease Programs
 - Equine Disease Programs
 - Poultry Disease Programs
 - Aquaculture Disease Programs

USDA National Animal Health Laboratory Network:

http://www.csrees.usda.gov/nea/ag_biosecurity/in_focus/apb_if_healthlab.html

- Created by CSREES, APHIS, and the American Association of Veterinary Laboratory Diagnosticians
- Shares "laboratory data to meet epidemiological and disease reporting needs"

12. ECONOMICS

USDA Economics and Statistics System

<http://usda.mannlib.cornell.edu/>

- Based in Cornell University
- Nearly 300 reports and datasets from the economics agencies of the U.S. Department of Agriculture
- Datasets are available in spreadsheets and updated yearly.
- Contains reports and datasets from AMS, ERS, NASS, World Agricultural Outlook Board (WAOB)
- Has a search engine

University of Connecticut Food Marketing Policy Center (FMPC):

<http://www.fmpc.uconn.edu/publications/>

- Includes issue papers, research monographs, research reports, FMPC journal reprints, books and conference proceedings, Regional Research Project NE-165 Journal reprints, and Regional Research Project NE-165 working papers.
- All of above can be downloaded or purchased.
- Includes information collected by FMPC and other universities.

USDA-ERS Foodborne Illness Cost Calculator

<http://www.ers.usda.gov/Data/FoodBorneIllness/>

- Estimates cost of Foodborne illness and premature death using assumptions about:
 - disease incidence,
 - outcome severity,
 - level of medical, productivity, and disutility costs
 - These assumptions can be varied to estimate savings of public health interventions
- Available for *Salmonella* and STEC O157 illness estimates

13. CONSUMER BEHAVIOR

USDA-ERS Hamburger Doneness and Consumer Preferences:

<http://www.ers.usda.gov/Data/hamburger/>

- Contains a case study of consumer food safety behavior from data purchased from the Market Research Corporation of America
- Data sets available online:
 - “consumers' preferences for how thoroughly they like their hamburgers cooked,
 - perceptions of the risks of foodborne illness,
 - perceived sensory characteristics of hamburgers cooked to different degrees of doneness,
 - cooking methods,
 - and consumers' sources of information about food safety”

FDA- CFSAN Health and Diet Survey

<http://www.cfsan.fda.gov/~comm/crnutri.html>

- Telephone survey that asks Americans about their public awareness, knowledge, attitudes, and reported behavior related to food and nutrition
- Conducted 9 surveys since 1982

14. FOOD SAFETY SYSTEM MANAGEMENT

USDA-ERS Food Safety Technologies and HACCP Compliance Survey

<http://www.ers.usda.gov/Data/HACCPsurvey/>

- In 2001 ERS and Washington State University conducted 2 surveys
 - Meat slaughter and processing plants answered by 861 meat slaughter and processors
 - Poultry slaughter and processing plants answered by 135 firms
- Questionnaires contain information on: the effects of the PR/HACCP rule on plant operations and costs, plant characteristics, plant operations, sanitation, equipment, product and environmental testing, dehiding

FDA National Seafood HACCP Database

<http://www.cfsan.fda.gov/~comm/seaeval2.html>

- Located in the FDA/CFSAN/Office of Seafood in Washington, DC
- Contains info collected from each individual inspection of seafood processors and importers.
- Only summaries of this information are available online

EHNIS – Environmental Health Specialists Network (EHS-Net)/ Environmental Health Specialists Network Information System (EHNIS)

<http://www.cdc.gov/nceh/ehs/EHSNet/>

- EHS-Net is a partnership between CDC, FDA, USDA, EPA and 9 states
 - Goal: prevent foodborne illness caused by environmental factors at the food service level
 - Surveys of restaurants and restaurant workers on food safety practices
- Specific studies include Egg handling study, Food preparation practices, Beliefs about sources of gastrointestinal illness, Hand washing survey
- EHNIS is an internet application developed by CDC to support EHS-Net data collection
 - Data from interviews or observation can be entered directly
 - Data from internet surveys
- EHNIS can be used by governmental agencies and NGOs for their data collection needs

15. AGRICULTURAL AND FOOD PRODUCTION PRACTICES

USDA ERS Crop Production Practices

<http://www.ers.usda.gov/Data/ARMS/CropOverview.htm>

- Contains answers from questionnaires given to farmers through the ARMS
- Only accessible through query or collaboration with ERS
- Topics of the questionnaire include:
 - Irrigation technology and water use
 - Nutrient use and management
 - Crop residue management and previous crop
 - Pest management
 - Pesticide use
 - Seed use
 - Tillage systems
 - Manure Management

