



# Strategic Partnership Program Agroterrorism (SPPA) Initiative

First Year Status Report  
September 2005 – June 2006

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## I. Executive Summary

To assist in protecting the nation's food supply, the Federal Bureau of Investigation (FBI), Department of Homeland Security (DHS), U.S. Department of Agriculture (USDA), and the Food and Drug Administration (FDA) have developed a joint assessment program, the Strategic Partnership Program Agroterrorism (SPPA) Initiative. The purpose of this initiative is to conduct a series of assessments of the food and agricultural sector in collaboration with private industry and State volunteers.

These assessments support the requirements for a coordinated food and agriculture infrastructure protection program as stated in the National Infrastructure Protection Plan (NIPP), Sector Specific Plans (SSP), and Homeland Security Presidential Directive 9 (HSPD-9), *Defense of US Agriculture and Food*.

SPPA assessments are conducted on a voluntary basis between one or more industry representatives for a particular product or commodity, their trade association(s), and Federal and State Government agricultural, public health and law enforcement officials. Together, they conduct a vulnerability assessment of that industry's production process using the CARVER + Shock tool. The acronym "CARVER" stands for the factors assessed: **C**riticality, **A**ccessibility, **R**ecuperability, **V**ulnerability, **E**ffect, **R**ecognizability, and **S**hock.

As a result of each assessment, participants identified nodes or process points of highest concern, protective measures and mitigation steps that may reduce the vulnerability of these nodes, and research gaps/needs. Discussions of mitigation steps and best practices were general in nature, focusing on physical security improvements for food processing facilities and biosecurity practices and disease surveillance for livestock.

Research gaps and needs were also identified during each assessment. Enhanced scientific capabilities can provide an early awareness of an event and permit a rapid response that could reduce the impact of an event. Identified gaps and needs include developing a better understanding of threat-agent characteristics and improved detection methodologies. Most assessments also identified improved communications between government and industry during an emergency as a key gap.

To date, the CARVER + Shock tool has produced useful distinctions between nodes of higher and lower concern for each food or agriculture production process assessed. The tool has also shown commonalities across food and agricultural industries that make them more vulnerable to attack, and generic protective measures or mitigation strategies that could be beneficial to the industries assessed.

## **II. Background**

The Strategic Partnership Program Agroterrorism (SPPA) Initiative is a public-private cooperative effort established by the FBI, DHS, USDA, and FDA in partnership with State and industry volunteers. The intent of the initiative is to collect the necessary data to identify sector-specific vulnerabilities, develop mitigation strategies, identify research gaps and needs, and increase awareness and coordination between the food and agriculture government and industry stakeholders. To accomplish this, the SPPA brings together these Federal, State, local, and industry partners to collaboratively conduct a series of assessments of food and agricultural industries.

These assessments support the requirements for a coordinated food and agriculture infrastructure protection program as stated in the National Infrastructure Protection Plan (NIPP), Sector Specific Plans (SSP), and Homeland Security Presidential Directive-9 (HSPD-9), *Defense of US Agriculture and Food*.

The NIPP, SSP, and HSPD-9 all call for Federal, State, and industry partners to work together to protect the nation's infrastructure. Specifically, HSPD-9 establishes a national policy to defend the agriculture and food system against terrorist attacks, major disasters, and other emergencies. HSPD-9 directs the government to work with industry to: identify and prioritize sector-critical infrastructure and key resources; establish protection requirements; develop awareness and early warning capabilities to recognize threats; mitigate vulnerabilities at critical production and processing nodes; enhance screening procedures for domestic and imported products; and enhance response and recovery procedures.

The government requires a greater understanding of the food and agriculture industries in order to identify the critical infrastructure and then address protective measures. The SPPA initiative is a forum for government and industry officials to share information that helps in identifying sector-specific vulnerabilities, developing protective measures, identifying research gaps and needs, and increasing awareness and coordination between the industry and government.

## **III. Program Overview**

A team of 20 to 30 participants from Federal, State and local agricultural, food, public health, and law enforcement government agencies, food and agricultural companies, and their trade associations participate in each SPPA assessment. Approximately 6 weeks prior to an assessment, the assessment leader coordinates with the industry representatives to ensure they prepare background materials that will educate the team about the particular food or commodity's

production process. Shortly thereafter, participants receive training materials and background information in advance of a conference call. Approximately 4 weeks prior to the assessment, the leader hosts a conference call to explain the goals of the SPPA, train participants on the CARVER + Shock tool, and address logistical or other related questions in preparation for the assessment.

