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AGROTERRORISM: THE THREAT TO AMERICA'S BREADBASKET

HEARING

BEFORE THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

NOVEMBER 19, 2003

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AGROTERRORISM: THE THREAT TO AMERICA'S BREADBASKET

WEDNESDAY, NOVEMBER 19, 2003

U.S. SENATE,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 9:30 a.m., in room SD–342, Dirksen Senate Office Building, Hon. Susan M. Collins, Chairman of the Committee, presiding.

Present: Senators Collins, Akaka, Durbin, and Lautenberg.

OPENING STATEMENT OF CHAIRMAN COLLINS

Chairman COLLINS. Good morning. The Committee will come to order.

Today, the Governmental Affairs Committee will examine the vulnerability of America's agriculture and food industry to terrorist attacks, what our Nation must do to defend against agroterrorism, and how prepared we are to respond to such an attack.

In the war on terrorism, the fields and pastures of America's farmland might seem at first to have nothing in common with the towers of the World Trade Center or our busy seaports. In fact, however, they are merely different manifestations of the same high priority target, the American economy. Even as he celebrated the toppling of the pillars of our economic power in the videotape released shortly after September 11, 2001, Osama bin Laden urged his followers to hit hard the American economy at its heart and core.

Nothing is more at the heart and core of our economy than our agriculture and food industry. It is a $1 trillion economic sector that creates one-sixth of our gross national product. One in eight Americans works in this sector. It is a sprawling industry that encompasses a half-billion acres of croplands, thousands of feedlots, countless processing plants, warehouses, research facilities, and factories for ingredients, ready-to-eat foods, and packaging, as well as the distribution network that brings food from around the Nation and around the world into the neighborhood markets and restaurants via virtually every mode of transportation.

Hundreds of pages of U.S. agricultural documents recovered from the al Qaeda caves in Afghanistan early last year are a strong indication that terrorists recognize that our agriculture and food industry provides tempting targets. According to a new RAND Corporation report, which will be released at today's hearing, the industry's size, scope, and productivity, combined with our lack of preparedness, offer a great many points of attack. Among our witnesses

today will be the report's author, Dr. Peter Chalk, a noted expert in biowarfare.

Al Qaeda's interest in agriculture is not limited to studying documents. These killers have practical, hands-on knowledge. A CIA report released in May confirmed that the September 11 hijackers expressed interest in crop dusting aircraft, an effective and remarkably simple way to spread biological agents, including plant and animal diseases, over large areas.

We have also learned from the CIA that Osama bin Laden himself has considerable knowledge of agriculture. He controlled sunflower and corn markets in the Sudan in the mid-1990's and may have used his farms to train terrorist operatives.[1]

This horrific page is from The Poisoner's Handbook, an underground pamphlet published here in the United States that provides detailed instructions on how to make powerful plant, animal, and human poisons from easily obtained ingredients and how to disseminate them. It was found in Afghanistan in the hands of a group known to support al Qaeda.

Last spring, a Saudi cleric who supports al Qaeda and has since been arrested issued a fatwa, a religious ruling, that justified the use of chemical and biological weapons, including weapons that destroy tillage and stock.

To appreciate the potential impact of agroterrorism, consider the economic and social impacts of naturally occurring events of agricultural disease outbreaks. Here are just three examples.

The 1997 outbreak of foot and mouth disease in Taiwan had an immediate cost to farmers of $4 billion. The estimated cost to date of trade embargoes is $15 billion. The 2001 outbreak of foot and mouth disease in Great Britain cost $1.6 billion in compensation to farmers. The lost revenue to tourism, a manifestation of the psychological impact, is estimated at $4 billion.

The 2002 outbreak of exotic Newcastle disease in California led to huge economic losses for poultry farmers and the quarantine of 46,000 square miles. Included in this area was the U.S. Army National Training Center at Fort Irwin.

But to call these three cases naturally occurring ignores an important point. Each was caused by human error, by carelessness, by a lapse in security. In Taiwan, it was one infected pig imported from Hong Kong. In Britain, it was one batch of infected feed at one farm. In California, it was one infected rooster smuggled across the border from Mexico. The ease with which terrorists could replicate these events is alarming.

Since September 11, we have done much to make our Nation more secure. Nevertheless, much of America remains unprotected. A vital sector remains largely unguarded and an attack could be devastating.

As we will hear today, an attack upon just one segment of the food supply could cripple our economy, require geographic quarantines, cause massive social upheaval, and, of course, produce illness and death.

To prevent a future attack, we must first understand the danger. The RAND report describes the threats and vulnerabilities and ex-

[1] Chart entitled "Terrorists' Interest in Agroterrorism," appears in the Appendix on page 160.

plores the likely outcomes of a possible agroterrorist attack. It is a call to action.

Understanding current Federal efforts to prevent and respond to a terrorist attack will help us understand what we need to do to better address our vulnerabilities. Therefore, we will also hear testimony today from representatives of the Department of Agriculture, the Food and Drug Administration, and the Department of Homeland Security, who will outline existing efforts and capabilities as well as what we must do to deter, detect, and respond effectively in the event of an attack.

As the chart to my left shows,[1] should there be an attack, more than 30 agencies may be involved. This is an example of the 30 agencies that would be involved in the event of an outbreak of foot and mouth disease. We must make sure that the efforts of these 30 agencies are effectively coordinated and that the Federal Government has a plan. After all, the impact of an ineffective Federal response could be devastating.

According to the National Defense University, even a limited outbreak of foot and mouth disease on just ten farms could have a $2 billion financial impact and wide-ranging effects on society, including the impairment of military deployment and readiness. These simulations are based upon the research of Dr. Thomas McGinn, who will also testify before us today.

Congress has not held a hearing devoted to agroterrorism since 1999, 2 years before the September 11 attacks on our Nation. That is not to say that no work has been done on this issue since that time. In addition to the work of the Federal departments and agencies represented today, Senator Roberts, who held the 1999 hearing, worked with me to help write the food safety provisions included in the Bioterrorism Act. Senator Durbin has worked hard to raise awareness of food safety vulnerabilities. And my distinguished colleague Senator Akaka, perhaps more than any other Senator, has worked toward legislative solutions to our Nation's vulnerabilities to possible agroterrorist attacks. Our first witness today, Senator Talent, has also been an outstanding leader in this effort as the chair of the Agriculture Committee's Subcommittee on Marketing, Inspection, and Product Promotion.

I look forward to working with Senator Talent as well as with the Members of this Committee to make sure that this aspect of homeland security receives the attention and the resources it deserves. We must join together on a bipartisan basis to address this growing threat before it reaches our soil.

I would now turn to Senator Akaka for his opening statement. Senator Akaka.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. Thank you very much, Madam Chairman. I also want to welcome Senator Talent and to tell him that I will be willing to work with him on this issue.

Thank you very much, Madam Chairman, for scheduling this hearing today which is so important to our country. Agroterrorism

[1] Chart entitled "30 Agencies Involved in Possible Foot and Mouth Disease Outbreak," appears in the Appendix on page 161.

is an important subject that receives too little attention. Perhaps it is easier to talk about terrorists attacking people than about terrorists attacking animals or grain production. Unfortunately, the two threats cannot be separated. To attack the Nation's food supply is to attack all of us directly.

After September 11, the President placed agriculture on the list of critical infrastructures that need to be protected from a terrorist attack. Since then, USDA has moved to improve its preparedness, prevention, and response efforts in the event of an agroterrorist attack.

We are being warned that America must do more to protect the U.S. agricultural resources. Despite the warnings about the vulnerability, as expressed by the Chairman, of this important sector of our country, our response has been woefully inadequate.

The Partnership for Public Service recently issued a study that examined the Federal Government's ability to defend against a bioterrorist attack. The Partnership report found that Federal agencies responsible for safeguarding our agriculture would face crushing burdens if our food and water supplies were contaminated.

The General Accounting Office issued three reports in the past year examining food processing security, foot and mouth disease, and mad cow disease. The GAO report and others suggest that we have a long way to go to prevent and prepare for an attack on our agriculture.

An unclassified CIA report released this month warns that advances in biotechnology have the potential to create a much more dangerous biological warfare threat. We must be mindful that any techniques that can be used to develop new bioweapons can be applied to developing threats to our agriculture.

The vulnerability of America's agriculture has long concerned me. When I served on the House Agriculture Appropriations Subcommittee, I supported the USDA's Animal and Plant Health Inspection Service, which plays a critical role in protecting our borders and farms from agricultural pests and diseases, a critical mission for my home State of Hawaii.

As a U.S. Senator, I continue to be concerned about this problem. In the 107th Congress, I introduced legislation to enhance agricultural security in the United States. Unfortunately, that bill was not considered during the last Congress and I again introduced legislation to address the shortcomings in agricultural security preparedness. My two bills, S. 427, the Agriculture Security Assistance Act, and S. 430, the Agriculture Security Preparedness Act, focus on the need to increase coordination in confronting the threat to America's agriculture industry.

The two measures provide for better funding and better coordinated response and defense to an agroterrorism attack. The first bill is primarily aimed at assisting States and communities in responding to threats to the agriculture industry. The legislation authorizes funds for communities and States to increase their ability to handle a crisis. It also encourages animal health professionals to participate in community emergency planning activities to assist farmers in strengthening their defenses against a terrorist threat.

The second measure will enable better interagency coordination within the Federal Government. The legislation establishes senior-

level liaisons in the Departments of Homeland Security and Health and Human Services to coordinate with the USDA on agricultural disease, emergency management, and response. Also, the bill requires DHS and USDA to work with the Department of Transportation to address the risks associated with transporting animals, plants, and people between and around farms.

No one disputes the saying that an ounce of prevention is worth a pound of cure. The Nation's capability to counter agroterrorism is increasing. However, the central importance of agriculture to our country suggests greater efforts are needed.

The consequences of a lack of preparedness could be quite high. My two bills will help our Nation act now so that a future agroterrorist attack can be avoided or quickly responded to before the damage to lives or livestock is too great.

I look forward to our witnesses this morning and look forward to a productive discussion. Thank you, Madam Chairman.

Chairman COLLINS. Thank you, Senator.

I know that our first witness is on a very tight schedule this morning so I am going to call upon him for his statement and then come back and turn to Senator Lautenberg for his opening remarks, if that is acceptable to the Senator from New Jersey.

Senator LAUTENBERG. Yes.

Chairman COLLINS. Thank you.

It is with great pleasure that I now introduce my esteemed colleague, Senator Jim Talent of Missouri. Senator Talent is the Chairman of the Senate Agriculture Subcommittee on Marketing, Inspection, and Product Promotion, which has jurisdiction over the Department of Agriculture's Animal and Plant Health Inspection Service. He represents a leading State in agriculture production and his commitment and leadership in protecting our Nation's food supply is a real asset not only to his State, but to our entire Nation. Senator Talent, we are glad to have you here today.

TESTIMONY OF HON. JAMES M. TALENT,[1] A U.S. SENATOR FROM THE STATE OF MISSOURI

Senator TALENT. I am very grateful to be here. Thank you, and the Ranking Member Senator Akaka, and thanks to Senator Lautenberg also for allowing me to go first. In return, I am going to be as brief as I can be.

I want to start off by thanking you for holding this hearing. We really are past due, I think, in holding another hearing on this important issue. We need to raise the visibility of the question of food security. Contrary to what some of us believe, without thinking about it, food doesn't come from a grocery store. It comes from the ranches in the West. It comes from the farms in the Midwest. It comes from the potato farms in Maine, Madam Chairman, and it is vulnerable to attack at all different levels of the production chain.

I want to thank you for allowing me to address the Committee. I am the Chairman of the Subcommittee on the Agriculture Committee that has jurisdiction over marketing, inspection, and product promotion, and therefore over this issue.

[1] The prepared statement of Senator Talent appears in the Appendix on page 53.

I do think it is important at the outset of the hearing, and since I am the first witness, maybe I can do it, to provide some notes of reassurance to consumers. We do have the safest and the most abundant and the most affordable food supply in the world. That was true before September 11. I think it is still true.

But what we are all recognizing here is that a system that was designed to protect against incompetence or unintentional mistakes that might allow pests or disease into the system is not necessarily designed as well as it should be to protect against an intentional attack. We have begun that transition in the last several years, but we need to make certain that we complete it and complete it as soon as possible because the stakes, as you have pointed out, Madam Chairman, are huge.

Apart from the threat to safety, which is, of course, the No. 1 thing, the diseases introduced in the system can and have affected people.

There is also a tremendous threat to the economy, and one gets the sense that is really what the terrorists are after. They want to spread fear and a lack of confidence in the food system. Agriculture sales account for 13 percent of the GNP. They are nearly one-sixth of all jobs in the United States. Of course, in the Midwest, where I am from, they loom as an even greater proportion of the economy in Missouri and the States around Missouri, and you have detailed, I think very well, Madam Chairman, what happens when there is an outbreak of some kind of food-related disease.

Canada's beef prices have declined 50 percent since BSE was discovered there. You have talked about the effect of swine fever in the Netherlands, foot and mouth disease in Taiwan, foot and mouth disease in the European Union. We all know the impact of BSE in Britain, and not just on the beef business there, but also on the tourist business.

And this is why it is so crucial to Missouri, Madam Chairman, because our two biggest parts of the economy are agriculture, agribusiness, and tourism. An outbreak of BSE or FMD or something like that in Missouri or anywhere near it would have a devastating impact, or could have a devastating impact on the economy, depending on how prepared we are and how quickly we act, and that is really what the hearing is about.

The experts in this, and you are going to have them here, I am not going to try and anticipate what they are going to say, but they talk about the importance of things like geography. We all know that livestock in particular tends to be raised in close quarters. There are certain parts of the country that are responsible for most of the livestock production and so the diseases tend to spread quickly because the animals are close together.

That emphasizes the importance of timing. We need to anticipate where this is most likely to occur. We need to have protocols in place so that we have confidence, we detect these diseases quickly and respond as quickly as possible. It took the Europeans 2 weeks to discover FMD in their domestic livestock and that is too much.

The producers, as you know, Madam Chairman, are already cooperating. It is their job to stay in touch with their herds and their cattle and their pork. They know what is going on there and they will participate and are participating in protocols with public

health agencies, with veterinarians, with law enforcement, so we can count on them, anyway, to do their part of the work.

What strategy should we use? I can't emphasize enough in your deliberations, Madam Chairman, and we are going to do this in the Agriculture Committee, the importance of cooperation and partnerships and established protocols. That graph that you put up is really a pretty damning graph. There are all these agencies that are involved in it. That is probably too many. At the very least, we have to be certain that they have protocols in place, they know how they are to work together to prevent this and respond quickly if and when it happens. We don't want this to be some kind of fire drill, when the alarm goes off, where they are all running around doing the same thing, and I am certain that is what your hearing will look into.

I want to, in closing, point out some of the good work that we are doing in Missouri. I have written testimony I would like to submit for the record if I could, Madam Chairman——

Chairman COLLINS. Without objection.

Senator TALENT [continuing]. By Dr. Ab Womack, who is the Co-Director of the Food and Agricultural Policy Research Institute at the University of Missouri.[1] If there is anything, and there is a lot going on good in agriculture in Missouri, Ab Womack knows about it. I would encourage you, Madam Chairman and staff, to consider him a ready resource if you want advice about this.

We have established an alliance at the University of Missouri and we are already partnering with producers, with life sciences—we have a lot of life science research centers in Missouri anyway—public health agencies, law enforcement, becoming a kind of center for developing protocols to deal with this and prevent it and address it quickly if and when it occurs, and hopeful of being able to work at the university with the Department of Homeland Security in the future to try and prevent this.

We have a big stake in Missouri, a big stake in the Midwest, but everybody in the country does. I am glad you are holding this hearing to raise the visibility and the importance of this and I am sure a lot of good is going to come out of it.

Thank you again. I thank again my friend from New Jersey for allowing me to go first.

Chairman COLLINS. Thank you very much for your testimony. I know I speak for all the Members of this Committee when I say that we look forward to working with you on solutions.

Senator TALENT. I have talked with Senator Cochran and he is, of course, extremely interested in this and I expect we can move ahead together on it. Thank you.

Chairman COLLINS. Thank you.

Senator LAUTENBERG. Madam Chairman, before Senator Talent leaves, I received my basic training in Missouri, in the Ozark Mountains, and as I dug a foxhole there with mighty strokes of a very sharp pickaxe, I couldn't get anywhere and I am delighted to hear that Missouri has something else besides that. [Laughter.]

Senator TALENT. Well, Senator, you were undoubtedly in Fort Leonard Wood, and if you dig at Fort Leonard Wood, you will hit

[1] Prepared statement by Dr. Ab Womack appears in the Appendix on page 162.

rock. It is one of the reasons the Army has established that. It sort of beefs up our recruits. [Laughter.]

But you go a little further south and east and you get to the foothills, some of the best farmland in the country, and then you go north and west. We have a lot of interesting places in Missouri. I am glad you were there, Senator. Come any time.

Chairman COLLINS. Thank you, Senator, and Senator Lautenberg, thank you for your courtesy in letting our witness proceed before your opening remarks.

OPENING STATEMENT OF SENATOR LAUTENBERG

Senator LAUTENBERG. I was pleased to do that, Madam Chairman, because I am grateful that you are examining this subject, that we have a chance to take a look at it today.

In the last few years, we have worked so hard to reduce the country's vulnerability to terrorist attacks, and it is a paradox when you think about it, that we now are moving to organically-produced products because we want to rid ourselves even of the slightest taint of a chemical or materials that might interfere with the purity of the product. And here we are, recognizing how vulnerable we all are to an attack on our agriculture, on our food supply.

Unfortunately, our food chain from production to processing to distribution and consumption presents an all too easy target for those who want to harm America, and few targets have the impact that one could conceive as that coming from our food supply, something unknown that takes time to discover and then the time involved in reaching a large group of people in a given area, possibly a huge group if things go as one could imagine.

As one of our witnesses today, Dr. McGinn of North Carolina's Department of Agriculture has put it, our food supply provides a big bullseye to some terrorists. Though people may not realize it, we actually have agriculture in my State, despite it's being densely populated—the most densely populated State in the country—we are referred to as the "Garden State" and there is a reason for that. New Jersey was a place of wonderful gardens and food production, and even though we are so crowded, we still today have nearly 10,000 farms. Most of these are family farms. They cover about 800,000 acres, and 800,000 acres in New Jersey, when you don't have a lot of acreage to spare, is quite significant.

We produce fruit, vegetables, some corn, milk, greenhouse and other specialty crops and we are the Nation's second leading producer of blueberries and the fourth leading producer of cranberries in the country. Agriculture contributes $800 million a year to New Jersey's economy, and yet for 2003, we have received only $146,000 for plant and animal disease response and surveillance and the Counterterrorism Food Safety and Security Program.