USDA NASS Census of Agriculture

http://www.nass.usda.gov/Census_of_Agriculture/index.asp

- Census contains statistics on agricultural production in the U.S.
- Numerous years available (1992, 1997, 2002)
- Includes summary reports searchable by state, county or zip code
- Information from special projects such as the farm and ranch irrigation survey included

USDA NASS Slaughter Totals

<http://usda.mannlib.cornell.edu/reports/nassr/livestock/pls-bb/2006/lstk0206.pdf>

- Contains information on calves, cattle, hog, sheep, and lamb slaughter and Red meat production
- Broken down into species, class, types of slaughter, types of plants

16. DIRECTORIES OF PUBLICATIONS OR WEBSITE LINKS

The FDA Publications Database

<http://www.accessdata.fda.gov/RIS/RISWEB.ISA>

- Contains a listing of articles (accompanied by abstracts) written by FDA scientists from 1998 to the present.

National Advisory Committee on Microbiological Criteria for Foods (NACMCF) Reports:

http://www.fsis.usda.gov/Regulations_& Policies/National_Advisory_Committee_on_Microbiological/

- From 1990 to 2004

- Can be used for regulations and programs in any agency or institution interested in reducing foodborne disease

NCFST Publications Database

http://www.ncfst.iit.edu/publications/staff_publications.html

- Maintained by National Center for Food Safety and Technology (NCFST)
- Contains a listing of articles written by NCFST scientists from 1989 to the present.

NCFST C. Botulinum Bibliography Database

http://www.ncfst.iit.edu/search/search_our_database.html

<http://www.ncfst.iit.edu/CBOT/cbotbibl.html>

- Maintained by National Center for Food Safety and Technology (NCFST)
- Searchable bibliography of publications about C. botulinum

UC- Davis WIFSS *E. coli*- Lettuce Research Database

http://wifss.ucdavis.edu/pathogens_toxins.html

- Developed by the Western Institute for Food Safety and Security (WIFSS) at the University of California at Davis
- Compilation of all research done on *E. coli* O157:H7 contamination in lettuce
- Password protected, not open to public

Union of Concerned Scientists Genetic Engineering Links:

http://www.ucsusa.org/food_and_environment/genetic_engineering/genetic-engineering-links.html

- Comprehensive list of links on Genetic Engineering from government, academia, industry, public interest organizations and newsletters

Union of Concerned Scientists Antibiotics and Food Links:

http://www.ucsusa.org/food_and_environment/antibiotics_and_food/antibiotic-resistance-links.html

- Comprehensive list of links on Antibiotics and Food from government, industry, and public interest organizations

17. STANDARDS, GUIDELINES, AND PRACTICES

The Codex Alimentarius

http://www.codexalimentarius.net/web/standard_list.do?lang=en

- A collection of international food standards, guidelines and codes of practice that cover all the main foods, whether processed, semi-processed or raw.
- Codex Alimentarius Commission was formed by FAO and WHO
- More than 160 countries are members of the Codex Alimentarius Commission

CSTE State Viral Hepatitis Plans

<http://www.cste.org/HepatitisPlans/HepatitisPlanspage.htm>

- list of links to 14 individual state Viral Hepatitis Plans
- CSTE and CDC provide funding to states for the development of a state health department comprehensive viral hepatitis program planning and implementation.
- The links provide resources and encouragement to other states for their own development of hepatitis plans.
- Similar to FoodSHIELD's prevention plan search but without contact information or map graphic

The International Portal on Food Safety, Animal and Plant Health:

<http://www.ipfsaph.org/En/default.jsp>

- Single access point for official national and international cross-sector information to support sanitary and phytosanitary (SPS) measures

- Contains more than 400 scientific and technical papers from FAO and thousands of documents from around the world.
- Includes “items of an internationally-negotiated or legally-binding nature, such as standards, legislation/regulations or notifications and supporting materials (e.g. expert consultation reports, scientific evaluations and specifications); and Contacts, individuals or services officially designated by an authority to be the focal point for a specific subject”
- Provided by international organizations (FAO, WHO), national governments and regional bodies
- Information separated by commodity, country, cross-sectoral issue, information type and source.

NACCHO Model Practices Database

<http://archive.naccho.org/modelPractices/>

- includes 6 current and 4 promising models on food safety practices.
- Each model includes Program Name, Organization, Contact person, web address, overview, Responsiveness and Innovation, Agency and Community Roles, Costs and Expenditures, and Implementation.

Official U.S. Standards for grains, rice, and pulses

<http://www.gipsa.usda.gov/GIPSA/webapp?area=home&subject=grpi&topic=sq-ous>

- Kept up to date through USDA -GIPSA - FGIS