During the week of the assessment, government participants typically tour one or more facilities or production sites related to the industry being assessed. These tours aid participants in understanding the process flow prior to conducting the tabletop portion of the assessment. Following the tour(s), all participants meet for several days to conduct the CARVER + Shock assessment, which includes informational briefings and discussions of protective measures or mitigation steps and research needs.

Over the course of multiple assessments, the CARVER + Shock tool has produced a useful distinction between nodes of higher and lower concern within each food or agriculture process under consideration. The CARVER + Shock tool has performed well, considering the dynamics of 20 to 30 people with disparate backgrounds ranging from food processing and agriculture production to law enforcement, attempting to achieve consensus. The identification of nodes of higher concern and trends related to these nodes transfers well from assessment to assessment even if the specific scores resulting from individual commodity CARVER + Shock assessments may not be directly comparable with the scores determined at other assessments.

At each assessment, mitigation steps and best practices are proposed and discussed. These mitigation steps have been very general in nature. They have typically focused on physical security improvements, such as countermeasures that can be imposed or bolstered at highly accessible or vulnerable nodes. This may vary by facility and depend on the production process point, but may include cameras, additional supervision, restricting access to certain areas of a facility, color-coded uniforms or bump caps to designate work area, limits of personal items onto production floor, access cards, and process design changes.

Research gaps and needs were also identified during each assessment. These gaps and needs dealt primarily with developing a better understanding of food threat-agent characteristics (including inactivation conditions and environments), development of detection methods for threat-agents of concern, and improved communication between government and industry. Regarding threat-agents, the industry participants were most interested in how the agents survive in particular products or commodities. The topic of improved communication methods included both the dissemination of food and agriculture defense-related information to industry by government and industry modes of communication to the appropriate government agencies during an emergency.

#### IV. Assessment Status

Each sector specific agency (FDA and USDA) proposed lists of products or commodities within their jurisdiction that could be assessed for the SPPA program (See Table 1.) Trade associations facilitated interactions among their membership and the government participants. The order and extent of products or commodities assessed to date are based upon industry and State volunteers, as well as seasonal considerations. The list of assessments that have been conducted or scheduled to occur within one-year of the program’s inception is presented in Table 2.

**Table 1. USDA and FDA Site Visits Initially Proposed**

<b>USDA Proposed Site Visits</b>	<b>FDA Proposed Site Visits</b>
<p><u>Pre-Harvest</u></p> <ul style="list-style-type: none"> <li>• Aquaculture production facility</li> <li>• Beef cattle feedlot</li> <li>• Cattle stockyard/auction barn</li> <li>• Citrus production facility</li> <li>• Corn farm</li> <li>• Dairy farm</li> <li>• Grain elevator and storage facility</li> <li>• Grain export handling facility</li> <li>• Poultry farm</li> <li>• Rice mill</li> <li>• Seed production facility</li> <li>• Soybean farm</li> <li>• Swine production facility</li> <li>• Veterinary biologics firm</li> </ul>	<ul style="list-style-type: none"> <li>• Animal by-products</li> <li>• Animal foods/feeds</li> <li>• Baby food</li> <li>• Breaded food, frozen, raw</li> <li>• Canned food, low acid</li> <li>• Cereal, whole-grain, not heat treated</li> <li>• Deli salads</li> <li>• Dietary supplement, botanical, tablets</li> <li>• Entrees, fully cooked</li> <li>• Flour</li> <li>• Frozen packaged entrees</li> <li>• Fruit juice</li> <li>• Gum arabic (ingredient)</li> <li>• High fructose corn syrup (ingredient)</li> <li>• Honey</li> <li>• Ice cream</li> </ul>
<p><u>Post-Harvest</u></p> <ul style="list-style-type: none"> <li>• Deli meats processing</li> <li>• Ground beef processing facility</li> <li>• Hot dog processing</li> <li>• Import re-inspection facilities</li> <li>• Liquid eggs processing</li> <li>• Poultry processing</li> <li>• Retailers (further processing on-site)</li> <li>• School food service central kitchens</li> </ul>	<ul style="list-style-type: none"> <li>• Infant formula</li> <li>• Milk, fluid</li> <li>• Peanut butter</li> <li>• Produce</li> <li>• Fresh</li> <li>• Cut, modified atmosphere packaged</li> <li>• Retail setting</li> <li>• Seafood, cooked, refrigerated, ready-to-eat</li> <li>• Soft drink, carbonated</li> </ul>
<p><u>Related Industries</u></p> <ul style="list-style-type: none"> <li>• Transportation companies</li> <li>• Warehouses</li> </ul>	<ul style="list-style-type: none"> <li>• Spices</li> <li>• Vitamin/micro-ingredient premixes/flavors</li> <li>• Vitamins, capsules</li> <li>• Water, bottled</li> <li>• Yogurt</li> </ul>