This compares rather poorly with other States. If you compare our population sizes, this sum by no means represents a proportionate ratio.

So given the size of our industry and our proximity to some of the biggest most vulnerable markets in the country, the poultry food safety funding that we receive is of concern to all of us in New Jersey. One of the things I would like to hear, Madam Chairman,

this morning is how we assess threats to our food safety, how we allocated Federal resources to respond to these threats.

Again, I congratulate you for holding this hearing. It is more than overdue. I will be anxious to hear what the witnesses have to say and look forward to the outcome of this hearing.

Chairman COLLINS. Thank you, Senator.

I would now like to call our second panel of witnesses forward. Our witnesses on this panel will provide an overview of agroterrorism by outlining the range of threats to our food chain, the vulnerability terrorists could exploit, and the economic, social, and public health consequences of such an attack.

Dr. Tom McGinn is the North Carolina Department of Agriculture's Assistant State Veterinarian and its Director of Emergency Preparedness. Dr. McGinn has worked with the National Defense University on computer simulations that illustrate the effects of attacks on various segments of the agriculture and food industry.

Dr. Peter Chalk is a policy analyst at the RAND Corporation and is the author of a new report that I mentioned in my opening statement that is entitled, "Hitting America's Soft Underbelly." It offers an enlightening assessment of our exposure to agroterrorism and makes several important policy recommendations.

Colleen O'Keefe joins us from the Illinois Department of Agriculture, where she is Division Manager of Food Safety and Animal Protection. Ms. O'Keefe will describe the Partnership for Security in Agriculture, an initiative among eight Midwestern States to develop a response plan.

I want to thank all of our witnesses for joining us today, and Dr. McGinn, we will start with your testimony. I understand that you have a PowerPoint presentation that you are going to use.

TESTIMONY OF THOMAS McGINN, NCDA&CS,[1] NORTH CAROLINA DEPARTMENT OF AGRICULTURE

Dr. MCGINN. Thank you. I just also want to add that I am the President of the State Animal Response Team for North Carolina. That is 42 organizations in a public-private partnership to respond to any animal in any disaster anywhere in North Carolina using the Incident Command System. So it is a public-private partnership on our State level and also on our country level. I am also Deputy Team Leader for VMAT–3, which is part of the National Disaster Medical System. So I am deployed both for State and national animal disasters.

Chairman COLLINS. You have a lot of experience and that is one reason we were so eager to have you testify this morning.

Dr. MCGINN. Thank you. Thank you for allowing me to be with you today.

I would like to start out by saying that the intentional use of a weapon of mass destruction against agriculture is agroterrorism, and what I would like to share with you today is how agriculture is both the perfect target and the perfect weapon. I am going to share with you some simulations that demonstrate the need for us to harness the resources and the energies of all aspects of govern-

[1] The prepared statement of Dr. McGinn with an attachment appears in the Appendix on page 58.

ment as well as public and private partnerships and the citizens of our country for the protection of our food.

I mentioned that agriculture is the perfect weapon. It is easily obtained. It is easily creating fear. It has collateral destruction, will destroy our food, and the persons that would actually use a biological event against terrorists are not harmed by it. It has been around since the beginning of history. The history of biological warfare says that warring nations seek to destroy the food producing capability of their enemies. So you can see why it would be a perfect weapon.

You have already mentioned that it is a perfect target. It is the largest single sector in our U.S. economy and it contributes $12 billion to the balance of trade.

Also, information discovered from Afghanistan illustrates that al Qaeda is interested in using these weapons against us.

My next slide will be a simulation that demonstrates the intentional introduction of foot and mouth disease into multiple locations in our country. In the lower left corner, you will see the days as they go forward and the States that are infected during each day, and then you will see the arrows that will go across the slide, indicating the spread of the disease. So you see Day One is the first day of infection. What you will see here is that by Day Five, we are already in 23 States, and that Day Five is the first day that the disease is detected. So it is subclinical. It cannot be seen until Day Five and then it is in 23 States.

By Day Eight, it is in 29 States, and then we would probably be in a position where there will be a national stop movement declared. The national stop movement would result ultimately in an estimated destruction of over 23 million animals.

This disease also is infectious to meat and dairy products, so not only would the stopping of the movement of animals occur, but also then there would have to be restrictions on the movement of food, as well.

So imagine what would be going on at this point in time as this sort of scenario occurs and the capabilities of these 30 organizations to respond to something that is already in 20 to 30 States before we have the capability of detecting it with current technologies. Imagine if such a disease was also a zoonotic disease, a disease that could affect humans, as well, and the kinds of concerns and frustrations that we would be experiencing and the effects on our economy that would occur.

With this scenario, every day that can be saved, particularly early on, is a reduction in millions of lost animals and billions of dollars saved to our economy. So the earlier we can detect this and the quicker we can respond, the more effective we would be at preventing this kind of a destruction.

If you look at the model I just shared with you and calculated the number of people that would be needed to respond to such an emergency, what we have done is sat down and added up all the people for decon, for permitting, for treatment, and for disposal of animals, for feeding and all these sorts of things, and come up with a total number of over 700,000 people would be needed at the maximum number of people at the greatest level of outbreak in our country.

Seven-hundred-thousand people—our Nation is not prepared to be able to respond with that kind of response. Therefore, we need statutory authority that requires the training and exercising on the county level, the State level, and the national level to be able to get the organizations that you have shared with us earlier to be in a coordinated and integrated capabilities to respond to this kind of an outbreak.

First responders, not only in the agricultural area but also as it relates to law enforcement, as it relates to fire, emergency medical services, all will be pressed into service in a situation like this, as well as the National Guard and the military.

I also believe that this total number of people, that this demonstrates the need for having the ability to have State and county animal response teams, much like we have volunteer fire departments that already exist in our country.

That was a simulation that I showed you last on an intentional introduction into the food production area. This is an intentional introduction of two pathogens into the food processing area. What this demonstrates, and you will see the days as it moves forward over on the right of this particular slide, on December 1, an introduction of two pathogens at the processing level in multiple sites. Again, it could be several sites or they could have actual delivery into many sites at one time. Obviously, the more sites they deliver to, the quicker these sorts of pathogens will spread throughout our country.

This slide demonstrates the number of sick people, the number in the ICUs and dead people that would result from the distribution of infectious material from these processing plants into single, just into single grocery stores and restaurants throughout our country.

Imagine the fear that would result from such an intentional introduction. Such a biological attack would create signs, both gastric, respiratory, and neurological. Anybody who is sick with any kind of a disease, whether it is flu or an allergy or whatever, or just a simple stomach virus, would think that they were infected, as well. This would overload our public health system and the confidence in the country's ability to respond. Our government's ability to respond would be called into question and fear would be widespread.

We have become a Nation concerned about receiving anthrax in our mailboxes. Imagine what it would be like to be a Nation concerned about opening our refrigerators and anthrax being in our refrigerators, as well.

Another method that terrorists could use would be the introduction of a pathogen into the quality control system. Imagine they just intentionally introduced it into a food sample or into a diagnostic laboratory. Our country would not even have to be infected with the disease. They just put an infectious material into the laboratory system and then the appearance of an infectious disease in our country would then exist.

And imagine the confidence that we would lose, or the people of our country would lose, in our system even with such an introduction. Our inability to validate the movement of animals and product would cause further loss of confidence in the public as we

would deal with these sorts of introductions within the quality control systems.

Imagine people purchasing products from other countries, not because they had a preference for taste, but because they were scared that it might be infected with some substance.

The protection of our food supply, therefore, is central to our culture and central to our government's stability. As consumers, we are looking for government agencies to speak with one voice. We are looking for them to actually give us the roles and responsibilities that they will undertake, the roles and responsibilities of the private sector, and then of the citizens themselves.

We were looking for funding on the State level to actually do the sorts of things that can't be done on the national level to actually determine what our vulnerabilities are and how they, in fact, reduce some of the risk associated from what these simulations detect.

Our country is looking at these 30 organizations that you shared to stand on the walls of a fort to protect food security arm in arm, not to be in the bunkhouse arguing over which particular agency is going to defend which section of the wall.

Here are the issues that we are addressing tangibly in North Carolina. These are things that we are currently doing to address the concerns.

The first one, detection and surveillance. You can see our education programs are critical, educating consumers, building resilience within the consumers as part of what we must be about. Instead of fear, we have got to instill confidence and resilience. Having an integrated human and animal alert system—this is something that we are pioneering in North Carolina with public health, emergency management, and the State Bureau of Investigation as well as the FBI.

And automated remote sensing capabilities. We have got to be able to detect earlier these sorts of pathogens. If we can see them before they are clinical, then we are going to again save millions of lives—millions of lives in terms of animals and billions of dollars.

And then containment and eradication, the ability to force multiply. The 700,000 people I shared with you earlier, we have got to train right down to the local level. These are the people that are going to be responding, not some group of folks coming in quickly from a national capability.

Increased technology, such as vaccines. We are going to have to expand our vaccine capabilities, our pharmaceutical capabilities. The Strategic National Stockpile is a very good place to actually expand that capability and to roll that capability out, as well.

And increase our laboratory capacity. If you take the same scenarios and look at what the costs are, how much laboratory capacity is needed, then we start to see the kinds of vulnerabilities that we are currently challenged to have in place.

Data management, a national multi-hazard GIS geographic information system. We have got to be able to know where these farms are and where these processing facilities are and how they move product long before we get involved in such an attack. Trying to determine where these places are located during an attack takes

weeks to months and we don't have the luxury, as you can see, of any days to do these sorts of things.

Advancing livestock modeling capabilities. We have got to be able to put economic numbers associated with these models and we are very diligently trying to determine what kind of intervention strategies we need to do to return to normalcy in terms of production and processing, and also what are the costs associated with these intervention strategies.

And finally, vulnerability assessment and risk reduction capabilities. We have got a food security program that is looking all the way from the raw ingredients through the producers, processing, distribution, and all the way to the retail and strengthening the chain, every link in that chain, in terms of what are the vulnerabilities. We do not know like we need to know what these vulnerabilities are. We do have a food safety culture, an excellent food safety culture in this country. We have got to develop a food security culture and this is a program that we are pioneering with AFDO, NASDA, and ASTHO in North Carolina.

Continuity of operation programs are critical on the national level, but also right down to the processor and the food level.

And then lastly, statutory terrorism training and exercising, much like what is done in the areas for radiological events. It is required. It needs to be required, and that would actually encourage the integration of these different agencies to work together.

We need Federal guidance. We need Federal leadership and Federal resources. We have got to be able to do that on a central basis and on a decentralized basis. The integration and coordination is essential.

There is funding that has been put forward in our State and all the other States that I have seen for law enforcement and for public health, for hospitals, targeted funding.

Agriculture, as you can see from these simulations, is part of the critical infrastructure of our country and similar funding directed, targeted at the protection of our food security coming down through Homeland Security, ODP, through specific agencies with deliverables associated with that will ensure the consumers of our country and the confidence that they have had up until now will continue forward as we face the kinds of threats we will be facing in the future.

Thank you very much for the opportunity to be with you today.

Chairman COLLINS. Thank you very much, Doctor, for an excellent presentation. When you were showing how quickly disease would spread, I was reminded of the "Dark Winter" exercise that tested what the spread and reaction would be to a deliberate contamination with smallpox. These simulations are very similar with the rapidity with which the disease spreads and the public reaction. So thank you for sharing your simulations.

Dr. MCGINN. It does also point out that within so many States, that it is a homeland security issue. It is not a State by State issue.

Chairman COLLINS. That is a good point, as well.

Dr. Chalk, thank you for being with us and please proceed with your testimony.

TESTIMONY OF PETER CHALK, POLICY ANALYST,[1] RAND CORPORATION

Dr. CHALK. Thank you, Madam Chairman, for the opportunity to testify on this important subject.

Over the past decade, the United States has devoted considerable resources to upgrading homeland security in the context of improving our response contingencies against attacks against critical infrastructure in the country. While many gaps remain, this emphasis on preparedness and response has led to the development of at least nascent command structures that now have begun to span the ambit of potential terrorist attacks from conventional bombings right through to more exotic chemical, biological, nuclear, and radiological incidents.

Agriculture, however, is one area that has received relatively little attention in this regard, particularly with respect to accurate threat assessments and consequence management procedures. Indeed, the sect was only included as a specific component of U.S. National Counterterrorist Strategy following al Qaeda's attacks on September 11.

The purpose of my testimony today is to expand the debate on homeland security by looking at some of the vulnerabilities that are inherent in agriculture and the capabilities that would be required to exploit those vulnerabilities.

A few words about the importance of agriculture. It is absolutely essential to the economic well-being of the United States. Although farming directly employs less than 3 percent of Americans, one in eight Americans actually are employed in an industry that is either directly or indirectly supported by food production.

Cattle and dairy farmers alone earn between $50 and $54 billion a year through meat and dairy sales, while roughly $50 billion a year is raised through agricultural exports. At the time of the 2001 attacks, agriculture constituted 9.7 percent of the gross domestic product of the United States, generating cash receipts in excess of $991 billion.

Unfortunately, given this economic importance, agriculture, the inherent nature of agriculture does remain vulnerable to disruption and sabotage, both naturally occurring and deliberate. A number of factors account for this.

Agriculture is both a large and intensive industry in the United States. Most dairies in the country can be expected to house at least 1,500 lactating cows at any one time, with the larger facilities housing upwards of 10,000 animals. And as we have heard, unlike human beings, these herds tend to be in very concentrated populations and are reared and bred in close proximity to one another. An outbreak of a contagious disease at any one of these facilities, particularly if it was airborne in character, would be very difficult to contain and could quite easily necessitate the wholesale eradication of all exposed animals, which is both technically and financially demanding.

U.S. livestock has also reportedly become increasingly disease-prone as a result of husbandry changes that have been designed to elevate the volume, quality, and quantity of meat production or to

[1] The prepared statement of Dr. Chalk appears in the Appendix on page 73.

meet the specific requirements of individual vendors. Biotechnic modifications have reportedly increased the stress levels of exposed animals, which has, in turn, lowered their natural tolerance to disease while at the same time increased the volume of bacteria that they could be expected to shed in the event of an infection.

There is also insufficient farm and biosecurity surveillance. Farmers in the United States have tended not to think about a deliberate attack against their facilities, much less actively planned to prevent one. Farms have, as a result, evolved as relatively open affairs, seldom incorporating concerted means to prevent unauthorized access or intrusion.

Food processing facilities also lack uniform biosecurity measures, particularly those that have proliferated at the medium to lower end of the production spectrum. Thousands of these facilities exist across the country, exhibiting uneven standards of internal quality control, questionable biosurveillance, and transient, largely unscreened workforces. Entry-exit controls are not always adequate and may not actually be practiced at all, and even basic measures, such as the padlocking of warehouses, may not be practiced.

There is also an inefficient passive disease reporting system in the United States. Responsibility for the early identification of a disease necessarily rests with the agricultural producers, but this is being hampered by the lack of clear communication channels between producers and regulators and reportedly also by an unwillingness on the part of farmers to quickly report disease outbreaks for fear that this could lead to uncompensated destruction of their livestock.

Finally, there is inappropriate training of veterinarians to recognize and treat foreign animal diseases. In part, this reflects the lower number of people actually entering into veterinarian science and also the preference choices of those that do, many of whom now tend to focus on domesticated animals because that is where the money is. Fewer and fewer people are actually focusing on large-scale husbandry.

Now, although vulnerability does not equate to risk and there are few reported actual incidents of terrorists employing biological agents against agriculture, a realistic potential for such a contingency certainly exists. Indeed, what makes the vulnerabilities in agriculture so worrying is that the capabilities that are required to exploit those vulnerabilities are not significant and certainly far less significant than those that would be required to carry out a mass attack against humans using biological agents.

At least four factors account for this. First, there are a large number of potential pathogens from which to choose, with at least 15 Class A agents being identified as having the ability to severely disrupt or affect animal populations. Most of these diseases are environmentally hardy and many are not routinely vaccinated against in the United States.

Second, many foreign animal diseases cannot be transmitted to human beings. This means there is no requirement on the part of the perpetrator to have an advanced understanding of animal disease science nor is there any need for elaborate containment procedures or personal protective equipment in the preparation of the agent.

Third, if the objective is human death, the farm-to-table food continuum offers a low-tech yet highly conducive mechanism for the transport and dissemination of bacteria and toxins, such as salmonella, E. coli, and botulism. Developments in the farm-to-table food continuum have greatly increased the potential number of entry points for these contaminants, which has greatly augmented the technical ease of actually carrying out an orchestrated foodborne attack.

Finally, animal diseases can be quickly spread to affect large herds over wide geographic areas. That reflects both the intensive nature of farming in the United States as well as the increased disease susceptibility of animals. There is, in other words, no obstacle of weaponization. I would like to stress that, because weaponization is often cited as the most important barrier that needs to be overcome in terms of actually weaponizing biological agents and one of the major factors that has so far prevented substate use and escalation to that level.

The ramifications of a concerted attack against the food chain would be far-reaching and they could quite easily extend beyond the immediate agricultural sector to affect other segments of society. We would have mass economic disruption, generating costs that would be expected to cross at least three levels. You would have direct costs associated with containment and eradication procedures. You would have indirect costs associated with losses that accrue to industries that are either directly or indirectly supported by agriculture, as well as compensation paid to farmers. Finally, there would be international costs in the form of protective embargoes imposed by major trading partners that were seeking to protect the viability of their own agricultural sectors.

You would also get loss of political support and confidence in government. A successful bio attack against livestock would undoubtedly encourage people to lose safety in the confidence of the food supply and they could possibly lead them to question the effectiveness of existing bio preparedness measures in general. The actual mechanics of dealing with a bio attack against agriculture could also be a trigger for mass public criticism, particularly in the event of a mass euthanization of exposed animals.

The United Kingdom foot and mouth disease outbreak provides a glaring example of just how far these effects can go. There, there were firebreaker operations that involved the eradication of non-disease-showing but susceptible animals in so-called firebreaker operations. That generated opposition not only amongst affected farmers, but animal rights advocates and eventually the public in general.

Finally, you could quite easily get social effects, particularly if a zoonotic disease became entrenched in the United States and was passed from animals to humans and human deaths actually occurred. Terrorists could use this to their advantage to create an atmosphere of fear and collapse without actually having to carry out concerted direct attacks against humans and accept all that entails in terms of attracting mass government reprisals and potentially a loss of support.

Despite the ease by which agricultural terrorism can be carried out and the potential ramifications of such a scenario, I don't think

that it is likely to constitute a primary form of terrorist aggression. This is because acts, while significant, are delayed. They lack a single point of reference for the media to latch onto and to emphasize. They are probably going to be viewed as too dry in comparison to more conventional attacks, such as a bombing campaign.

