

## Introduction to the Public Health Information System

The Food Safety and Inspection Service (FSIS) is the public health regulatory agency responsible for ensuring that domestic and imported meat, poultry, and processed egg products are safe, wholesome, and properly labeled. FSIS has made significant advances in the inspection process and is constantly evolving to enhance our ability to protect public health. Looking back, certain milestones may come to mind. In 1906, Congress passed the Federal Meat Inspection Act. In 1996, FSIS finalized the “Pathogen Reduction: Hazard Analysis Critical Control Point (HACCP) Systems” rule. In 2011, FSIS implemented the Public Health Information System (PHIS) to support a data-driven approach to FSIS inspection, auditing, and scheduling.

### Objective

To demonstrate mastery of this module, Inspection Program Personnel (IPP) will be able to explain how PHIS enhances inspection and protects public health.

### PHIS Introduction

PHIS is a user friendly, web-based application that replaces several legacy systems and automates many processes. It allows FSIS to obtain and quickly analyze more data about domestic and international food safety systems producing FSIS regulated products. It also enables the Agency to better identify food safety risks before they result in outbreaks or recalls. The Predictive Analytics component supports a data driven approach to inspection and sampling by automatically searching data to identify trends and notifying FSIS personnel about potential public health threats.

PHIS generates specific tasks and adjusts task frequencies based on public health risk factors. IPP, supervisors, and analysts access real time data for early recognition of food safety system deficiencies and trends. Data is used to quickly and effectively respond to prevent product adulteration, recalls, and outbreaks. The quality of the analysis and the response however depends on the quality of the data in the system. It is critical that IPP enter data that is complete and accurate.

PHIS was developed in response to an Office of the Inspector General (OIG) recommendation that FSIS develop an integrated data infrastructure to support a comprehensive, timely and reliable data driven inspection system. PHIS enables FSIS to utilize real time data to inform all aspects of its business process (e.g. domestic inspection, import inspection, and export activities).

PHIS replaced several legacy systems, facilitating maintenance and analysis of the composited data. Work efficiency and effectiveness continues to improve since FSIS personnel with different roles (e.g. inspectors, managers, analysts, policy developers) can readily access and utilize inspection and sampling data. Agency resources are better utilized since tasks are prioritized.

There are four functional areas within PHIS:

- **Domestic Inspection**
- **Exports Certification**
- **Imports**
- **Predictive Analytics**

This course covers Domestic Inspection and Export Certification. Imports are covered in a separate course.

PHIS is role based. There are many different roles based on duties, job description and job series. Each user role sees a unique navigation menu. For example, CSIs can access establishment profile, task calendar, inspection verification data, animal disposition, and export certification menus for their assignments.

Establishment profile data drives many important PHIS functions. Therefore, IPP must routinely update and ensure the accuracy of the profile data. The profile includes critical information about the establishments' operations, product types, product volumes, and HACCP system. This information allows FSIS to tailor inspection, sampling, or other activities based on establishment factors. Sample requests are electronically routed to inspectors based on establishment profile information. If profile data is inaccurate or missing, IPP could receive sample requests for products that the establishment no longer produces.

A "task list" is generated for each establishment based on profile data. The task list identifies task priorities and frequencies. IPP consider the task priorities, time constraints, and their knowledge of establishment operations to schedule tasks on their task calendar.

In addition to routine tasks, "directed" tasks may be added to the task list. PHIS generates some directed tasks in response to sample results. Sample tasks specify a time frame during which IPP are to schedule and collect the requested sample. IPP can add directed tasks to document a noncompliance found when not performing a routine task. PHIS also allows directed tasks to be initiated at various Agency levels and targeted to subsets of establishments in response to public health findings or other information. The system tracks completion of tasks and can alert supervisors when tasks are performed.

PHIS contains links to applicable guidance material (e.g. directives, notices). The guidance is based on the establishment profile and the specific inspection task. Linking to only the applicable guidance reduces time spent searching for and reviewing information that may not be helpful or pertinent.

In PHIS, IPP document the specific regulations verified and the findings of compliance or noncompliance for each regulation. If a noncompliance is found, it is documented on an NR along with other applicable information such as product type, lot number, retain or reject tags used, and/or the applicable CCP verified for some tasks. The system also facilitates documenting meeting minutes in a memorandum of interview (MOI). Inspectors can create notes in PHIS that can be used to communicate with other inspectors or included as agenda topics for meetings.

FSIS began implementing the PHIS Export Component on June 29, 2018, with a limited number of 16 countries, and then gradually expand to additional countries. Phase one includes Afghanistan, Andorra, Bahamas, Bolivia, Burundi, Cape Verde, Cook Islands, Ethiopia, French Guiana, Gambia, Guinea, Liberia, Mozambique, San Marino, Tanzania and Uganda.