**Table 2. Assessments Conducted or Scheduled (Sept. 05-06)**

<b>Status</b>	<b>Date</b>	<b>Sector Specific Agency</b>	<b>Industry</b>	<b>State</b>
Completed	11/2005	FDA	Yogurt	TN, MN
Completed	12/2005	FDA/ USDA	Grain – export elevators	LA
Completed	01/2006	FDA	Bottled Water	PA
Completed	02/2006	FDA	Baby Food – jarred applesauce	MI
Completed	02/2006	USDA	School Central Kitchens	NC
Completed	03/2006	USDA	Swine Production	IA
Completed	03/2006	FDA/ USDA	Frozen Food – pizza	WI, FL
Completed	04/2006	FDA	Juice Industry – apple juice	NH
Completed	04/2006	USDA	Egg Products – liquid	PA
Completed	05/2006	FDA	Fresh-Cut Produce – bagged salads	CA
Completed	06/2006	FDA	Infant Formula	AZ
Completed	06/2006	USDA	Poultry Processing	AR
Scheduled	07/2006	FDA	Fluid Dairy – processing	NY
Scheduled	07/2006	USDA	Beef Cattle Feedlot	NE
Scheduled	08/2006	USDA	Ground Beef Processing	KS
Scheduled	08/2006	USDA	Cattle Auction Barn	MO, KS
Scheduled	09/2006	USDA	Dairy Farm	ID

## **V. General Industry-Wide Vulnerabilities**

The very nature of the assessments conducted under the SPPA Initiative has been to determine the presence and extent of vulnerabilities at each node in an industry's production process (i.e., ground beef processing). Individual company participants provide perspective into industry-wide practices. When possible, this allows the results of a specific product assessment to provide insight into similar vulnerabilities that may be encountered in like-products or like-processes.

The general vulnerabilities identified over the course of many SPPA assessments have been highly dependent upon whether they are a food or agricultural product/commodity.

## Food Processing

Assessments of processed foods showed a common focus on vulnerabilities that could be a means to cause harm to public health or loss of life. Economic implications of each vulnerable food processing node were significant, but overtaken by the public health implications.

In general, the nodes of highest concern for food products were those in which direct human contact with the largest amount of product (large batch sizes) was both possible and likely. The largest amount of product was typically found in containers that hold either bulk raw ingredients, or large amounts of mixed ingredients. These vulnerabilities were especially true when human access to product or ingredients is a normal operation step such as in the manual addition of secondary ingredients. Additionally, secondary ingredients are a high concern because they are usually dispersed and mixed into large amounts of product during further processing.

In sum, for processed foods, the amount of product that can be directly contacted and exploited by a terrorist usually limits vulnerabilities. Thus, large batch sizes and secondary ingredients that will be mixed with large amounts of product stand out as critical.

## Agricultural Production

Agricultural products or commodities, such as live animals or plants, demonstrate different vulnerabilities. Assessments showed that readily available, highly transmissible or contagious plant and animal diseases are the greatest threat from an economic perspective. Only a single plant or animal may need to be infected to close our trading partners' borders to the product or commodity and pose a significant impact on the national economy. A zoonotic disease transmissible between animals and humans, as a threat-agent, raises the possibility for a dual impact to public health and the economy.

## **VI. Commonalities of Identified Mitigation Strategies**

Over the course of the SPPA assessments, participants discussed numerous mitigation strategies, and best practices. The participants did not come to consensus on all identified strategies and practices, but this was a first step and further discussion can occur outside the SPPA. Where feasible, strategies unique to a product, commodity, or facility were generalized to show applicability to others. Mitigation recommendations may not, and are not, expected to apply universally to all sites. The application of mitigation recommendations, even very general recommendations, must be based on a comprehensive determination of risk for a specific site. Most participants identified the following mitigation strategies:

## Physical Security Measures Based On Site-Specific Vulnerability Assessments

When possible, deterrents should be imposed or bolstered at highly accessible or vulnerable nodes. This may vary by site and depends on the production process point, but may include cameras, additional supervision, restricted access areas, color-coded uniforms or bump caps to designate work area, and limiting personal items on the production floor.