However, I think that attacks against agriculture could certainly emerge as a favored secondary form of terrorist aggression that is designed to further entrench and augment the general social disruption and upheaval generated by a more conventional terrorist bombing. The mere ability to employ cheap and unsophisticated means to target a State's economic base while at the same time possibly overwhelm its public management infrastructure gives agroterrorism considerable utility in terms of cost-benefit payoffs that would be of particular interest to any sub-state group that is faced with overcoming significant power of symmetry, such as al Qaeda.

And I will finish off by saying that one must remember that bin Laden has specifically exhorted the use of biological agents against the United States in whatever manner possible and part of his strategy now is very definitely focusing on destroying the economic underbelly of the United States as he sees that as the principal anchor that is sustaining what he views as the demonic Western-dominated system across the globe.

Thank you very much.

Chairman COLLINS. Thank you. Dr. O'Keefe.

TESTIMONY OF COLLEEN O'KEEFE, D.M.V, M.S.,[1] ILLINOIS DEPARTMENT OF AGRICULTURE

Dr. O'KEEFE. Thank you, Madam Chairman and distinguished Members, for inviting me. My point will be at a State level where we are with the region.

Illinois has $7.5 billion in farm income, and $1.4 billion of that is livestock cash receipts. So we see agroterrorism as a very valid problem. With the ease of travel and the presence of biological agents worldwide—we have O'Hare as an international stop point—foreign animal disease in Illinois would be a major problem because it would stop the movement of interstate, intrastate animals, and then as our previous people have said, would cause great economic problem.

And then there is the problem with consumer confidence. What meat products would be available would become prohibitively expensive and then the consumer confidence as to whether they would even choose to eat it.

Presently in Illinois, we have an Emergency Animal Disease and Animals in Disaster Annex with our Illinois State Emergency Management and this allows the Department of Agriculture access to our other State agencies. We have a plan with the Illinois Department of Nuclear Safety for animals and plants in the case of a nuclear disaster.

Our most current initiatives have occurred this spring when we are trying to get down to the first responder level, which is the people who will be the ones that will initially notify us of these out-

[1] The prepared statement of Dr. O'Keefe appears in the Appendix on page 83.

breaks. We started with general meetings, trying to notify veterinarians of their roles as first responders. In October, we had our first informational meeting for veterinarians to bring them up to date on foreign animal diseases and to find out what their willingness will be to help us as a first responder.

We will also be carrying this down to the producer level in the future. The training of the producers as first responders is something that we feel is very important. We are hoping to start getting emergency animal disease and animal in disaster plans next to the county emergency response plans and we hope to have regional and county veterinary response teams available.

So we have a fairly general overall State process, but that doesn't get us to the point where we need, which is down to the producer and veterinary level.

In putting together our State plan, we started this actually in 1998. In 2002, it was recognized that this is not a State issue, this is a regional issue, and then a Central States Animal Emergency Coordinating Council was formed through the effort of Illinois. The Departments of Agriculture and Emergency Management in Illinois, Indiana, Iowa, Kentucky, Missouri, North Carolina, Wisconsin, and the USDA came together to look at the issues at a regional level and in that report, there were several findings that came out that I think are important to bring out.

The overall goal of the regional plan was to enhance communication. Initially, it wasn't even known how one State would notify another State of a possible foreign animal disease. It is down to that basic level. So these are issues that we needed to look at.

We need to work together towards a common system of tracking and monitoring animal movements. Illinois alone imports and exports 360,000 head of swine, cattle, sheep, and goats per month—that is Illinois—and the rest of these States, you can probably multiply that by each State, and some States, probably Iowa, even more.

The States with appropriate mapping technology and data collection are the exception rather than the rule. We need to have the USDA implement an electronic system to track livestock movements.

The post-outbreak livestock movement protocol is critical. We have talked about the stoppage of infected animals to prevent the further infection, but at some point, we have to be able to facilitate the normal marketing of animals also, animals that are healthy and unexposed, to try to minimize the economic damage that will occur.

We need to know what the government's indemnity plan would be before the emergency arises, and there is a disposal issue of animals that have been infected. This has to be done ahead of time because the numbers involved are huge.

There are multiple agencies involved. No one Department of Agriculture can possibly cope with an infection. So we have private organizations and associations and all the agencies involved, and so training and testing is critical that we continue that.

Those were the resolutions that were made. Earlier this year, a multi-State partnership in resource sharing has been organized to continue with this criteria. The partner States at this point are Illi-

nois, Iowa, Kansas, Kentucky, Minnesota, Missouri, Nebraska, Oklahoma, South Dakota, and Wisconsin.

This partnership has the goal to determine where the State needs lie and what States can and should be doing together to strengthen our agricultural security and programs, and what they have done at this point is we have three work groups that are rapidly working. We have a State-to-Federal work group which is trying to strengthen our State and Federal bonds. We have a State-to-State work group that addresses the issue of interstate threat communication, joint planning and exercise, and livestock movement, quarantine, and crop security.

The cooperative resource sharing group is trying to address services and resources that can be shared across State borders. We presently have an Emergency Management Assistance Compact, and what this does is allows for licensees from one State to work in another State in an emergency situation. So that is important, that we learn to use that to share veterinary emergency response teams and State animal health employees. We need to share our laboratory resources. We need to learn to share planning and educational materials.

The State needs—while Illinois is doing really well, we have several critical shortages, our staffing, for one. Our State, and our State is not alone in this, is doing our emergency management with three people who are working half-time on this.

Our State laboratories, both the animal disease laboratory and our agricultural product laboratory, are always needing equipment. I am sure you hear that all the time. But it is important that we have the most current equipment so we can have the most rapid diagnosis of disease possible because that is what makes the differences in slowing down the economic devastation. And we need to have equipment that will keep our staffs safe.

The other thing is the State labs are not at this time allowed to test for foreign animal diseases and if we had an outbreak, the only place it is allowed to test is Plum Island, and that system would rapidly become overwhelmed and what would happen is that it would cause a delay in diagnosis and containment and that is a critical need that we have.

We need help with the technology of just simply mapping where our livestock are, where the slaughter facilities are, warehouses are, this type of thing. We need to be able to look at the land to determine where we can set up disposal capabilities.

And the other thing we need is we need to be able to continue training and exercising all of these groups that are managing together. We need to have a very good rapport with the Federal Government. We can't do this without Federal help, both on a basis of, in Illinois, we can quarantine animals but we cannot cause their euthanasia or the disposal of them without a very lengthy process, not counting the fact that we simply do not have the money. And so we need the Federal Government to step in and declare emergency so that we have the capabilities of getting animals disposed of to stop this disease. So working with the Federal Government is critical to any foreign animal disease and I truly hope that I never have to use any of what I have in plan implemented here. Thank you.

Chairman COLLINS. Thank you, Dr. O'Keefe.

Dr. McGinn, I want to pick up on a point that Dr. O'Keefe made about the tracking of livestock. From your presentation, it is evident that the speed with which a localized outbreak of foot and mouth disease could accelerate into a national catastrophe is truly alarming. It also is evident that it would be relatively easy for an agroterrorist to create such an outbreak and then just let it naturally spread on its own.

It is my understanding that the phenomenon is driven in large part by the widespread industry practice of moving animals throughout the country to save on the costs throughout the production phase. I am told that in the beef industry, for example, that 80 percent of the animals pass through 2 percent of our feedlots. I was astounded to learn that.

Are these movements sufficiently tracked so that livestock coming from farms that are infected could be identified and isolated? Explain a little bit more to us what the process would be if you discover an outbreak. You pointed out that it would take several days before it became evident. How difficult would it be to trace back to the farm where there may have been an intentional contamination?

Dr. MCGINN. The consumers want us to be able to do that instantaneously, and in order for them to have confidence in our ability to actually contain these contagious agents that move so rapidly across our country, we are going to have to improve our system.

You heard Dr. O'Keefe from Illinois say that they move 300-plus thousand animals per month. We move, just out of our State, close to 200,000 head every week and millions of poultry every week, as well. Millions of poultry and close to 200,000 livestock animals move out of our State each week. It is an incredible network, not only of live animals but also of products within the food chain, not unlike the Internet.

To protect this network is going to require not just protection around certain facilities, but the entire network itself. That is why the critical infrastructure of transportation is also important, as well as agriculture. In order to be able to actually protect this network, we have to know where it is, and if we are spending in some of the exercises that I have participated in weeks trying to find the farms that could have actually been exposed to a disease, the disease is continuing to move on. You never—it is like a fire that is out of control. We never actually get ahead of the fire because we don't know where the fire is and we are always behind the curve trying to contain the spread of this virus. These viruses don't sleep at night. They move in our transportation networks.

Consequently, we have got to have a national multi-hazard geographic information system. We have got to do this not just for livestock, but also every aspect of the food chain, and not just on the animal side—for plants, pesticides, fertilizers, all the areas of agriculture. We have got to look at every area and have all the different hazards which could possibly be affected identified.

This takes some additional work at this point in time. We have the safest food system in the world. Terrorists are causing us to make it even safer and the development of this national capability to actually track these movements is a critical component of what we need.

Chairman COLLINS. We talked mostly about attacks on livestock, but intelligence reports tell us that terrorist groups are also targeting the various parts of the food chain as potential means of spreading disease and toxins. I would like each of you to comment on the vulnerabilities of our food chain aside from the livestock issue which we have talked about, and we will start with you, Dr. McGinn.

Dr. MCGINN. As I was mentioning, fertilizers are used as bombs. Pesticides, as well, we have heard about their use as a terrorist activity. The plant pathogens, as well, and the destruction that can be done from plant pathogens is enormous.

We have got to look at each aspect of the food chain from the raw ingredients through the production and processing and distribution up to the retail level and carefully look at the vulnerabilities and then put in place some vulnerability reduction strategies that look at it as a network or as a chain instead of just as an individual commodity along that chain.

Chairman COLLINS. Dr. Chalk.

Dr. CHALK. Yes. I agree that one has to look at the entire food production process in assessing vulnerabilities. With respect to crops, there are definite vulnerabilities vis-a-vis a seed growing stock for the subsequent growing season.

With respect to food processing facilities, I think most of my attention focuses on the smallest scale production plants that exist across the country because it is at this point that biosecurity and surveillance tends to be least uniform, and in many of these facilities, there is not an adequate system of tracking the dissemination of products that actually go from the plant itself through the distribution chain to supermarkets and so forth, so that would be very difficult to actually trace back a contaminated product once it becomes apparent, which is a problem.

The one saving grace is that these smaller facilities actually have a smaller cachement area. The larger food processing facilities, if one could actually orchestrate an attack within those companies, that would be the one that would actually have major run-on effects in terms of public health. But fortunately, food buyer security surveillance at those facilities is of a far higher standard.

Chairman COLLINS. Dr. O'Keefe.

Dr. O'KEEFE. When I was preparing for this speech, my expertise is in animals and so I polled other members of my Department of Agriculture on the issues of feed, seeds, and fertilizer security. Our response is we have done a risk assessment, but that is about it, and the reason being is that we feel that the animal terrorism is the main thrust of what would be economically important, and so we have chosen to put our limited resources and people into that area.

However, we recognize that this is not the only one and that is our next issue to look at, is attempting to come up with some rational plan to help with this.

Chairman COLLINS. Thank you. Senator Akaka.

Senator AKAKA. Thank you very much, Madam Chairman.

Dr. McGinn, you stated in your written testimony that the United States, and this surprised me, lacks the capability to produce vaccines to combat foreign animal diseases, such as foot

and mouth disease, and would have to rely upon Great Britain in this case for our vaccine supply in the event of an outbreak.

I wonder, does it make sense to rely on another country for this vaccine? Could you describe the resources that would be required to develop it in the United States?

Dr. MCGINN. Senator Collins mentioned earlier Dark Winter and that scenario that really helped us see the need to get smallpox vaccine back as a way of protecting our country. If you look at these types of scenarios that we are sharing today, obviously, we have got to expand our ability to have the kinds of vaccines that we need to protect our food producing capabilities.

Foot and mouth disease is a very complex vaccine that in order to be able to make it in such a way that we would have it on the shelf and ready to cover all different types of infection is a challenging thing to do. So what really needs to happen is looking at the different potential biological weapons that could be used against livestock and then determining what those costs would be for the development of those vaccines and then going ahead and targeting some dollars to accomplish the ability for us to be able to contain an outbreak quickly with the use of vaccines that could be available.

Senator AKAKA. Dr. Chalk, I know you work in California, as well, as here in Virginia. In your testimony, you cited the outbreak of exotic Newcastle disease in California chickens in 2002. Can you walk us through the successes and failures in the Federal, State, and local agencies and their response to this outbreak?

Dr. CHALK. Well, with respect to the poultry industry, I would argue that contingency measures are higher simply because there have been more referenced disease outbreaks at these facilities. There tends to be a higher awareness of the need for biosecurity and consideration of biosurveillance in terms of people coming on and leaving the premises, all of which tends to result in more effective recognition and rapid treatment, which tends to mean that although a large number of animals and flocks would be destroyed, that the disease itself doesn't spread.

The problem is that you can't extrapolate that experience to the general agricultural industry at large because the referent examples aren't there. The referent experience isn't there. And I would say that if one was to equate the relative success of containment and eradication procedures vis-a-vis poultry compared to, say, swine herds or beef stocks, that the former would be far higher. But that is simply because it is of a smaller scale. You are not dealing with large-scale animals. And also, the visual impacts are not going to attract the same sort of media attention in terms of euthanization and eradication.

But certainly, the problem with the poultry industry is that diseases that affect birds do spread very quickly and these populations are incredibly concentrated in nature. So it is highly vulnerable in that extent, but at the same time, that vulnerability has bred more concerted security preparedness measures. And certainly our experience in California when we have looked at the biosecurity measures at poultry farms is of a far higher standard. So to that extent, it is a positive, if you would like.

Senator AKAKA. Yes. As you can tell, I am interested in the communication and response in these efforts. Dr. O'Keefe, in your testimony, you make a series of recommendations for ways in which Federal agencies can aid State and local governments to prevent and respond to an outbreak of foreign animal diseases. I think you implied that the communication is not that great. Can you comment on your experience working with Federal agencies? For example, do you feel that there is adequate communication between the Illinois Department of Agriculture and the Federal agencies and that they are responsive to State and local needs?

Dr. O'KEEFE. The lack of communication, I think, is more on a State-to-State basis, just learning who we have to talk to in each State, because various States have different structures. So that is it.

As far as working with the Federal level, the Federal veterinarians that we deal with in the State of Illinois have been exceptional as far as working with us, training with us, helping us set up our plans. So in that respect, it has gone well. Beyond that, I really couldn't comment.

But as far as working with the Federal veterinarians, of course, the major problem is the shortage of the numbers involved and that is a problem. But we do get along fairly well, at least in Illinois, with our Federal veterinarians. The communication problem is more State-to-State in trying to get the right language together and who to talk to and how to organize, because obviously these emergencies aren't going to recognize State boundaries.

Senator AKAKA. Thank you for your responses, Madam Chairman.

Chairman COLLINS. Thank you. Senator Lautenberg.

Senator LAUTENBERG. Thank you, Madam Chairman.

Is there not a network, a database that veterinarians, Dr. O'Keefe, can access for epidemic-type conditions?

Dr. O'KEEFE. If I understand you, if we see an outbreak, is that what you are saying?

Senator LAUTENBERG. Of a highly contagious disease.

Dr. O'KEEFE. Actually, there is a protocol of notifying the State veterinarian here in Illinois and then the State veterinarian notifies the Federal veterinarian in charge.

Senator LAUTENBERG. So all veterinarians, because they are licensed professionals, know how to——

Dr. O'KEEFE. Well, actually, that was one of the issues—when we did the first responder meeting—that we had to bring up, is that we are not taught, we haven't been taught how to—what do you do when you see a possible disease situation? Who do you call? It never has been an issue prior to this so it is not well——

Senator LAUTENBERG. Yes.

Dr. O'KEEFE. In fact, we have made up magnets that we are just spreading everywhere, to producers and to veterinarians, that exactly give the protocols of who to call.

Senator LAUTENBERG. Without oversimplifying, I mean, this is something certainly that looks like the first level thing to do——

Dr. O'KEEFE. Right. Well, that is what I said.

Senator LAUTENBERG [continuing]. If you detect foot and mouth or swine cholera, that kind of thing, since you do have a profes-

sional population that is largely in touch with those places where you might see evidence of these diseases.

You said, also, Dr. O'Keefe, something that I was curious about. Were you describing a complicated array of things that prevent you from euthanizing livestock?

Dr. O'KEEFE. Illinois statute says that we offer them an indemnity. If they choose to say—I say their cow is worth $50 and they say their cow is worth $75, then it has to go to an arbitrator before we can do anything and that is how our statute is set up for the destruction of animals. And so, obviously, we don't have time for that in an outbreak situation.

Senator LAUTENBERG. So it becomes the first stage of an economic issue.

Dr. O'KEEFE. Correct.

Senator LAUTENBERG. And also, do you not have repositories where these diseased carcasses can be disposed?

Dr. O'KEEFE. No. The number of animals that you are talking about, if you are talking about pigs and cattle, there is no place that can set up for that, and that is one of the areas that we are presently actively pursuing, is we need to have set up ahead of time a method of disposal. In England, I think everybody saw the burning carcasses. I mean, sadly, that is one possibility. There are other ways. But they can't go to renderers because of the possibility of infection, so we have to come up with—and burial is another possibility. However, EPA may not look on burial sites as being a possibility.

Senator LAUTENBERG. If we can find a place. We really haven't identified a fully safe repository for spent nuclear waste——

Dr. O'KEEFE. Well, and we don't want to transport these animals very far because of the infection.

Senator LAUTENBERG. I remembered about a trip I took to the Soviet Union right after Chernobyl, months later, maybe a year, and I went into a supermarket, just as part of a review of what was taking place, and I saw signs advertising the fact that these items have been radiated as a result of the explosion there, and people bought it. They were cheaper, and they knew that it was cheaper in price. The same thing with meats. I was stunned, but when people are desperate, they do all kinds of things.

I am not suggesting that we set up a system to accommodate that, not at all, but Dr. Chalk and also Dr. McGinn, if the mission was to scare us into activity, it sure scared us. Now, the response is the problem, because of the enormous cost that might be involved in preparing for these contingencies.

You said something, Dr. Chalk, about that kind of attack not having the same visibility as a conventional bombing attack or something like that, but the amount of harm that it could do is far greater than anything except a nuclear bomb might do in one fell swoop.