For active countries in PHIS Export module, applicants must submit an application through PHIS or submit a paper application for the contractor to enter it into PHIS. PHIS will verify the eligibility of the product based on Hazard Analysis and Critical Control Points (HACCP) category, species, and maturity (for beef only). Once PHIS validates the application, an export task is generated in the establishment task list on the task calendar. The export task name will contain the seven (7) digit export application number that is generated by PHIS. PHIS will generate a separate export task for each submitted export application. IPP should perform the Export Task and provide the applicant with the export certificate printed on a security paper.

You can access information about Country Rollout Schedule, Information for Industry, Information for Foreign Governments and FSIS Inspection Program Personnel, and Rulemaking/Reference Documents on the FSIS website. <https://www.fsis.usda.gov/wps/portal/fsis/topics/inspection/phis> click on "Export Component." We will discuss export more in detail on week 4 of this training course.

PHIS will manage export applications, export certificates, and product eligibility. The Application for Export Certificate and the Export Library provide the data necessary for PHIS to populate the entire export certificate. The export certificate is validated by the Export Library Validation Service eliminating the need for an attached AMS Statement of Verification and manual verification of establishment and product eligibility. Inspectors only verify those requirements not checked by the Export Library Validation Service. They approve the export application, conduct reinspection, and permit the establishment to stamp the

product; but they do not have to issue a certificate to the applicant for completion because PHIS completes the certificate. The inspector's signature is an electronic signature for those countries that receive electronic certificates. Inspectors or PHVs do not have to review the official export certificate unless the country requires a signed hard copy. Likewise, inspectors or PHVs do not have to sign a final certificate, distribute the copies, or file official copies of the certificate if the importing country chooses to receive the certificate electronically.

For replacement certificates, inspectors only review the material changes. The applicant is charged a fee for each application, and inspectors charge for reimbursable services in certain situations.

## **Predictive Analytics**

Predictive analytics integrates data from various sources such as Centers for Disease Control, PulseNet, the Agricultural Research Service VetNet and the National Antimicrobial Resistance Monitoring System and stores the collected data in the FSIS Data Warehouse. Algorithms perform real time data analysis. When anomalies are identified, PHIS sends alerts to the appropriate user homepages or email addresses. Users may subscribe to alerts that are of interest.

Predictive analytics also uses algorithms to automate scheduling in response to certain events. The system generates appropriate follow-up tasks in response to sampling results. For performing and scheduling directed tasks, IPP should follow guidance in FSIS Directive 13000.1

Predictive analytics incorporates decision criteria to schedule Food Safety Assessments and identifies when an establishment should reassess their hazard analysis. Analysts can also conduct spontaneous data analyses from multiple data sources to identify trends and anomalies.

Predictive analytics has data reporting and visualization tools. The system can flag unusual events within reports and bring them to the attention of FSIS personnel. The reporting functionality allows users to drill-down to underlying data, populating the report and flag anomalies. Visualization tools include box plots, trend lines, maps, etc., in addition to standard tables.

This introduction is a brief overview of how PHIS improves our inspection system to better protect public health. Policy modules, hands-on computer training, and workshops will follow.

## Rules For Computers

We use laptops to provide hands-on experience with PHIS. This outlines the rules for using classroom laptop computers.

After the training, participants should be aware of the capabilities and limitations of the laptops, proper use and handling, and trying to stay together with the class.

For the purpose of the training, log on with:

- **User Name: FSIS\_User**
- **Password: FSIS**

Each laptop has a number marked on it. Instructors will inventory and log each computer. We will check-out computers for PHIS hands-on training. Laptops will be locked and stored each evening. Please keep your laptops plugged in as they have variable battery life. Outlets are available at each seat. If you prefer to work with a mouse, they will be furnished.

You will be assigned a log-in number, and use it for the duration of the training.

You are responsible for the training computer during class time and it should be treated and maintained just like any other FSIS accountable item made available for your use. Serious abuse or damage will be reported to your supervisor.

Each laptop has preloaded data to assist in training and hands on exercises. Do not add, delete, or move files on your training laptop. Please do not install files, other applications or games unrelated to training.

During the training, instructors will walk you through examples, scenarios and case studies on the training laptop. The intent is that the whole class will be able to stay together as examples are worked through. Visiting extraneous screens or moving ahead of the class may distract from the current example, and could make it difficult to follow along with the class examples and exercises. Participants have varying levels of computer experience. Instructors will assist those with less experience so that no one falls behind. If you get lost, raise your hand for assistance and an instructor will help.

These laptops do not have the capabilities of a normal FSIS issued laptop. Word processing, e-mail and internet access are not available. The training version of PHIS is designed to operate as it will in real life, but instead of a centralized database, this version is operated locally. Simulated establishments and tasks are used as PHIS training aids. Please await instruction for distribution of computers.