## Continue to Conduct Site-Specific Vulnerability Assessments

Where practical, industry may choose to conduct site-specific assessments to learn of vulnerabilities unique to that site. This activity can build upon the SPPA assessments, which are general product or commodity assessments. All vulnerability assessments should be periodically revisited. As new tools become available, industry should experiment to find the most useful tool for their specific product, commodity, or process.

## Food Process Design Changes

Process design changes, such as altering the time/temperature of a food processing step may be useful to eliminate certain threat-agents. This would require adequate information regarding the thermal stability of all possible threat-agents and any changes must provide sufficient benefit to outweigh any adverse affects on final product quality. Process design changes could also include the physical layout of a production facility (i.e., place critical nodes where employee traffic can be controlled or monitored.)

## Penetration Audits

Penetration audits may be a useful tool to assess or validate security procedures. They may also be useful to validate the results of risk assessments. Penetration audits may include having an outsider attempt to access the facility or may be conducted by having a current employee attempt to access another location within the facility to see if he or she is challenged or if his or her activity is noticed and communicated to superiors.

## Food and Agriculture Defense Incorporated into Procurement Selection Process

Food and agriculture defense-related parameters and Standard Operating Procedures (SOPs) could be placed in the procurement selection processes and vendor assurance programs. The goal is to assure the security of raw ingredients, and a positive side-effect would be to attain a trickle-down effect to implement food defense measures throughout the industry. For instance, producers may require that suppliers have a food defense plan and conduct food defense training.

### Raw Materials Inspection

Raw materials inspections procedures could be enhanced to include an emphasis on the detection of tampering or adulteration. This could include SOPs for rejecting opened, damaged, or altered goods, and quarantine and investigation procedures.

### Biosecurity Best Practices

Biosecurity and best practices for livestock and plants have encompassed two realms; protecting and isolating livestock and plants from pathogens, and mitigating the economic fallout after exposure. Discussion of best practices when dealing with protection and isolation were a cornerstone of past SPPA assessments that dealt with agricultural products or commodities. Highlighted and recurring themes include but are not limited to:

- isolating new livestock acquisitions,
- screening visitors, to include review of point of origin or recent travel locales,
- decontaminating clothing and material prior to entering and departing facility premises, and
- decontaminating materials used in the rearing process.

Additionally, industry participants should screen their water and feed suppliers, as well as transportation providers.

Best practices in a post-exposure state have received considerable attention during recent SPPA assessments. Highlighted best practices include a robust foreign animal disease (FAD) screening and detection regimen, immediate isolation of suspected FAD-infected animals, and effective depopulation and disposal practices. In addition to physical practices industry participant recognize the need for a public relations campaign designed to educate consumers and ease foreign market concerns.

### Employee Peer Monitoring Programs

Companies could create or further develop employee peer monitoring programs to include an emphasis on food and agricultural defense. Employees are a valuable asset and can be utilized to increase security for little or no additional cost to a company. Examples would include “badge challenges”, questioning anyone without a visible and valid company identification badge, and “location challenges”, questioning peers that are found in areas not associated with their job function. Another option is to team individuals together (buddy system) so one person does not work alone at specific critical nodes. The addition of another individual that verifies and oversees the production process provides dual control during a critical step.

## Awareness Training

Awareness training could be implemented to educate employees and staff about the importance of food and agricultural defense. These activities would need to be tailored to the appropriate audience at each level within an organization. Awareness training could include information regarding the implications of a terrorist attack on the U.S. food supply (including production agriculture). To further this goal, FDA and USDA offer a free web-based course at: [www.fda.gov/ora/training/orau/FoodSecurity](http://www.fda.gov/ora/training/orau/FoodSecurity)

## Trade Industry Group Best Practices:

More trade industry groups can encourage their members to adopt uniform food defense and agriculture security practices through guidance documents and best practices developed by industry and trade associations. Many protective measures require financial commitments from individual companies to make changes within their system or process design. Industry, in general, would prefer for trade organizations to promote the adoption of best practices.