So I, frankly, sit here a little bit overwhelmed by the potential, that we know exists. I think there was a time, because Senator Collins, our Chairperson, referred to al Qaeda manuals that were found. Do you believe that these couple years later after September 11 that al Qaeda still might have that as a target in mind, an attack on a food supply?

Dr. CHALK. I think there are a number of things here. Certainly, if one takes at face value the assertions of bin Laden about economic warfare, a certainly viable method of undermining the economic resource base of the United States is through agriculture. And one also has to take into account that even if a disease was contained, the possibilities of recurrences are always there, especially if something like foot and mouth getting out of the agricultural population into the wildlife population. If those sorts of scenarios happen, then you have got a very difficult problem.

If we look at the U.K. experience, for instance, although the eradication of foot and mouth disease has been declared, residual outbreaks continue to take place, which is still having an economic impact on the country.

The other aspect to bear in mind is that al Qaeda is very definitely interested in biowarfare. We know that from written statements. We know that from verbal statements. The problem with biowarfare against human beings is that it is one thing to want to do it. It is an entirely different thing to actually weaponize agents to kill large numbers of people to make a mass impact. You can have a psychological impact, but it is much more difficult to have a mass physical impact.

With bioattacks against agriculture, the very nature of the fact that the animals themselves are the weapons, means you don't have to weaponize the agent. In addition, the mere fact that you can handle disease agents with little or no risk of latent or accidental infection, and the possibility that the general population may not understand that certain diseases are not transmissible to humans, all of these factors bear into the fact that attacks against agriculture are easy to do, will spread quickly, will definitely have an economic impact, and quite possibly have a very significant psychological impact—if one is looking at what terrorists aim to do, objective of disorienting society and undermining the support pillars that give any society strength.

Agroterrorism in that sense is a viable option, particularly when you take into account its cost-benefit analysis. And one must remember that terrorists, like bodies of running water, always choose the course of least resistance.

Senator LAUTENBERG. Madam Chairman, I will conclude, but I commend you for holding this hearing and for helping us to understand what the dimension of agro-terrorism could be. I will leave it to you to direct us how to solve this problem. Thank you.

Chairman COLLINS. Thank you, Senator. Senator Durbin.

OPENING STATEMENT OF SENATOR DURBIN

Senator DURBIN. Madam Chairman, thanks for this hearing. I might tell you that I think this is historic in that after September 11, I was asked to go to a briefing, a classified briefing, from our intelligence agencies about agroterrorism. I was the only one in the room. There weren't a lot of Senators clamoring to get in at that point. A lot of other things were on our minds. But it was frightening. I haven't spoken about it since publicly because of some of the concerns I have had, and I am glad that you are making this a public issue. We have to face it.

You brought together a great panel here and another great panel to follow on. I want to quickly thank Dr. O'Keefe for being here from my home town. Her family and she have been friends for years and years and I thank her for joining us.

Two things I would note here. We start off by saying to State and local agencies, get your act together here. Face the reality of food security. And yet, as you have noted at the outset of this hearing, we don't have our act together in Washington by a long shot. You have noted some 30 different agencies that might be involved in a possible foot and mouth disease outbreak. We have 13 different Federal agencies that are responsible for food inspection, 35 different laws, 70 different committees and subcommittees of jurisdiction.

We don't have our act together. We are not taking this as seriously as we should. The next panel will represent three of those Federal agencies, not all of them, but the three major ones, but it is an indication that we haven't really taken this admonition to heart here in Washington and we should.

Let me try to explore two scenarios in the brief time that I have here, and let me first go to, and this is troubling in a respect to talk about it, but I think we have to and I think they have been alluded to. Virtually every agricultural State in the Nation has a State fair. Ours does, a huge gathering of people from rural areas and livestock, the best to come to be shown. As a youngster and as a father raising kids, we used to like to walk our kids, come take a look at the cows and the sheep and the horses and everything that is there. It was just a wonderful feeling. It is a great part of growing up in Illinois.

And yet when you think now in terms of our discussion, this is an experience that we have to reassess. Dr. Chalk, you talk about the weaponization of foot and mouth disease and I think what you say is that it is doable. A person could find a way to spread this disease. If that is the case, let me ask you this. What is the incubation period for foot and mouth disease?

Dr. CHALK. Well, Dr. McGinn was——

Senator DURBIN. Or Dr. McGinn, whoever.

Dr. MCGINN. Three to 5 days was the accepted length of time. That is why a terrorist could actually put it on a handkerchief, bring it into our country from any country that has foot and mouth disease in the world, just put it on a handkerchief, bring it in, and infect at multiple sites. We can't see the disease. The virus is actually spreading, but then in about 4 to 5 days——

Senator DURBIN. If you exposed livestock before they are being shipped back to the farm at a State fair, you would have dispersed this disease across the State. Frankly and sadly, in an efficient way, it would move across the State. That is a reality and would have a terrible damaging economic impact. How do we cope with that? How do we deal with that?

Now let me go to the next area, food processing, which concerns me a great deal. In fact, Madam Chairman, I asked the General Accounting Office to do a study this year on food processing security. We talk about safety, but what about security? And what they found when it came to the security aspects which we have discussed here are troubling.

They went to the two major agencies, Food and Drug Administration and USDA, who are represented today, and they concluded, the GAO, that neither agency believes it has the authority to regulate all aspects of security. The U.S. Department of Agriculture believes the statutes cannot be interpreted to authorize the regulation of security measures that are not associated with the immediate food processing environment. As a result, USDA does not believe it has the authority to require food processors to adopt measures to ensure security outside the premises, such as installing fences, or to require that food processors conduct employee background checks.

So now we have moved beyond the livestock to the processing part of it and we don't have the current authority to deal with security on the ground. Instead, we deal with something known as voluntary guidelines, and excuse me, but I don't think that is good enough. It might have been good enough dealing with the problems of the 19th Century. It is not good enough in dealing with the problems of the 21st Century.

[The prepared statement of Senator Durbin follows:]

OPENING PREPARED STATEMENT OF SENATOR DURBIN

Good morning.

Thank you, Madam Chairman for holding this hearing on a topic that potentially impacts the life of every American. I would also like to welcome one of our witnesses and a life-long resident of Illinois, Dr. Colleen O'Keefe from the Illinois Department of Agriculture.

Agriculture's contribution to our Gross Domestic Product is over one trillion dollars per year—one sixth of our GDP. And although only 3 percent of Americans are directly involved with farming, one out of eight (1/8) Americans are employed in an occupation that is directly supported by food and fiber production. Additionally, agricultural exports are the largest positive contributor to the United States' trade balance.

An act of agricultural terrorism or a naturally occurring agricultural catastrophe would have immediate effects on our economy and could threaten our national security. Public health and animal health could be compromised and public confidence in our institutions would be shaken. How long these effects would last depends on our readiness to respond.

We have concentrated on many aspects of national security but have taken much more limited action to address agricultural and food security. There are many steps in the process that brings food from farm fields to grocers' shelves and each step may be susceptible to tampering. Possible targets could include field crops, farm animals, food in the processing and distribution chain, market-ready food, storage facilities, wholesale and retail outlets, transportation systems and research institutions.

Because of consolidation within the agricultural sector and vertical integration of our food production and distribution systems, one well-placed and well-timed attack could disrupt a considerable portion of our food chain.

We should develop an integrated strategy that includes specific, relevant and measurable goals for preparedness, surveillance, response and recovery.

We cannot assume we are prepared for agricultural catastrophes if we have not established clear roles for Federal, State and local authorities and integrated those roles into the overall homeland security plan.

We cannot presume to have effective surveillance unless we develop adequate laboratory capacity and the ability to quickly transfer samples and results.

We cannot pretend to have an adequate response unless we can predict patterns of disease dispersion and address economic, social, trade, diplomatic, legal and even military options after an outbreak.

Communication is basic to our preparedness, surveillance, response and recovery, from local farmers to international trade partners. We must communicate effectively among and between agencies, with our trade partners and especially with the agricultural community that is so critical to our own individual well-being and the well-being of our entire country.

Madam Chairman, right now there are too many variables in our approach to intentional or naturally occurring agricultural disasters. In the last Congress, I introduced legislation to combine the 13 different Federal agencies that have jurisdiction over food safety into one Food Safety Administration. A single food agency would serve as an efficient and coherent system dedicated to securing our Nation's food supply and ultimately our public health and economic strength. I am making improvements to that legislation and plan to re-introduce it early in the next session.

In closing, I would like to cite the 2002 report, "Agricultural Bioterrorism: A Federal Strategy to Meet the Threat" from the National Defense University. The paper concludes, "An aggressive, well-coordinated effort to combat agricultural bioterrorism will strengthen partnerships and improve coordination among agencies and organizations with responsibilities, programs, and capabilities to address a significant national threat. Perhaps, because the threat is more focused and manageable than other potential threats against the Nation's infrastructures, an effective, well-coordinated program may provide a model for other counterterrorism efforts."

Madam Chairman, I would suggest that now is the time to build that model program.

Thank you, Madam Chairman. I look forward to hearing from today's witnesses about their agencies' food security efforts at the State and national levels.

Senator DURBIN. And so I would like to ask each of you, in the short time remaining here, if you could comment briefly. Do you feel that consolidating our efforts in Washington is also essential to making certain that we deal with food security in a responsible fashion so that you in State and local venues have someone you can work with who really looks at the depth and breadth of the challenge that faces us? Dr. McGinn.

Dr. MCGINN. Absolutely. I think if you look at the scenarios that we have shared today and the one you just mentioned about the State fairs, this was in *Scientific American* that that very scenario had been discussed, and the *Scientific American* said these sorts of scenarios are out there and having a Federal plan that coordinates all the agencies and requiring these Federal agencies to come up with that plan within a certain length of time, and then that sets a standard or a set of roles and responsibilities that they would undertake and then, in like fashion, requiring the States to follow that sort of plan to be able to address these intentional attacks is very much necessary at this point in time.

To do that takes some resources. If you look at the scenario with smallpox and human health, what you saw is the CDC grants that came forward with a tremendous amount of resources to the States. They focus on different areas, training, exercising, pharmaceuticals, communications. They have all these different focus areas and very much feel like that in order to get this coordinated effort on the national level and on the State level, we have got to have the plans. We need deadlines to get those out there, but the dollars have to come to both levels to actually build the capabilities, targeted dollars, a large number of dollars, sustainable dollars that had not yet been put into this whole process.

So a plan is great, but building capability in addition to that plan, both of those need to be on a time line and funded in order to address these sorts of things.

Senator DURBIN. Thank you. Dr. Chalk or Dr. O'Keefe?

Dr. CHALK. I absolutely agree. One needs to have a plan to ensure against duplication of effort, cross-jurisdictional jealousies, turf wars that inevitably arise in terms of mandates. It is all very well to have plans, but those plans need to be directed and coordinated in a single fashion to prevent the proliferation of ad hoc ini-

tiatives that seek to address specific contingencies in an individual basis. And as we have seen in various other areas of counterterrorism, that is not a viable way of actually dealing with this threat.

One also has to look at the agricultural and food industry in a holistic fashion. As you say, it definitely does need to include the food production part of the industry and those sorts of modalities need to be factored in in terms of setting predetermined standards that should be instituted across the board. So I would fundamentally support those sorts of efforts.

Senator DURBIN. Dr. O'Keefe.

Dr. O'KEEFE. I agree with everything they said. I can't speak on a Federal level. That is not my expertise. But on the State level, we run into this all the time, whether public health has an issue or is it Department of Agriculture, and we—what our mandate is and what their mandate is are sometimes not the same and we can see a problem but not be able to deal with it and have to turn it over to another agency and there is a lot of time gap sometimes in getting it done. So assuming that they are both the same is a critical need legislatively.

Senator DURBIN. Madam Chairman, I thank you. I thank the panel. I would just say to you, every time I bring this issue up, the lobbyists get nervous and their feet start shuffling and they are thinking, oh my God, he is going to take away my job. He is talking about combining some existing agency into a new agency and I represent the group that is comfortable with an existing agency. Don't change things. Don't rock the boat.

And the same thing is true up here on Capitol Hill with Members of Congress who jealously guard their jurisdiction. They don't want to give it up. And then you get downtown, and frankly, the only people who favor consolidation of food safety and security are either people who are not in the government or people retired from the government. As soon as they arrive and they are on the government payroll, in political positions usually, oh, they have just resisted night and day. We can't afford this anymore. Agroterrorism, I think, ought to be the wake-up call here, that we can do a much better job, and thank you for alerting us.

Chairman COLLINS. Thank you, Senator Durbin.

We will do one final round of questions for this panel, limited to 4 minutes each.

Dr. McGinn, one consequence that you have explored of an outbreak would be an impact potentially on military training and deployment. This consequence is something that I think most of us hadn't even thought of as a possible consequence of agroterrorism. Could you expand on your earlier comments and tell us a little bit about your concerns in that area and any suggestions you might have?

Dr. MCGINN. Gladly. In the scenario we shared earlier, you can see all the arrows going across all the different States, but within those States then what occurs is multiple quarantined areas that will be popping up simultaneously. You could have 500 to 1,000 farming facilities or processing facilities under quarantine at one time.

This will create a restriction in movement that is very significant to the military, but also to anybody moving any sort of goods through, whether it is a research facility that has to move products, moving computers from one place to the next. Any sort of movements then become gummed up in the works, so to speak.

So the military would be an example. They have got to be able to mobilize very quickly and deploy extremely quickly and so any sort of way that they would have to be dealing with these quarantined facilities would be a great challenge to them. They would also be restricted in where they could land and actually set up and stage in other countries. When other countries have had foot and animal diseases in their country, infectious organisms, we would not allow them to come and exercise in our country because of fear that those transports and those personnel might bring some of these infectious diseases into our country. So we have already set a precedence that says we don't want those sorts of diseases coming into our country, so we would then in like fashion if a terrorist used such an organism against us, then we would have a difficult time being able to deploy to other countries, as well.

So this whole issue of the massive number of quarantines associated, as we saw in the U.K., you had people leave their homes with their children so they could go to school and they actually left where they lived for long periods in time so as to get outside of quarantine areas.

So the challenge associated with any kind of biological event, whether it is directed at animals or directed at people, becomes this whole issue of restriction in movement and obviously it has a great impact on our ability of our military to do what it needs to do to protect us, as well.

Chairman COLLINS. Thank you. I think that helps us understand that the consequences of an outbreak of animal disease are far-reaching when it actually would have an impact on military readiness and the ability to deploy troops.

Dr. O'Keefe, one of our witnesses on the next panel will talk about the Federal Government's efforts to train State officials. For example, the Department of Agriculture's APHIS sponsored 2-week training seminars three times in 2001 for veterinarians in all 50 States. Could you give us your assessment of Federal efforts to assist State officials through education and training to increase the level of preparedness?

Dr. O'KEEFE. We have at this point four trained veterinarians for the foreign animal disease diagnosticians, which is critical to the point of diagnosing quickly whether or not this is a risk or not.

As far as the other levels go, when seminars have been made available, we have sent staff. At this point, we always need more training, but the level we are at right now is adequate.

Chairman COLLINS. Thank you. Dr. Chalk, just one final question for you. We know that some nations, including the former Soviet Union, experimented extensively with crop and livestock diseases as weapons. Should we be concerned about the dissemination of that research to terrorist groups and to nations that sponsor terrorism, and if so, do you have any suggestions for how we can address that potential threat?

Dr. CHALK. Yes, you are quite correct. The former Soviet Union, Iraq, and South Africa, are all countries that have—and the United States, for that matter—are all countries that have included agricultural components in their weapons of mass destruction biological programs.

There is certainly a potential for that research to be disseminated by rogue scientists, by individuals seeking to make a quick buck, particularly from the Soviet Union, in exactly the same fashion as the concern exists vis-a-vis scientists who have been involved in the human side of the biological programs.

I guess the fundamental way of dealing with that is to provide incentives for the scientists in the countries concerned not to do that in terms of providing viable income and employment opportunities and redirecting their efforts towards the development of sustainable vaccines to deal with things like foot and mouth disease. And certainly the technological expertise in those countries exists whereby one could tap into that and actually use it as a positive resource as opposed to a potential negative threat.

On the State side, the one thing I would like to stress is that when it is argued that we are always dealing in scenarios when it comes to agroterrorism, I have only come up with two documented cases of the sub-state use of biological weapons deliberately as a political strategy against livestock.

The mere fact that nation states have recognized its utility as a viable offensive weapon, as a form of asymmetric warfare, should be of concern, not only in terms of understanding its potential utility, but in many cases sub-state actors will seek to replicate what the state actor is doing, and that is certainly true of the terrorism method. So it is important that we understand the dynamics of how States have seen agroterrorism and we understand the potential dissemination of those lessons, of those implications down to the sub-state level.

Luckily, though, with respect to the former Soviet Union, with respect to Iraq, and certainly with respect to South Africa, there has been a voluntary curtailment of the bio weapons programs in general. So that has mitigated that threat. But the fact is, the knowledge is out there. It is still there and we need to be aware of that.

Chairman COLLINS. Thank you. Senator Akaka.

Senator AKAKA. Thank you, Madam Chairman. I would like to ask for comments from our witnesses either now or for the record on my legislation, S. 427, which is the Agriculture Security Assistance Act, and also S. 430, which is the Agriculture Security Preparedness Act. These bills increase coordination in confronting threats in the agriculture industry. I crafted this to maximize the benefits for our country and would like for you to look at it and to make comments on it. That is my question, and because of time, I would like to have it for the record.

Chairman COLLINS. Thank you, Senator.

I want to thank this excellent panel for your testimony today. There is one final point that at least two of you raised that I want to highlight, and that is that an individual who is intent upon creating an attack of agroterrorism does not necessarily put himself

at risk and that makes agroterrorism much more tempting, in many ways.

For example, someone who is dealing with anthrax has to worry about contaminating himself. By contrast, someone who is seeking to create an outbreak of foot and mouth disease does not have to worry about "catching" the disease, and that seems to be the case with many of the pathogens that you have identified as potential vehicles for causing an agroterrorist attack.

I think that makes the challenge that much more difficult and I want to thank you all for the work that you are doing in this area and for giving the panel a better understanding of the challenges our Nation faces. Thank you.

I would now like to call our final panel forward. It consists of representatives of the Department of Homeland Security, the Food and Drug Administration, and the Department of Agriculture. These are the three agencies that are most responsible for agroterrorism preparedness and response.

Dr. Penrose Albright is the Assistant Secretary for Science and Technology at the Department of Homeland Security. The Science and Technology Directorate heads the Department's agroterrorism prevention and response efforts and oversees the Plum Island Animal Disease Center, our first line of defense against foreign animal disease.

Dr. Lester Crawford is the Deputy Commissioner for the Food and Drug Administration. Two entities within the FDA, the Center for Food Safety and Applied Nutrition and the Office of Regulatory Affairs play significant roles in FDA's efforts to prevent and respond to an attack upon our food supply.

Dr. Charles Lambert is Deputy Under Secretary for Marketing and Regulatory Programs at the Department of Agriculture. Dr. Lambert's responsibilities include the management of the Animal and Plant Health Inspection Service, the principal Federal agency for preventing and responding to outbreaks of diseases and pests. APHIS also monitors foreign animal and plant health and maintains a surveillance system aimed at rapidly detecting and diagnosing outbreaks of exotic diseases in the United States. He is accompanied by Dr. Merle Pierson, Deputy Under Secretary for Food Safety.

I want to thank you all for being here today and for your patience in waiting through the testimony of the other witnesses.

Dr. Albright, it is a great pleasure to welcome you back to the Committee. We were very pleased to confirm you earlier this year and we look forward to hearing your testimony.

TESTIMONY OF HON. PENROSE ALBRIGHT,[1] ASSISTANT SECRETARY FOR SCIENCE AND TECHNOLOGY, DEPARTMENT OF HOMELAND SECURITY

Mr. ALBRIGHT. Thank you, Chairman Collins and Senator Akaka. I am pleased to appear before you today to report on the progress the Science and Technology Directorate of the Department of Homeland Security is making in the areas of prevention, protec-

[1] The prepared statement of Mr. Albright appears in the Appendix on page 88.

tion, response, and recovery to acts of agroterrorism against the American people.

The Department's mission is to protect America from terrorist threats or strikes, including those directed at agriculture and food. The Science and Technology Directorate serves as the primary research and development arm of the Department of Homeland Security and its priority is to find technology solutions to meet pressing homeland security challenges.

S&T is specifically tasked with marshaling the intellectual capital of the engineering and scientific communities to develop fresh and effective approaches to safeguard the American public. The Science and Technology Directorate collaborates with APHIS and with USDA's Agricultural Research Service, or ARS, on research at the Plum Island Animal Disease Center, which on June 1 of this year became part of the Department of Homeland Security as mandated by the Homeland Security Act.

In its planning, the Science and Technology Directorate has been guided by the Homeland Security Act of 2002, current threat assessments, our understanding of existing capabilities or those that can be anticipated in the near term, and by the priorities outlined in the President's National Strategy for Homeland Security. In short, we are shaping the Directorate to serve as the Department's hub for research and development for countering the spectrum of threats against the United States and its people.

The Department and the Directorate must consider and address a number of factors in its approach to protecting the agricultural infrastructure. You heard a lot of the issues from the prior witnesses.

The U.S. agricultural and food system is a large nationwide system of production, processing, and distribution. The opportunities both geographically and within the system for intentional introduction of biological agents introduces considerable complexity in securing these critical components of the national infrastructure.

The historical approach to keeping foreign animal diseases, such as foot and mouth disease, out of the continental United States has been to secure and protect our borders against the unintentional introduction of animals carrying such diseases. The bioterrorism event, on the other hand, would be the result of the intentional introduction of one or more biological agents at multiple locations within our borders simultaneously. Therefore, we have a need to clearly understand the scope and scale of this challenge and to develop a national strategy and the necessary tools to prevent, detect, respond, and recover from such potential events.

Through their research and regulatory programs, the USDA and the Food and Drug Administration provide the foundation for national agricultural, animal, and plant health and for public health. The USDA has established programs on foreign animal diseases and their pathogens, diseases of domestic animals and their pathogens, vectors and reservoirs of animal and human disease pathogens, plant crop diseases and their pathogens, and food safety. The FDA also has a very strong research program to address food safety and security concerns.

Thus, our strategy in the Science and Technology Directorate is designed to overlay protection from agricultural terrorism onto this very excellent foundation.

Two of the four high-consequence biological scenarios that have been guiding the Science and Technology Directorate's planning for its research programs, in fact, address major concerns in agriculture and food, specifically, the deliberate introduction of foot and mouth disease into the United States and the results of a classified food security scenario that we also use in our planning purposes.

We expect that the lessons learned from a thorough analysis of these initial two Department of Homeland Security biological scenarios will provide a valuable perspective and framework for our planning in collaboration with our USDA and FDA partners and will serve to guide the development of initial scenarios in agriculture and food safety.

Let me now say a few words about one of our key concerns, which is foot and mouth disease. Foot and mouth disease virus infects cloven footed animals, such as cattle, swine, sheep, and deer, and is one of the most infectious biological agents known. It is not infectious to humans.

The United States has been free from foot and mouth disease since 1929. As the isolation and manipulation of the foot and mouth disease virus requires fairly low to medium-range technology, this pathogen is a potentially high consequence if intentionally introduced to U.S. livestock.

Research on the intact FMD virus is currently restricted to the Plum Island Animal Disease Center just off of Long Island. At Plum Island, the research program led by ARS and the diagnostic program conducted by APHIS are, in fact, unique. Therefore, Plum Island is recognized as a critical national asset that is essential for protecting the U.S. livestock that is vital to the Nation's economy and food supply.

We are currently developing a collaborative strategy for the operations and research programs on Plum Island with our colleagues at APHIS and ARS and with the customers and stakeholders representing key industry groups. This strategic planning includes, first, a 60-day study of facilities and the security status and requirements of Plum Island; coordination of the Plum Island program with the National Biodefense Analysis and Countermeasures Center, or NBAC, that the Science and Technology Directorate has created at the Fort Detrick Biodefense Campus. NBAC is dedicated to protecting health and agriculture by advancing the scientific community's knowledge of bioterrorism events and vulnerabilities.

We are also performing an end-to-end analysis of the R&D requirements for a comprehensive program on foot and mouth disease, including identification of research and technology gaps and milestones for deployment of diagnostics, vaccines, and antivirals over a 1-, 3-, and 5-year set of time frames, along with the associated needs for facilities, staffing, and funding required to support this research and development activity.

This is just but a part of a joint DHS–USDA comprehensive national strategy for foreign animal disease with an emphasis on foot and mouth disease which must be reported to Congress in January as required by the fiscal year 2004 appropriations language.

The joint USDA–DHS Comprehensive National Strategy for Foreign Animal Diseases in general includes the drafting of a technology development roadmap. The roadmap includes the identification of major technology requirements and gaps with major milestones during the short, mid, and long terms in the following areas. Development, and if cost effective, deployment of a prototype surveillance capability along with development of outbreak response plans; development at MBAC of a forensics capability for agroterrorism threats; development and characterization of a strain and sample archive for the various diseases at issue; development of rapid detection capabilities—you heard from prior witnesses the importance of that—and also the development of rapid and new assays; and the development of new adjutants, antivirals, immune stimulators, and novel vaccines. These activities are significant new investments to enhance the national capacity to respond to agroterrorism.

Consistent with that roadmap, currently within the Science and Technology Directorate, our initiatives and activities in agricultural security include, as mentioned earlier, in the context of foot and mouth disease, we are conducting end-to-end systems studies to fully understand the scope and requirements for foreign animal disease and food security scenarios in general. This includes the development and exercising of model simulations and tabletop exercise to explore the epidemiological and economic consequences and tradeoffs that follow policy and crisis management decisions associated with these scenarios.

We are developing key enabling technologies and tools, such as, again, rapid assays and diagnostics, to prevent, detect, respond, and recover from the intentional or unintentional introduction of biological agents into the national agriculture and food systems. I should say that this is part of the much larger effort that we are conducting that is also applying these technologies to human health issues, as well. They apply equally across the board.

We are developing key enabling technologies and tools, such as a detection and surveillance system that is known as the Biowatch Program that is currently deployed in 31 cities across the Nation for human health purposes in agricultural scenarios.

We are performing end-to-end systems studies with USDA and FDA on food security to specify, design, and guide development of detection surveillance systems at critical nodes in the food production systems.

And we have awarded contracts through our recent solicitations with the Technical Support Working Group for new detection technologies for biological agents, for example, botulinum toxin.

We are also conducting through the Homeland Security Advanced Research Projects Agency a broad agency announcement for more advanced capabilities in this specific arena, and we are also funding long-range research at our national labs specifically in those areas.

We will also be establishing university-based Homeland Security Centers of Excellence dedicated to agriculture and food safety in fiscal year 2004.

We have also heard from prior witnesses about the need for trained researchers in this area. We have within the Department

of Homeland Security a scholars and fellows program that supports undergraduate and graduate students in areas of interest to homeland security. There were a number, in our first class of fellows and scholars, of people engaged in biological research and I was told prior to the hearing that specifically one of them is a veterinary doctor who intends to perform her research at Plum Island on foreign animal diseases, so we are adding to that capability.

We have further collaborations with S&T. Between S&T and USDA include, as I mentioned earlier, a Plum Island interagency agreement that provides for the DHS operations and maintenance of the facility. Also, to make sure that we are fully coordinating our foreign animal disease programs in collaboration with ARS and APHIS and to include bioforensic analysis to support attribution of agroterrorism events. We are conducting joint R&D programs on FMD diagnostics and also assisting APHIS in its support for the foot and mouth disease vaccine bank and foreign animal disease training and diagnostics capabilities up at Plum Island.

As I mentioned earlier and as required by our appropriations language, we are developing with USDA a national agricultural biosecurity research and development strategy to be delivered in January 2004, and, of course, under Section 302.2 of the Homeland Security Act, we are required to develop a broad national strategy for homeland security research and development activities. And, of course, we are working closely with USDA and with FDA on the development of the relevant sections of that strategy.

So in conclusion, the Science and Technology Directorate is leveraging its programmatic and research strengths and establishing working relationships with the key Federal biodefense agencies to complement the technology base and research capabilities available at USDA and FDA laboratories and also land grant universities. The collaboration between S&T and USDA on the operations and research programs at Plum Island and MBAC will continue to be a major programmatic and operational focus in fiscal year 2004 and beyond. The systems studies in fiscal year 2004 in foreign animal disease and food security scenarios will further define the research requirements for our strategy and budget in fiscal year 2005 and beyond.

While the Directorate has made significant early progress in the areas of protecting the Nation from acts of agroterrorism, challenges remain and we have a great deal of work before us. But we are confident that we are moving in the right direction with our current collaborative strategy with USDA, FDA, and other stakeholders and our plans to systematically fortify the vulnerabilities in agricultural infrastructure and protect it from threats and attacks.

Chairman Collins, this concludes my prepared remarks and I will be happy to take any questions.

Chairman COLLINS. Thank you. Dr. Crawford.

TESTIMONY OF LESTER M. CRAWFORD, D.V.M., Ph.D.,[1] DEPUTY COMMISSIONER, FOOD AND DRUG ADMINISTRATION

Dr. CRAWFORD. Thank you. Senator Collins and Members of the Committee, I am Les Crawford, Deputy Commissioner of the Food and Drug Administration. I am pleased to be here today with my colleagues from Agriculture and also from Homeland Security.

FDA appreciates the opportunity to discuss our food counterterrorism activities. I will first briefly describe FDA's food safety and security responsibilities. Then I will discuss FDA's ten-point program for ensuring the safety and security of the Nation's food supply. The plan includes FDA's recent actions to implement the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. I am told, Senator Collins, that you named it that, but we call it the Bioterrorism Act. I would like to thank you for your leadership role in the enactment of this landmark legislation.

FDA's food safety and security responsibilities. First, we are the Federal agency that regulates 80 percent of the Nation's food supply, everything we eat except for meat, poultry, and certain egg products, which are regulated by our partners at USDA. Our responsibility extends to live food animals and animal feed.

Food safety and food security continue to be top priorities for this administration. In our food safety and security efforts, FDA has many partners, Federal and State agencies, academia, and industry. We are working closely with our Federal partners, such as USDA, Department of Homeland Security, Homeland Security Council at the White House, and the Department of State, as well as with law enforcement and intelligence gathering agencies.

I also want to emphasize our close working relationships with our sister public health agency, the Centers for Disease Control and Prevention, also the Customs and Border Protection Agency within the Department of Homeland Security, and with the Food Safety and Inspection Service and the Animal and Plant Health Inspection Service in USDA.

On July 23, Commissioner McClellan of FDA issued a report to HHS Secretary Thompson entitled, "Ensuring the Safety and Security of the Nation's Food Supply." The report outlines a comprehensive ten-point program to protect the safety and security of our food supply. I will briefly describe some of the program areas.

First, a stronger FDA. Thanks to bipartisan Congressional support, the fiscal year 2002 supplemental included counterterrorism funds for FDA. This enabled our agency to hire over 800 employees, 655 of whom were hired as additional field personnel. Six-hundred-and-thirty-five were hired to address food safety and security issues, primarily at the border.

Imports—the volume of imported food shipments has been rising steadily in recent years. It has increased about five-fold since the passage of the World Trade Organization Treaty. With the additional field employees, we have expanded FDA's presence at ports of entry, increased surveillance of imported foods, increased domestic inspections, and enhanced our laboratory analysis capacity.

[1] The prepared statement of Dr. Crawford appears in the Appendix on page 96.

Implementation of the Bioterrorism Act. Title 3 of the Bioterrorism Act provided the Secretary of Health and Human Services with new authorities to protect the Nation's food supply against the threat of intentional contamination and other food-related emergencies. These new authorities will improve our ability to act quickly in responding to a threatened or actual terrorist attack, as well as other food-related emergencies.

The agency has been working hard to implement this law effectively and efficiently. On October 10 of this year, we published two interim final regulations to implement Section 305, Registration of Food Facilities, and Section 307, Prior Notice of Imported Food Shipments. We have also published proposed regulations to implement Section 303, the Administrative Detention section, and Section 306, Maintenance and Inspection of Records for Foods.

The interim final rule on registration requires domestic and foreign facilities that manufacture or process, pack, or hold food for human or animal consumption in the United States to register with FDA. FDA will have, for the first time, a complete roster of foreign and domestic food facilities. In the event of a potential or actual terrorist incident or an outbreak of foodborne illness, the registration information will enable FDA to quickly identify and locate the facilities that may be affected. We expect up to 420,000 facilities to register under this requirement.

The Bioterrorism Act requires facilities to register by December 12, 2003. FDA's electronic registration system became operational on October 16, giving facilities time to register by the statutory deadline. We wish to encourage facilities to go ahead and submit their registrations and not wait until the deadline. As of yesterday afternoon, over 55,000 facilities had registered. We encourage people to hurry up and do that. It is very easily done off our website. We have a section in the upper right-hand corner which enables you to do it electronically in about 15 minutes.

The interim final regulation on prior notice requires the submission to FDA of prior notice of food, including animal feed, that is imported or offered for import into the United States. This advance information would allow FDA, working closely with CBP, to more effectively target inspections to ensure the safety of imported foods.

I would like to mention a few of our other program activities, if I may. FDA has issued guidance on the security measures the food industry may take to minimize the risk that food will be subject to tampering or other malicious, criminal, or terrorist actions. We have conducted extensive scientific vulnerability assessments of different categories of food, determining the most serious risk of intentional contamination with different biological or chemical agents during various stages of food production and distribution.

FDA has established an Office of Crisis Management to coordinate the preparedness and emergency response activities within FDA and with our Federal, State, and local counterparts. To increase laboratory surge capacity, FDA has worked in close collaboration with CDC and USDA FSIS to expand the laboratory response network by establishing the Food Emergency Response Network, or FERN, to include a substantial number of counterterrorism laboratories capable of analyzing foods for agents of con-

cern. FDA has embarked on an ambitious research agenda throughout the agency to address potential terrorist threats.

In conclusion, through the new authorities in the Bioterrorism Act and the measures outlined in the ten-point plan, we are making tremendous progress in our ability to ensure the safety and security of the Nation's food supply.

I want to thank you for the opportunity to discuss FDA's food safety and security activities and I would be more than pleased to respond to any questions or comments. Thank you very much.

Chairman COLLINS. Thank you. Dr. Lambert.

TESTIMONY OF CHARLES LAMBERT, [1] DEPUTY UNDER SECRETARY FOR MARKETING AND REGULATORY PROGRAMS, U.S. DEPARTMENT OF AGRICULTURE, ACCOMPANIED BY MERLE PIERSON, DEPUTY UNDER SECRETARY FOR FOOD SAFETY, U.S. DEPARTMENT OF AGRICULTURE

Dr. LAMBERT. Thank you, Madam Chairman and Mr. Akaka. Thank you for the opportunity to speak with you on behalf of USDA about agroterrorism and our efforts to prevent and respond to a possible attack.

Many agencies within USDA have been working to address this issue. Today, my comments will focus only on the work at the Animal and Plant Health Inspection Service (APHIS) and at the Food Safety Inspection Service (FSIS). APHIS is under the jurisdiction of Marketing and Regulatory Programs, and Dr. Merle Pierson will be available to answer additional questions and explore topics that I introduce in the food safety area.

APHIS's mission is to protect the health and value of American agriculture and natural resources. To accomplish this mission, APHIS has a safeguarding system in place to prevent introductions of foreign agricultural pests and diseases. APHIS also has operational response mechanisms to contain and eradicate a pest or disease should an introduction occur.

Since September 11, 2001, APHIS has heightened its already vigilant efforts to prevent foreign agricultural pests and diseases from entering the United States, either intentionally or unintentionally. APHIS has undertaken numerous measures to bolster its infrastructure. More than ever, APHIS is confident in its ability to detect and respond to the accidental or intentional introduction of animal and plant pests and diseases to ensure that America's food supply is protected and remains prosperous.

Events over the past 2 years have led APHIS to increase its networks of partners and better share information with cooperators. In any emergency or situation, the better prepared both with information and with training everyone is the more effective the response will be.

USDA realizes that there can never be enough people involved in safeguarding activities. We are actively working with stakeholder organizations, including the National Association of State Departments of Agriculture, U.S. Animal Health Association, the North American Plant Protection Organization, university systems, and county extension agents and others to maximize collective ef-

[1] The prepared statement of Dr. Lambert appears in the Appendix on page 117.

forts to safeguard against potential introduction of foreign plant and animal pathogens.

APHIS has held foreign animal disease awareness training seminars for State and Federal veterinarians from all 50 States to enhance preparedness for introduction of foreign animal diseases, to improve communications, and strengthen cooperative partnerships.

APHIS also conducts yearly emergency preparedness satellite seminars to share vital information with veterinarian practitioners on how to identify and respond to an animal health emergency. More than 1,700 Federal and State veterinary officials and emergency planners, military representatives, and veterinarian college students and professors have participated.

Working with our Federal counterparts is essential. In the event of an agroterror attack, the Department of Homeland Security and APHIS will work as partners to safeguard America's food and agricultural resources. DHS will lead the team of first responders to contain and manage the threat, while APHIS provides crucial scientific and diagnostic expertise. This expertise will be critical in managing a potential disease outbreak as well as assisting efforts to find those responsible for a terrorist attack. In preparation, APHIS has established a liaison at DHS responsible for ensuring that agroterrorist response information is included in first responder training.