## **VII. Commonalities of Identified Research Gaps and Needs**

Throughout the SPPA assessments, and subsequent discussions, participants identified numerous research gaps and needs. Research gaps and needs that were highly specific for a single product or commodity have been omitted or generalized so that they are more broadly applicable. Commonly identified research gaps and needs follow.

### Threat-Agent and Agent/Matrix Research:

Industry participants have expressed an interest or need for improved threat-agent information. The following agent or agent/matrix research needs were discussed by meeting participants:

- What threat-agents are applicable to food and agriculture industries, and can these lists of agents be tailored to specific products or commodities?
- Are agent inactivation temperatures, effects of environmental conditions, agent persistence, etc. known? Although it is not feasible to research the stability of all potential threat-agents against all scenarios, general threat-agent stability information in a representative variety of conditions and matrices would be useful.
- What oral dose is toxic or infectious for each threat-agent (biological and chemical)?
- What are possible or feasible ranges of terrorist capabilities for threat-agent production or acquisition?

### Incident Detection and Response:

Industry participants have requested information on the detection methods currently available for applicable food and agriculture threat-agents (biological and chemical), and which of these have been validated for their specific products. The following specific questions have been asked:

- What detection methods are currently available?
- Are the methods rapid?
- What methods have been validated against particular products, commodities, or processes?
- To whom are the methods/materials available (industry, emergency responders, etc.)?

### Improved Communication Channels:

There is an abundance of food defense and agriculture security information available from government websites, trade organizations, State and local health or agriculture departments, etc. The participants at several SPPA assessments have asked if it would be possible to create a single resource by consolidating these materials.

An additional communication issue was the need for simplified and uniform point-of-contact lists and procedures for suspicious incidents. Many industry and State participants requested clear protocols for whom to contact (besides local law enforcement) following a suspected contamination or terrorist event.

## **VIII. Commonalities of Identified Threat Indicators**

Threat indicators, early warnings of a possible suspicious event or planning for an attack, have been discussed at all assessments. Participants have focused upon very general threat indicators dealing with employee vigilance and awareness. These indicators include:

- Employees, visitors, vendors, and contractors, observed in areas where they have no legitimate reason to be.
- Someone expressing an unusual interest in the production process.
- Employee health patterns such as unusual absence or attendance patterns and illnesses related to particular job functions or work areas.
- Delays in deliveries, deviations from delivery schedules or evidence of product tampering.

## **IX. Overall Assessment Observations**

### Assessment Schedule

This schedule and format has worked well throughout the SPPA initiative. The pre-assessment training materials and conference call have adequately prepared participants for the assessment process and saves valuable time during the on-site assessments. The 3-4 day period provides sufficient time for completing the assessment.

## **X. Participant Perspective**

Although much information has been exchanged during the course of these assessments, the greatest benefit may be in the enhanced communication channels that are formed during each exercise. Numerous initiatives such as this, at the Federal and State levels to partner on security efforts, are the result of a shift to working in partnership to address security issues. Exercises such as the SPPA and others have further bolstered the trust between industry and their government partners while also allowing government agencies to tap into the valuable knowledge base found in private industry.

The comments received from industry participants and trade organizations regarding the SPPA assessments have been very positive. The structure of these assessments has been somewhat informal, allowing open discussions and questions. This informal atmosphere has further improved the interactions and open communications among the industry and government participants. The fact that multiple Federal agencies are represented has also been a great advantage for industry participants. Often a single question posed by industry can be addressed by the multiple perspectives of both the Federal and State food and agriculture leads, and law enforcement agents in attendance. Having all of these voices in the same room at the same time strengthens the industry perception that all facets of the Government are working in unison to improve the safety and security of the food industry.

## **XI. Conclusion**

It is virtually impossible to guard against all threats to the food and agriculture supply. Food and agriculture industries, like all facets of US commerce, must anticipate the possibility of a terrorist attack on their products and evaluate their preparedness and mitigation strategies to either thwart an attack or, at the very least, mitigate the damage, and recover from the economic and psychological impact of an attack. The SPPA initiative is a significant step towards hardening food and agriculture industries. This is accomplished by providing training and hands-on experience with a terrorism-focused assessment tool to industry

members; by providing Federal, State, and local government an in-depth look at the vulnerabilities that may be associated with facets of the food and agriculture industries; and by increasing communication between industry, government, and law enforcement stakeholders.