APHIS has also entered into interagency agreements with other government agencies so that we can benefit from open source intelligence gathering on potential threats to U.S. agriculture and participate in the evaluation of newly developed rapid diagnostic equipment.

Pest and disease detection is a critical component of our safeguarding system. Of the 2002 homeland security supplemental funding, $20.6 million went to facility and equipment upgrades at a network of animal and plant laboratories around the country. This investment has enhanced our diagnostic and response capability.

APHIS's safeguarding, intradiction, and trade compliance team is working in partnership with DHS and State and local law enforcement agencies to mitigate the risk of smuggled commodities. In addition, APHIS monitors pests and diseases overseas and has implemented the Offshore Pest Information System to monitor and document changes in distribution and outbreak status of specific pests and diseases in their countries of origin.

APHIS currently has 64 Foreign Service officials stationed in 26 countries on six continents. These officials work closely with their foreign counterparts to collect information and help focus our safeguarding efforts. It is important that we remain prepared for the introduction of a foreign animal or plant disease, whether introduction is intentional or unintentional.

One of the most important developments in increasing the effectiveness of our emergency response is implementation of the National Interagency Incident Management System to ensure that the entire U.S. Government has a single comprehensive approach to incident management. This unified approach facilitates coordination among various agencies and jurisdictions and has been used widely in the emergency management community, including at USDA's

Forest Service when they are responding to fires. APHIS has already put this model to use with great success in combatting an outbreak of poultry exotic Newcastle disease in the Southwestern United States.

APHIS also has opened a state-of-the-art emergency operations center which serves as the national command and coordination center for APHIS emergency programs. The center houses 40 or more personnel and operates around the clock in emergency.

The Food Safety Inspection Service is the USDA agency responsible for ensuring that the Nation's meat, poultry, and egg products are safe, secure, wholesome, and accurately labeled. Each day, FSIS has more than 7,600 inspectors and veterinarians in more than 6,000 Federal meat, poultry, and egg product plants and at ports of entry to prevent, detect, and respond to food-related emergencies.

FSIS has undertaken a number of initiatives to protect meat, poultry, and egg products from the potential of a terrorist attack. The newly created Office of Food Security and Emergency Preparedness serves as the centralized office within FSIS for food security issues. OFSEP interacts closely with USDA's Homeland Security Council and represents the agency on all food security matters throughout the Federal Government, as well as in State and local activities.

FSIS collaborates and coordinates closely with its State partners, including the Association of Food and Drug Officials, the Association of State and Territorial Health Officials, and the National Association of State Departments of Agriculture to ensure an effective prevention and response program.

Both APHIS and FSIS receive threat information and written reports from the intelligence community to update the Department on terrorist attacks relative to food and agriculture. This intelligence allows APHIS and FSIS to prioritize responses based upon both perceived vulnerability and what is known of the terrorist threat.

The White House Homeland Security Council has recognized the need for a coordinated approach to food security matters and has assembled an interagency food working group to consider policy issues related to protecting the food supply and minimizing it as a target for terrorist activity. The working group has representatives from 12 Federal agencies, including FSIS.

In addition to its partnerships with the White House and Federal agencies, in April 2003, FSIS signed a memorandum of agreement with the Surgeon General and Public Health Service that allows more commissioned Corps officers to be detailed to the agency. These officers will assist in preventing foodborne illness and help FSIS respond to foodborne outbreaks when they occur, as well as assisting in the agency's homeland security efforts.

In fiscal year 2003, FSIS undertook many new initiatives as well as strengthened its existing infrastructure to enhance the ability to detect any potential intentional threat to the food supply. FSIS has also strengthened its controls to protect the public from the entry of contaminated food from abroad.

As part of FSIS initiatives to better develop its workforce to respond to potential terrorist attack, employee directives were issued

last March to instruct in-plant and laboratory personnel on how to respond when the Homeland Security Advisory System threat level moves to orange or red.

In March 2003, as Operation Iraqi Freedom began, the Federal Government initiated Operation Liberty Shield to increase security and readiness in the United States. During this time, FSIS implemented activities to focus efforts at preventing food and agro-terrorism.

FSIS, as well as FDA and APHIS, was selected to participate within a multi-department international trade data system in 2004. This new initiative will establish a single automated system for sharing data on inspection and certification of products entering the United States and it will provide commercial enterprises with a single source for interaction with the various agencies that regulate imports. This new system will eliminate duplication, increase security, and reduce costs to the government.

In fiscal year 2003, FSIS laboratories expanded their capability to test for non-traditional microbial, chemical, and radiological threat agents and increase their surge capacity. In addition, construction is underway on a biosecurity Level 3 laboratory that will enable FSIS to conduct analyses on a larger range of potential bio-terrorism agents. Construction should be completed in December.

The strong working relationships that USDA has with the other Federal agencies and with State and local governments and industry, as broadly defined from the production through processing sector to the individual food companies, is vital to our efforts to safeguard U.S. agriculture. Preserving traditional relationships and building new ones, such as with DHS, will strengthen our efforts.

I assure you that USDA remains committed to our biosecurity and emergency preparedness activities, to ensuring the continued good health and value of U.S. agriculture. Thank you, and I look forward to responding to your questions.

Chairman COLLINS. Thank you, Dr. Lambert.

Dr. McGinn painted a striking picture of how fast an outbreak of foot and mouth disease could spread in our country. In fact, I wish I could superimpose his map on top of the chart that I have just asked to be displayed about the number of agencies that possibly would be involved in a foot and mouth disease outbreak.

Each of your agencies is obviously involved and are among the key players, but we know that more than 30 agencies potentially would be involved were there an outbreak of foot and mouth disease. That raises concerns in my mind about whether the Federal Government has an integrated, effective plan for dealing with an outbreak such as of foot and mouth disease or other foreign animal disease. It is my understanding that before the new Department of Homeland Security was created, that USDA was taking the lead in developing a Federal emergency response plan for an outbreak of foot and mouth disease or other highly contagious disease.

Mr. Lambert, I would ask you first, what is the status of that plan?

Dr. LAMBERT. First, I would like to say that the data that Dr. McGinn presented, we have seen. They have actually been the basis for simulated exercises that have been conducted. In September 2000, seven deputy secretaries from across the government,

the intelligence community, and State and local governments conducted a simulation that was shown in Dr. McGinn's data, and since that time, APHIS has also conducted a simulated exercise that showed the multiple introductions of animal pathogens. Then FDA and FSIS have simulated or conducted an exercise on the intentional pathogen release in the food supply that Dr. McGinn showed.

We do have—the FEMA exercise has been transferred to the Department of Homeland Security. In the event of a terrorist attack, they would become the first responders. APHIS would provide the technical expertise that we have within the Department in a coordinated effort to arrest and contain that disease.

Chairman COLLINS. But are you familiar with the plan that USDA had begun to develop prior to the creation of the new Department? Did the work for that plan get transferred to DHS or is the Department of Agriculture still playing the lead role?

Dr. LAMBERT. We are both working in that area. In the event of an outbreak, USDA would respond. We would coordinate and communicate closely with the Department of Homeland Security. If terrorist or purposeful introduction was indicated, then DHS would take the lead in the investigative efforts of that investigation with APHIS supplying the——

Chairman COLLINS. Has the plan, though, been completed? Are you familiar with what I am referring to?

Dr. LAMBERT. The plan is in place, and yes, we do have a response plan——

Chairman COLLINS. It is completed?

Dr. LAMBERT. Yes.

Chairman COLLINS. OK. Dr. Albright, do you view DHS as being the lead agency in the event of an outbreak? My concern, I think, is obvious. When you have this many agencies involved, it just raises questions about whether there is going to be confusion, whether everyone understands the role played by individual agencies, whether anyone is coordinating the response as a whole, and we know from Dr. McGinn's testimony that time is absolutely of the essence and we can't afford any confusion or lost time.

Mr. ALBRIGHT. Yes. I think, first, one point that ought to be made is that if there was an unintentional outbreak of foot and mouth disease, if this was just a standard agricultural health and safety exercise, essentially, that chart would still be in play. There have been response plans in place for a very long time that USDA has operated that provided for a coordination of all these different agencies and the marshaling of the resources necessary to respond to an unintentional outbreak.

I think what has changed, of course, what you have alluded to is that with the passage of the Homeland Security Act of 2002, that we now have a new Department that is charged with the responsibility of coordinating and responding to the deliberate introduction of these kinds of pathogens or, for that matter, to almost anything affecting our critical infrastructure.

So I think it is certainly the case that with the advent of the new Department, that a lot of the prior Presidential decision directives, for example, that were associated with the various coordination activities that existed prior to the establishment of the Department

need to be revisited, and they have been revisited and they are being updated to reflect first the post-September 11 environment and to also reflect the statutory responsibilities of the Secretary of Homeland Security.

So yes, I think it is fair to say that the Department takes these responsibilities seriously. We are, as Dr. Lambert described, we are working very closely with USDA. They are obviously the subject matter experts in a lot of this, and working closely with, for that matter, FDA and other agencies to develop these response plans.

Do I believe that we necessarily—I mean, are we in a position yet to respond to the kinds of scenarios, for example, that you saw Dr. McGinn describing? I guess I can't say that that is necessarily the case yet. Clearly, there are technological issues involved. He pointed out, for example, that a lot of the issues surrounding such an outbreak just have to do with the incubation period of this and the fact that you have multiple sites being introduced all over the country. So clearly, there are tools that need to be developed and put in place before you could mount as effective a response as you would like.

Chairman COLLINS. The RAND report includes six specific recommendations for a more aggressive and coordinated strategy to secure the agriculture and food sector against an agroterrorist attack. Specifically, the RAND report calls for, first, a comprehensive needs analysis to determine the appropriate investment requirements for the emergency management infrastructure; second, an increase in the number of State and local personnel who can identify and treat foreign animal diseases, such as foot and mouth; third, it calls for coordinated and standardized links between the U.S. agricultural and intelligence communities; fourth, enhancing the law enforcement community's ability to determine whether disease outbreaks are deliberate or whether they are naturally occurring; fifth, improving the effectiveness of disease reporting systems; and finally, the need for an improved surveillance quality control and emergency response measures at food processing and packing plants.

Dr. Crawford, I would like to start with you and get the opinion of all the witnesses of those recommendations.

Dr. CRAWFORD. I think those are sound recommendations and we have taken them very seriously. Most of these were well underway before the advent of the report. However, the report strengthened our resolve and also gave us a good means of communication not only with the public, but with the Congress to close the gaps.

One thing that was particularly important that I believe we have done successfully is to establish viable links with the intelligence community. That required, as you would know, all of us that are in authority in FDA to receive the proper security clearances and also to be linked up so that we could get daily briefings on the possibility of threats, etc. That has been accomplished and is working very well. We have certainly profited from this in our planning, and also, it is useful for us to have these kinds of clearances so that we can be involved in White House working groups and other trans-departmental groups that are dealing with these problems. So that was, I think, a very positive benefit of it.

And the rest of it was proceeding apace. I think they were excellent suggestions and they have served as a benchmark for this tenpoint program that I mentioned, actually.

Chairman COLLINS. Thank you. Dr. Lambert, your judgment of these recomendations.

Dr. LAMBERT. Thank you. I would concur that these are very sound recommendations and we are moving to implement them and have moved to implement them. With respect to the intelligence, as my comments indicated, we do both at APHIS and FSIS receive these intelligence reports and they serve as the basis, along with other information from our animal health and foreign officers, information officers, to help guide and focus our efforts.

Chairman COLLINS. And Dr. Albright.

Mr. ALBRIGHT. I think they are probably consistent with other reports. For example, the National Academy of Sciences has done quite a bit of work in this area and has made essentially the same kinds of recommendations. We would agree with them.

In terms of needs assessment, as I mentioned in my statement, we are focusing our efforts around specific scenarios that actually allow us to identify the bottlenecks and where we actually—what the gaps are and where we need to actually focus our efforts to better respond to these kinds of outbreaks. So yes.

Chairman COLLINS. Thank you. Senator Akaka.

Senator AKAKA. Thank you very much, Madam Chairman.

Dr. Lambert, according to a recent GAO report, the Plum Island Animal Disease Center is taking unnecessary risks with the pathogen protection and is vulnerable to security breaches. Plum Island is the only U.S. facility capable of responding to an outbreak of foot and mouth disease.

In addition, the *Washington Post* reported last week that the Federal Government had failed to meet the November 12 deadline that requires security reviews of U.S. laboratories and scientists under the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. Reading that article makes me feel extremely troubled about this. What is USDA doing to ensure these security reviews are completed more quickly?

Dr. LAMBERT. USDA had an outside independent agency conduct a security assessment at Plum Island in November 2001 and we worked with that independent agency to develop risk management approach to improve security on Plum Island. We have invested about $860,000 in security upgrades, even before September 11. Since that time, we have invested another $1.4 million of security countermeasures. Additional security guards were hired at Plum Island at a cost of nearly $1 million in fiscal year 2002 and nearly $1.4 million in fiscal year 2004.

So measures have been taken to strengthen security at Plum Island, and I would add that recently, Plum Island did pass inspection as a select agent location. So we feel that additional measures have been taken.

Senator AKAKA. Dr. Lambert, concern has been expressed by Members of Congress and farmers, as well, about the implications of the merger of the three border inspection agencies into what is being called the "one face at the border" initiative at the Department of Homeland Security. The consolidation, some feel, means

that agriculture specialists are no longer present at primary border inspections. Officers with only basic agricultural training are now responsible for detecting suspicious animal and plant products. It seems questionable whether these officers have adequate training to know what to look for, especially since they are responsible for usually immigration and customs-related inspections.

What is being done to ensure that qualified staff are protecting all aspects of our borders, and are they receiving specialized training?

Dr. LAMBERT. Yes, Senator. We have heard some of the same concerns. Essentially, the 2,600 positions that were agricultural inspectors at APHIS prior to the transfer of those positions early this year to Homeland Security, essentially, those same people are there. They have agricultural training. They have the same basis of that training.

We are working to continue that. APHIS has closely coordinated with Homeland Security to assure that we have people at the border that have agricultural expertise. APHIS is closely involved in the training of those people and in the policy decisions that they enact.

Another way to look at that is that now we have nearly 4,000 port inspectors that all have some agricultural exposure, as well. So we have added people from INS and Customs that can participate and watch for agricultural pathogens, in addition. So it cuts both ways. Thank you.

Senator AKAKA. Dr. Lambert, last month, the House Agriculture Committee approved a bill to create a disaster response team within USDA. The mission of the team would facilitate financial relief for local farmers and ranchers in the event of a crisis. Can you discuss what role USDA sees for itself in local security enhancements, such as prevention and detection of agricultural attack?

Dr. LAMBERT. We currently at APHIS have an indemnification program for producers who have livestock that need to be euthanized due to a disease outbreak. We think that is a part of our emergency declaration authority and the ability to reimburse producers for loss. We think that is important because knowing that they will not suffer these losses, or knowing that there is a potential for indemnification, that producers will be more willing to report an outbreak and to do that in a timely manner, and that is, as has been indicated, very critical to our ability to get the disease contained and eradicated.

Senator AKAKA. Dr. Lambert, let me go back and ask you to clarify your response to my first question. When are the security reviews going to be completed for the other affected U.S. laboratories?

Dr. LAMBERT. We have 75 provisional approvals and three that have been denied and we will continue to accept and review additional applications as they become available.

Senator AKAKA. Thank you, Madam Chairman.

Chairman COLLINS. Thank you, Senator.

As I learn more about this issue, I am struck by the number of points at which an agroterrorist attack could occur. If you look at the vulnerabilities of the system, it starts at the farm to our

feedlots, even State fairs, and processing plants. There are so many different points of possible attack.

Before we can develop effective measures to improve the security of our farms and food supply, we need to do, it seems to me, a better job of identifying our vulnerabilities. I would like to know to what extent have your departments undertaken vulnerability assessments for the entire agricultural and food industry sector, and we will start with you, Dr. Albright.

Mr. ALBRIGHT. For the entire sector, I can't argue for the entire sector. We certainly have leveraged extensive efforts that I know USDA and FDA conducted in doing vulnerability assessments.

We, too, as I mentioned earlier, have been working closely through the Food Security Working Group with FDA and USDA and through various activities conducted by the White House. As we look at our defense posture in general, we have been leveraging, as I said, existing vulnerability assessments and also conducting additional ones based, as I said a moment ago, on some of the scenarios that we have been focusing our attention on in order to better inform response plans, investments, and that sort of thing.

So I don't think we can say we have looked at the entire sector, but we have certainly been looking at pieces of it.

Chairman COLLINS. Dr. Crawford.

Dr. CRAWFORD. Yes. What we have done in collaboration with the two other departments represented here and also the White House Homeland Security Council, we have looked at the products that FDA regulates and we have evaluated the probabilities of them being used as a vehicle for terrorism in the United States. We have done threat and vulnerability assessments so as to identify those that are most likely, both in terms of the efficacy or effectiveness of an attack through this particular product, if you will, and second, the damage that could be done if it was used as a vehicle.

As a result of that, we have identified those that are most likely. We have identified how this would be done and what we could do to interdict or contravene this from happening in terms of how FDA does its business. We have even looked forward to how this country might recover from such an attack.

We have briefed these two departments on the most likely concerns, also the White House and other departments that have concerns of food safety and also terrorism, including the intelligence community and the science infrastructure of the U.S. Government. We would be pleased, and I think this should be done, so it is not just an offer, it is a plea, that we are able to give you this particular presentation, also, and whoever of your colleagues and of your staff that could receive the information because we would be very willing to—you can understand that I can't do that here, but if we may, we would like to, once you reflect on it, would like to schedule such a debriefing.

Chairman COLLINS. Thank you. I will take you up on that. Dr. Lambert.

Dr. LAMBERT. Yes. USDA APHIS has also conducted vulnerability assessments in both the animal and plant side. As Dr. Crawford indicated, those are classified, but we would be willing to participate in that briefing or independently to inform you in the appropriate manner.

With respect to the critical infrastructure of vulnerability assessment, we are coordinating closely with DHS to identify and define those critical infrastructures and then proceed with the assessment.

Chairman COLLINS. Dr. Lambert, let me do a follow-up with you. I understand that FSIS, as opposed to APHIS—we have a lot of acronyms flying around here today—has completed a risk analysis of the food supply from farm to table, but that the risk assessment did not include an analysis of security measures at food processing and packing plants. I am told that the reason for that is that FSIS concluded that determined terrorists could overcome those security measures. That is not very comforting, I might add.

The General Accounting Office has criticized this conclusion and I must say I tend to agree with GAO. What is the justification for conducting a risk assessment but essentially downplaying or ignoring preventative measures that food processors and packers are taking. Is USDA suggesting that processors and packers shouldn't take security measures because they won't be effective? I mean, that is a pretty chilling conclusion to draw.

Dr. LAMBERT. Madam Chairman, with your permission, I would defer the question to my counterpart at FSIS and have him respond.

Chairman COLLINS. Dr. Pierson.

Dr. PIERSON. Thank you, Madam Chairman. I might mention that the FSIS has conducted vulnerability assessments in the food system and, of course, identified high-risk commodities, threat agents, sites, etc. I join with Dr. Crawford in saying we would be very happy to brief you on this classified information that we have.

Specifically to your concern area, we are, in fact, now conducting that assessment and taking those factors into consideration that you mentioned. We think that it is something that must be included in an assessment.

Chairman COLLINS. But was there a conclusion reached by FSIS that security precautions at processing and packing plants would not be effective in deterring determined terrorists? This seemed to be GAO's criticism.

Dr. PIERSON. I think to make that as a broad criticism would be a little difficult to make. There certainly can be cracks in the system, and we, for example, do provide security guidelines to small and very small corporations. I might also mention that our 7,600 inspectors who are there daily at the over 6,000 plants that are in existence have special training in food security issues and they can be of assistance in terms of identifying those gaps. But definitely, we are taking further consideration of how we can enhance protections in the food processing operations.

Chairman COLLINS. I will provide you with the GAO finding that I am referring to, but just for the record, I am going to quote directly from GAO's report. It is a letter that was included by FSIS's Administrator Gary McKee, who was responding to the criticism by GAO. FSIS said, "FSIS made the assumption that plant security measures could be overcome by a determined terrorist and that certain commodities or processes could be more at risk than others to an attack. Security measures could lessen the risk, but the risk would still exist."

I am concerned if we are essentially writing off one point of vulnerability because we think the challenge is to great to secure these plants. I am concerned about the message that may send. Do you have a further comment on this letter?

Dr. PIERSON. I could comment further that what is being identified is worst case scenarios, too, and scenarios where the "what if" situations, what if those security measures were overcome, what would be the results, also.

Chairman COLLINS. But, of course, worst case scenarios are exactly what we have to plan for.

Dr. PIERSON. That is exactly right.

Chairman COLLINS. Senator Akaka.

Senator AKAKA. Thank you very much, Madam Chairman.

I have a question for Dr. Crawford. As you are aware, over the past few months, there has been an outbreak of hepatitis A in Tennessee, North Carolina, Georgia, and just last week in Pennsylvania. According to the CDC, this represents the largest foodborne outbreak of hepatitis A in United States history. The initial cases were traced back to green onions originating in Mexico and it is strongly suggested that the Pennsylvania outbreak has a similar source.

Next month, as you mentioned in your testimony, the FDA is scheduled to begin enforcement of two new regulations that will require domestic and foreign food processing facilities to register with the agency. The regulations will also require the prior notification of any food products being imported to the United States. The FDA is also planning to require all companies involved in the food supply system to keep detailed records of the origin of food products that they handle.

How would the hepatitis A outbreak have been prevented or handled differently had FDA's new security measures been in place?

Dr. CRAWFORD. Well, as I mentioned in my oral statement, the Bioterrorism Act, as we call it, does give us new authorities that, frankly, FDA has been seeking for many years. We now have the requirement to have food establishments not only in this country but elsewhere in the world that want to trade with the United States to register with us. We can require the registration. If they are not registered, then they may not do business with the United States either internally or externally. That, frankly, is something we have never had.

In the aftermath of September 11, 2001, it was useful for the government to do an inventory of food establishments and other establishments that FDA regulated as we tried to grapple with the possibility of further terrorist attacks following the anthrax outbreak. At that time, we did not have the authority nor did we have a list of who we were having to regulate. Now, you may ask, how could this be? Well, that is democracy in action. We didn't have it.

But because of the leadership of Senator Collins and you and this Committee and others, as I mentioned earlier, and Secretary Thompson, we now have that authority. So registration is something that is going to definitely happen as of December 12.

The other thing we can do which speaks to this problem, as you know, we previously had difficulty with cantaloupes coming from Mexico, and then during the time I was Acting Commissioner, we

found it advisable, necessary, and in order to protect the public health, we banned the shipment of cantaloupes from Mexico. We still have that authority to do that. We also have the authority to debar those companies that send contaminated food to the United States. If we go through the debarment process, they may not ever ship food again to this country.

We also for the first time can detain food that comes into the United States, which is something that we are doing with respect to the green onions that you mentioned.

And then finally, we require that a country or an entity wanting to ship food to the United States has to give us notice that it is coming. Before the advent of the Bioterrorism Act, it was like us standing at the border like the catcher in the rye, trying to figure out where to deploy our resources and what to do with the minimal authorities we had. Now, we have the authority to police the food supply and we are very much at FDA looking forward to December 12, when we go forward and do this, we think, better. It not only makes us better in terms of bioterrorism prevention, but in essential food safety.

Senator AKAKA. Thank you very much for that response. This is what we are looking for and I am glad to hear that. Thank you very much, Madam Chairman.

Chairman COLLINS. Thank you, Senator.

I want to thank this panel for their testimony and also for their efforts to make our food supply safer and to guard against an agroterrorism attack. The expertise and insight of all of our witnesses today have been extremely helpful to the Committee and shed much needed light on an aspect of homeland security that I believe has not received the attention that it deserves.

We are all very proud of having the safest food supply in the world, but that doesn't mean that we are somehow immune from an attack on our food supply. We know that terrorists such as Osama bin Laden have repeatedly stated their intention to cause economic harm and massive social upheaval, not to mention deaths and illness. When you look at the low-tech nature of so much of the agriculture industry, it is a tempting target, a real invitation to those who would do us harm.

So I think there is an awful lot of work that needs to be done here. I look forward to following up and appreciate the offer for the classified briefings, as well. But I would also ask each of the witnesses that we have heard from today to provide the Committee with any recommendations for further changes in laws that you may think would give you the tools that you need. I think the Bioterrorism Act was a great step forward, but I suspect as you delve further into this area with your planning that you are going to find that there are some gaps in authority.

We have talked, for example, today about the lack of a system for tracking livestock easily. Those kinds of recommendations may just be handled through administrative regulations, but they also may warrant some changes in laws. So I would invite your participation in that process, as well.

Finally, I want to thank Senator Akaka who has been a real leader in this area with the bills that he has introduced, as well, and I look forward to working with him.

I would be remiss if I didn't also acknowledge the hard work of my staff in putting together this hearing.

So thank you all for being here today. The record of this hearing will be kept open for 15 days for the submission of additional statements or questions and the hearing is now adjourned.

[Whereupon, at 12:30 p.m., the Committee was adjourned.]

APPENDIX

Testimony of
Senator Jim Talent
Before the Senate
Committee on Governmental Affairs
Hearing to Assess the Threat to America's Breadbasket
November 19, 2003

Madam Chairman, thank you for holding this hearing on such an important issue. It is important to raise the visibility of the question of food security. Contrary to what some believe, food doesn't come from a grocery store. It comes from farms in the heartland and potato farms in Maine and a threat to our food security affects us all.

Also thank you for allowing me to address your committee. I am chairman of the Agriculture Sub-Committee for Marketing, Inspection and Promotion, which has jurisdiction over inspection and certification of agriculture products.

I want to start with a note to consumers – its one you've probably heard before. Our nation's food supply is the safest, most abundant and affordable food supply in the world. That was true before September 11th and that is true today. I am confident in our government's ability to work with industry and our research institutions to protect the commodities that our farmers and ranchers produce.

However, since September 11, there is a need for heightened vigilance to prevent foreign agricultural pests and diseases from being deliberately introduced in the United States. The idea of terrorists deciding to create food-related threat is something new that we must address.

I compliment the efforts of each segment of the food industry, from farmers to retailers, to boost security measures. However, regardless of the intent behind a foreign pest or disease entering the US, it would still have a major, negative impact on our nation's economy.

Apart from the threat to safety, the economy is at stake. Nationally, agriculture sales account for 13% of the GNP and nearly one-sixth of all jobs in the US are related to agriculture. This amount is even greater in parts of the country like Missouri and the Midwest region.

Recent international instances have given us a window to see just what happens to the economy when you have a breach of biosecurity:

- In 1997, Classical Swine Fever devastated Netherlands pork producers and their industry costing roughly $2.3 billion in economic damages.

- Also in 1997 – Foot and Mouth Disease (FMD) broke out in Taiwan costing roughly $8 billion in economic damages.

- Just two years ago in the European Union, FMD destroyed their livestock industry and cost roughly $9.5 billion in economic damages. That number is still rising.

Experts have identified a few points to consider when determining the economic impact of an animal or plant disease outbreak: geography, timing and strategy.

- Geography - Where and over what area will the outbreak occur?

- We all know that the US agriculture industry, especially the livestock sector is highly concentrated. Large groups of animals share close quarters on the farm, during transportation and at the processing facilities.
- A disease could move quickly between herds and paralyze our agriculture industry.
- Additionally, if something were to occur in the Midwest, the impacts would be even more devastating. This is yet another reason why I appreciate the Chairwoman for holding this hearing.

- Timing - How quickly will outbreaks be detected and dealt with?
  - In the EU, it took them two weeks to discover FMD in their domestic livestock.
  - Obviously, the more quickly the disease is detected and eradication efforts get underway, the negative impact will be minimized.
  - In the event of a disease entering our domestic herds – we must have the networks in place to detect the disease and initiate the next steps to contain and eradicate the disease.
  - Farmers keep a watchful eye on herds. Any sign of sickness will get quick attention that immediately initiates a network lead by state veterinarians. This will also bring agriculture extension representatives and the vet schools into the process with research labs close at hand.

- Strategy - What strategy will be used to respond to the outbreak?

- Our federal agencies should partner with each other, as well as, industry, universities, commodity groups and private research institutions.
- The Universities represent an existing network for communications and research initiatives. The administration realizes that and DHS has a plan to work with these institutions to designate

I am confident that the remaining speakers will address these points in more detail, as well as the coordination between state, federal and local interests in the event of a breach of our nations biosecurity.

In closing, I want to point out some of the good work that is going on at the University of Missouri in an effort to address – geography, timing and strategy as it relates to food security. Missouri is smack in the middle of "America's Bread Basket."

Within the borders of Missouri, Kansas, Nebraska and Iowa is approximately 25 percent of the nation's crop and grasslands and 20 percent of the livestock industry.

Bordering states make up a combination of 70 percent of American agriculture. Two major rivers traverse these states, moving substantial quantities of agricultural inputs and products destined for foreign markets. Additionally, the Kansas City Board of Trade is an active indicator of domestic and global agriculture.

Given this substantial agricultural base and the growing threat from agroterrorism, the University of Missouri took the lead in forming the Midwest alliance as a national research resource.

They have partnered with other universities and private research institutions to establish a research test bed oriented to facilitate the prevention, detection, response and communication to the Midwest, additionally, it could be directed to any region of the country. I have a detailed paper prepared by the University that explains the Alliance and the economic significance of the Midwest that I would like to submit for the record.

I look forward to continuing to address this issue together with this committee and in my subcommittee on the Senate Agriculture Committee.

Testimony Before the Senate Governmental Affairs Committee by Dr. Thomas McGinn, NCDA&CS
November 19, 2003

Protecting the Nation's Food Chain and Economy

In the National Strategy for Physical Protection of Critical Infrastructure and Key Assets, released in February 2003, the President of the United States designated food and agriculture as critical infrastructures of the nation. This is an important first step in recognizing the importance of protecting America's food chain and our agriculture from terrorist attack and providing an adequate emergency response capability in the face of Weapons of Mass Destruction (WMD) threats for the agriculture infrastructure of our nation.

There are several key areas where leadership from the Congress will be crucial to a successful defense of our nation's agriculture industries and the security of our national food chain, from farm to fork. The first of these is the need to develop a national, highly integrated, yet automated, disease detection and surveillance capability to assist industry and the states in earlier detection of a weaponized disease attack (human and animal!) The solution is a similar type of investment to what CDC has made for the last two years in PH at the state level, however at a more modest level. This investment would be in training for industry and the states, development and nationwide deployment of reliable field testing technologies, such as RT-PCR and, finally, the development and deployment of remote, automated radiological, chemical and bio-pathogen sensor systems that can be deployed in periods of higher risk to provide a disease "trip wire" system to shorten our detection cycle time. Such a system could be integrated with state and national geographic information system (GIS) databases so that real time warnings would be provided in a geographic context.

It is important top note that the development and production of accurate, hand-held, portable bio-pathogen detection systems and the assay materials for specific weaponizable pathogens, such as FMD, is a critical need. The technology has been developed. However, no production base has been created as yet because the needed assays have often not been produced, or, to date, the potential market opportunity is insufficiently developed to encourage investment in the technology development cycle. As a result, we are currently dependant upon the timely discovery of clinical signs of disease, often by untrained, non-professional staff working in animal management fields. This can delay detection by days, even weeks after infection. Each day of delay in detection will result in a geometric increase in animal losses and disease eradication costs. Of even more concern is that for zoonotic diseases, that can affect both humans and animals, this lack of an active disease detection and surveillance system based upon such technologies, means our current detection and surveillance for human disease remains the hospital emergency room.

Next we need a national effort to standardize and deploy an agriculture infrastructure information rich GIS systems within each state. These systems, which house each state's Critical Infrastructure Information (CII) as well as human and livestock demographics, are vital to rapid, accurate decision making in the face of a fast moving disease. The data from such systems could be accessed by state and federal response elements in the event of a terrorist attack or any disease emergency.

Another major concern is that we do not currently have the ability to forecast the probably movement/spread of a livestock disease, whether the result of a terrorist act or an accident. These means we cannot accurately focus resources prior to or as the disease spreads where they will do the most good. The result will be that we will waste enormous resources and animal populations to disposal as we try to chase and contain the disease. The solution is that we need better predictive animal disease modeling tools. A modest investment in modeling software, possible leveraging military modeling technologies and our vast academic resource base, could yield enormous savings in response time and resources and industry preservation. Modeling will also enhance our training and exercise capabilities.

We lack detailed information on the true vulnerabilities of our nation's food chain. We have broad scope, very general data, but we do not understand the true nature of actual vulnerabilities at the granular level. The terrorist will spend months, even years studying a potential target within an infrastructure before he attacks. We need to invest some level of effort to at least know what the terrorist might learn from his efforts. The solution is Congressional support for a national food security program, such as that now being proposed by the Association of Food and Drug Officials (AFDO) and the Association of the State and Territorial Health Officials (ASTHO). This proposed program, modeled on and a compliment to the

North Carolina Food Security Project, will assist states and industry in an accurate assessment of the vulnerabilities of each component of the nation's food chain, by commodity. The data gathered would then be assessed and improved response and mitigation plans, vulnerability reduction programs and advanced training and exercise programs would be developed. The resulting vulnerability, all unclassified, along with the risk reduction, response and mitigation plans and the training and exercise programs would be shared with all of the states and industry, as appropriate, to enable reasonable hardening of the entire food chain in accordance with the current level of threat.

Next we need to further develop the livestock and plant laboratory system across the nation so that every laboratory can be leveraged to in both the detection and surveillance efforts, as well as disease response. Competent, efficient, standardized and redundant laboratory capacity is key to rapid and accurate diagnosis in the event of any disease emergency, whether human or animal.

Even if we discover that a disease, such as FMD, has been introduced to into our cattle or swine (or both) populations, even with early detection by advanced detection technologies, we lack a vaccine production capability or effective vaccine strategies with which to combat a number of potentially weaponizable diseases! Initially, in the case of FMD, we would be almost entirely dependant upon the Europeans for vaccines, until a production cycle can be established in the United States. If there is a simultaneous FMD outbreak in Europe, it is unlikely that we would get that support. The solution is that we must invest now in both the development of vaccines and the creation of a vaccine production base for FMD before such an outbreak occurs.

In the area of disease response, containment and eradication, we need a refined national strategy for preparedness and response to any attack on the farm to fork infrastructure that is based upon national policy guidance, resources and standards, but with response and mitigation based upon a public-private partnership at the state and local level. This strategy must integrate DHS, USDA, FDA and NDMS with state and county animal response teams, thereby leveraging public, private and volunteer resources, just as we now do with public and volunteer fire departments.

In summary, the key issues and proposed solutions are:

Issue:	Solution:
Detection and Surveillance	**Education Programs, field detection & diagnostics, Integrated Human/Animal Health Alert System, Automated, Remote Detection Technologies**
Containment and Eradication	**Force Multiplication Programs/Teams (VMAT, SART and CART) and new technologies such as vaccines, increased laboratory capacity**
CII Data management	**National Multi Hazard GIS based system, Advanced livestock disease spread modeling tools**
Vulnerabilities Assessment & Risk Reduction	**AFDO National Food Security Program** (modeled on NC), **Continuity of Operation Programs (COOP), Statutory Agro-Terrorism Training & Exercises**

We need federal policy guidance, resources and centralized leadership with decentralized, but integrated and coordinated, public-private execution at the state level

The effort to protect our national food chain and our agriculture infrastructure will be fraught with learning and challenges for everyone. That said, just because the process will be difficult and potentially competitive with other important prevention and response needs, the effort must be made and we owe it to the people of the United States to do everything we can to protect them, their health and their economic well being in the face of terrorist and disease threats.

Dr. Tom McGinn

N.C. Assistant State Veterinarian
Director Emergency Programs
State Animal Response Team
VMAT - 3

American Veterinary Medical Foundation

Homeland security…requires coordinated action on the part of federal, state, and local governments; the private sector; and concerned citizens across the country.

Source: National Strategy for the Protection of Critical Infrastructure and Key Assets (available on the Web at www.whitehouse.gov/pcipb/physical.html)

Agro-Bioterrorism Threat

- Easy to obtain, conceal and spread
- Easy to create fear: Kill one scare 10,000
- Easy to create collateral damage
  - Zoonotic diseases, toxins, chemicals
- Destroy enemies food supply: Weapon of choice well before Anthrax in mail
- Destroy nation and/or way of life
- Do not have to injure themselves

Bio-Terrorism has been employed throughout history!

Agriculture as a Target

"One sixth of the U.S. gross national product and one eighth of all American jobs are connected to agriculture." (U.S. Rep Bob Etheridge)

U.S. agriculture is the largest single sector of the U.S. economy

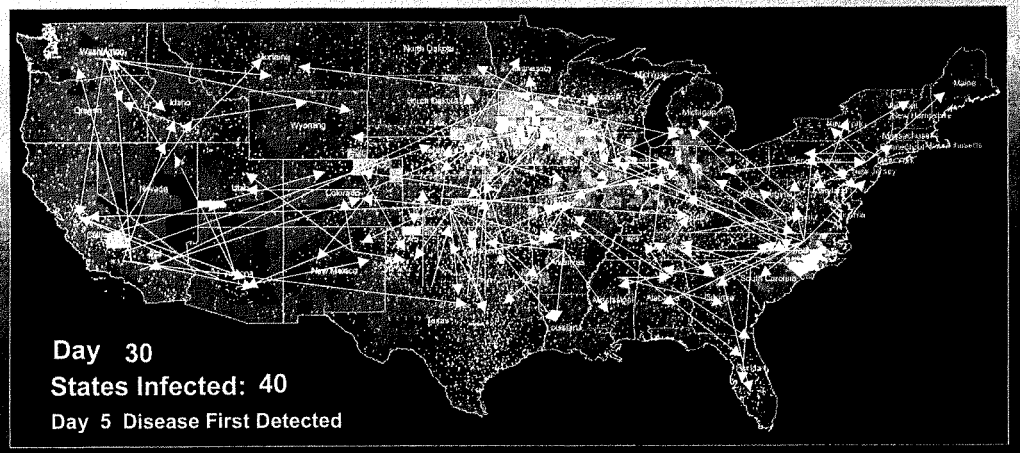
$1 trillion in economy activity

+$12 billion to balance of trade

$58 billion to NC

Information discovered in Afghanistan illustrates Al Qaeda's interest in biological weapons

Potential FMD Disease Spread
After a simulated terrorist attack at 5 Locations



Potential Impact: Even if a national "stop Movement" of all susceptible animals is ordered on Day 8, by the time the disease is eradicated the nation would lose still 23.6 million animals!

An Improved National Surveillance and Detection System would reduce disease spread!

FMD Agricultural Bioterrorism Outcome

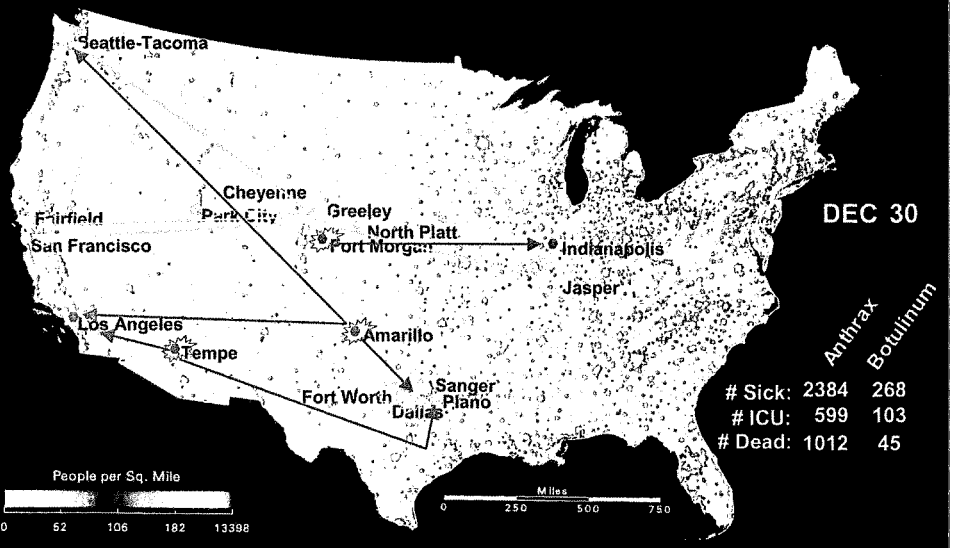
These numbers represent the estimated maximum daily manpower requirement to control the disease outbreak predicted in this model:

Primary Outbreaks (5):	32,105
Secondary Outbreaks (32):	178,847
Tertiary Outbreaks (106):	499,800
Disaster Federal Assistance Staff Offices (44):	13,200
Total:	723,952

The nation is not prepared to resource a response at this level and our state response plans are not integrated with other states or with the current federal response plans!

Food Contamination Scenario

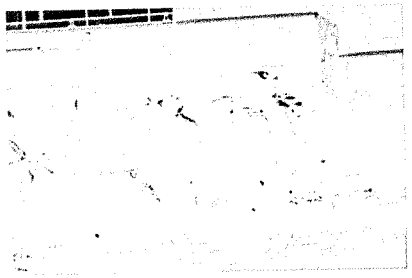
BIO Terrorist Attack Trace Out



DEC 30

	Anthrax	Botulinum
# Sick:	2384	268
# ICU:	599	103
# Dead:	1012	45

Worried Well Effect



Such a biological attack would produce gastro, respiratory and neurological symptoms for those infected.

Very rapidly, anyone with allergy, flu or common gastrointestinal discomfort will assume they are a victim. The public health system will be quickly overloaded!

Terrorist Corruption of the Integrity of Food Quality Control Process

The intentional introduction of a contaminated tissue or food sample into the quality control or laboratory system would trigger a similar national response.

Confidence in the food chain would be undermined and entire farm to fork food system processes would be shut down with enormous, long term economic consequences!

Protecting Food Supply Central to Cultural and Governmental Stability

- Requires federal leadership
- Partnership with state and local governments
  - state and locals receive < 10 % federal funding but conduct > 80 % of the food inspections
- Collaboration with private sector

Key Issues & Solutions
For Protecting the Nation's Food Chain

Issue:	Solution:
Detection and Surveillance	Education Programs, field detection & diagnostics, Integrated Human/Animal Health Alert System, Automated, Remote Detection Technologies
Containment and Eradication	Force Multiplication Programs/Teams (VMAT, SART and CART) and new technologies such as vaccines, increased laboratory capacity
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Vulnerabilities Assessment & Risk Reduction	AFDO National Food Security Program (modeled on NC), Continuity of Operation Programs (COOP), Statutory Agro-Terrorism Training & Exercises

We need federal policy guidance, resources and centralized leadership with decentralized, but integrated and coordinated, public-private execution at the state level

Federal Leadership Is Needed

- Facilitate development of national food security strategy
  - partnership with states and private sector
- Coordinate decentralized implementation
- Provide funding to protect food and agricultural infrastructure

TESTIMONY

The Bio-Terrorist Threat to Agricultural Livestock and Produce

DR. PETER CHALK

CT-213

November, 2003

Testimony presented before the Government Affairs Committee of the United States Senate on November 12, 2003.

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THE BIO-TERRORIST THREAT TO AGRICULTURAL LIVESTOCK AND PRODUCE

Statement prepared by Dr Peter Chalk,* Policy Analyst, RAND Santa Monica Office

INTRODUCTION

Thank you Mr. Chairman and distinguished Members of the Senate Committee on Government Affairs for the opportunity to testify on this important subject. Over the past decade, the United States has moved to increase its ability to detect, prevent and respond to terrorist threats and incidents. Much of this focus, which has involved considerable financial outlays, has aimed at upgrading public infrastructure through the development of vulnerability threat analyses designed to maximize both anti-terrorist contingencies and consequence management modalities. While many gaps remain, investments in preparedness, training and response have helped with the development of at least nascent incident command structures that have incrementally begun to span the ambit of potential terrorist attacks, from conventional bombings to more "exotic" biological, chemical, radiological and nuclear incidents.

Agriculture is one area that has received comparatively little attention in this regard, however. In terms of accurate threat assessments and consequence management procedures, the industry exists somewhat as a latecomer to the growing emphasis that has been given to critical infrastructure protection (CIP) in this country. Indeed the sector was only incorporated as a specific component of U.S. national counter-terrorist strategy following *al-Qaeda's* attacks on the Pentagon and World Trade Center in September 2001.[1]

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* This testimony is based on the author's cumulative knowledge of terrorism and threats to US agriculture. No Federal government grants or monies were used to prepare this written statement. The opinions and conclusions expressed both in this testimony and the background research from which it is derived are entirely the author's own and should not be interpreted as representing those of RAND of any of the sponsors of its research.

[1] It should be noted that Agriculture and Food Safety is included as one of eight sub-groups of the National Security Council's (NSC) Weapons of Mass Destruction Preparedness Group, which was established in 1998 under the auspices of Presidential Decision Directive 62 (PDD-62), "Combating Terrorism." The USDA serves as chair of this sub-group. However, the Department is a relative latecomer to the national security and defense structure and presently lacks sufficient visibility and influence to champion greater Federal attention to countering biological attacks against agriculture (which is, itself, invariably overshadowed by other terrorism-related issues). See Henry Parker *Agricultural Bioterrorism: A Federal Strategy to Meet the*

This testimony aims to expand the current debate on domestic homeland security by assessing the vulnerabilities of agriculture and the food chain to a deliberate act of biological terrorism. For the purposes of this testimony, agro-terrorism will be defined as the deliberate introduction of a disease agent, either against livestock or into the general food chain, for the purposes of undermining national stability and/or engendering public fear. Depending on the disease agent and vector chosen, it is a tactic that can be used either to generate either economic, social and political disruption or as a form of direct human aggression.

THE IMPORTANCE OF THE US AGRICULTURAL AND FOOD SECTOR AND ITS VULNERABILITY TO SABOTAGE

Agriculture and the general food industry are highly important to the social, economic and, arguably, political stability of the United States. Although farming directly employs less than three percent of the American population, one in eight people work in an occupation that is directly supported by food production.[2] Cattle and dairy farmers alone earn between $50 billion and $54 billion a year through meat and milk sales,[3] while roughly $50 billion is raised every year through farm-related exports. In 2001, food production constituted 9.7 percent of the U.S. GDP, generating cash receipts in excess of $991 billion.[4]

Unfortunately, the agricultural and food industries remain vulnerable to deliberate disruption. Critical considerations in this regard include:

The Concentrated and Intensive Nature of Contemporary US Farming Practices

Agriculture is both a large-scale and intensive business in the United States. Most dairies in the country can be expected to contain at least 1,500 lactating cows at

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Threat. McNair Paper 65 (Washington D.C.: Institute for National Strategic Studies, National Defense University, March 2002), 30.

[2] Agricultural Research Service, "Econoterrorism, a.k.a. Agricultural Bioterrorism or Asymmetric Use of Bioweapons," unclassified briefing given before the United States Department of Agriculture (USDA), February 28, 2000. See also Parker, *Agricultural Bioterrorism: A Federal Strategy to Meet the Threat*, 11.

[3] Overall livestock sales in 2001 were in excess of $108 billion. See "Agro-Terrorism Still a Credible Threat," *The Wall Street Journal*, December 26 2001.

[4] Bureau of Economic Analysis, "Gross Domestic Product: First Quarter 2002 (Advance)," available on-line at http://www.bea.doc.gov/bea/newsrel/gdp102a.htm.

any one time, with some of the largest facilities housing upwards of 10,000 animals.[5] Unlike humans, these animals exist as highly concentrated populations and tend to be bred and reared in extreme proximity to one another. The outbreak of a contagious disease at one of these facilities would be very difficult to contain, especially if it was airborne in nature, and could well necessitate the destruction of all exposed livestock – a formidable and highly expensive task. Indicative of this was the recent outbreak of Exotic Newcastle Disease (END) in late 2002, which by October of this year had led to the slaughter of over three million chickens in several counties across California.[6]

The Increased Disease Susceptibility of Livestock

U.S. livestock has become progressively more disease prone in recent years as a result of husbandry changes and biotechnology innovations that have been introduced to increase the quality and quantity of meat production as well as to meet the specific requirements of individual vendors. These modifications, which have included everything from sterilization programs to dehorning, branding, crowding and hormone injections, have combined to elevate the stress levels of exposed animals. This has both lowered their natural tolerance to contagious pathogenic agents as well as increased the "volume" of bacteria that would normally be shed in the event of an infection.[7]

Insufficient Farm/Food-Related Security and Surveillance

A deliberate act of sabotage is simply not something that the majority of the agricultural community have actively thought about, much less physically prepared to guard against. Farms in the U.S. have therefore tended to evolve, not surprisingly, as relatively open affairs, seldom incorporating concerted means to prevent unauthorized access or intrusion. This is especially true of outlying fields and feedlots but is also often the case with respect to centralized facilities such as milking stands.

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[5] See, for instance, Siobhan Gorman, "Bioterror Down on the Farm," *National Journal* 27 (July 1999): 812; and Agricultural Research Service (ARS), *Agriculture's Defenses Against Biological Warfare and Other Outbreaks*, 2. Currently, roughly three quarters of all dairy commodities are concentrated in the hands of less than ten percent of the country's cow and calf production facilities.

[6] See "Exotic Newcastle Disease Update," CDFA Animal Health Branch Press Release, October 15, 2003, available on-line at http://www.cdfa.ca.gov/ahfs/ah/Newcastle_info.htm Affected counties included Imperial, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, Ventura and Kern.

[7] Comments made by Dr Paul Effler, Hawaii State Epidemiologist, during the "Transnational Security Threats in Asia" Conference, Honolulu, Hawaii, August 8-10, 2000.

Food processing and packing plants also tend to lack uniform security and safety preparedness measures, particularly those that have proliferated at the lower and medium end of the production spectrum. Thousands of these facilities exist across the country, exhibiting uneven standards of internal quality control, questionable bio-surveillance and highly transient, unscreened workforces.[8] Entry-exit controls are not always adequate (and occasionally do not exist at all) and even basic measures such as padlocking storage rooms may not be practiced. Moreover, many small-scale operations do not keep accurate records of their distribution network, meaning that it may not be possible to trace a tainted food item back to its original source of production.[9]

Inefficient Passive Disease Reporting System

Responsibility for reporting unusual disease occurrences in the U.S. lies with agricultural producers. However in many cases, communication channels between and state emergency management personnel remain underdeveloped, particularly with regards to information frameworks that clearly designate relevant regulatory agencies and primary or secondary personnel that need to be contacted in the event of a serious viral or bacterial outbreak. Equally as important, farmers are often reluctant to quickly report outbreaks of notifiable diseases, fearing that if they do so, they will be forced to carry mass, unrecompensed depopulation measures.[10]

The current operation of the U.S. animal disease reporting system, in other words, does little to avail early pathogenic warning and identification. This is problematic as rapid, confirmed diagnoses are vital to any effective emergency management system, particularly in the case of highly transmissible viral infections such as FMD.

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[8] It should be noted that during 2002, the Bush Administration introduced plans to upgrade the screening of workforces employed at food processing plants and packing facilities. It is not clear, however, how comprehensive these checks will be and to what extent they will apply to the thousands of the thousands of small and medium scale plants that exist throughout the U.S. and which necessarily operate on a system of self-regulation.

[9] Author interview, California Department of Health and Human Services (CDHHS), Sacramento, August 2000.

[10] It should be noted that the USDA is considering a review of indemnity provisions specifically related to foot and mouth disease, which would authorize payments to cover both disinfection costs as well as the full market value of destroyed animals and related products and materials. For a detailed description of the proposed changes see USDA, *Foot and Mouth Disease Payment of Indemnity; Update of Provisions* [Docket Number 01-069-1], RIN 0597-AB34, November 2002, available on-line at: http://frwebgate.access.gpo.gov

Inappropriate Veterinarian and Diagnostic Training

The number of appropriately trained veterinarians capable of recognizing and treating exotic livestock diseases is declining in the U.S. In part, this reflects the smaller numbers of people actually entering veterinarian science – itself a product of the lack of educational support and financial incentive given to the discipline in the country – and the preference choices of those that do – most of who tend to focus on domesticated pets such as dogs and cats rather than large-scale husbandry (as this is where the most money is to be made).[11] Just as importantly, it is indicative of college curriculae that, in many cases, reportedly do not emphasize FADs sufficiently, with the focus directed toward diseases that are endemic to the United States itself.[12]

CAPABILITY REQUIREMENTS FOR CARRYING OUT AN AGRO-TERRORIST ATTACK

Although vulnerability does not equate to risk and there are few recorded instances of terrorists actually using disease agents against livestock, a realistic potential for such a contingency exists. Indeed what makes the vulnerabilities inherent in agriculture so worrying is that the capability requirements for exploiting these weaknesses are not significant and certainly less than those that would be needed for a human-directed bio-attack. At least four factors account for this. First, there is a large menu of agents to choose from, with fifteen "List A" pathogens identified by the *Office International des Epizooties* (OIE) as having the potential to severely effect agricultural populations and/or trade.[13] Most of these diseases are environmentally hardy – being able to exist for extended periods of time on organic or inorganic matter – and many are not routinely vaccinated against in the United States.

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[11] Comments made to author during the "AFBF Commodity Advisory Meeting," Capital Holiday Inn, Washington D.C., January 2002.

[12] Comments made by USDA officials attending the NRC "National Security Implications of Advances in Biotechnology: Threats to Plants and Animals" Planning Meeting, Washington D.C., August 1999.

[13] The OIE specifies List A diseases as those "that have the potential for very serious and rapid spread, irrespective of national borders, that are of serious socio-economic or public health consequence and that are of major importance in the international trade of animals and animal products." List B diseases are defined as those "that are considered to be of socio-economic and/or public health importance within countries and that are significant in the international trade of animals and animal products." For further details see OIE classification of diseases, available on-line at http://www.oie.int/eng/maladies/en.classification.htm

Second, many FADs cannot be transmitted to humans, meaning that they can be handled with no risk of latent or accidental infection. There is, thus, no requirement on the part of the perpetrator to have an advanced understanding of animal disease epidemiology and transmission modes nor is there any need for elaborate containment procedures, personal protective equipment (PPE) and/or prophylaxis antibiotics in the preparation of the agent.[14]

Third, if the objective is human deaths, the food chain offers a low-tech, yet conducive mechanism for disseminating toxins and bacteria such as salmonella, *e-coli* and botulism (none of which require any substantial scientific knowledge to isolate or develop). Developments in the farm-to-table food continuum have greatly increased the number of entry points for these agents, which combined with the lack of security and surveillance at many processing and packing plants, has helped to augment the technical ease of orchestrating a food-borne attack.[15]

Fourth, animal diseases can be quickly spread to affect large numbers of herds over wide geographic areas. This reflects the intensive and concentrated nature of modern farming practices in the US and the increased susceptibility of livestock to viral and bacterial infections (see above). There is, in other words, no obstacle of weaponization - which is frequently cited as one of the most important barriers preventing non-state offensive use of biological agents[16] - that needs to be overcome in agricultural terrorism as the animals, themselves, become the primary vector for pathogenic transmission.

IMPACT OF A MAJOR ATTACK AGAINST AGRICULTURAL LIVESTOCK AND/OR THE FOOD CHAIN

The ramifications of a concerted bio-assault on the U.S. meat and food base would be far-reaching and could extend beyond the immediate agricultural community to

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[14] All of these animal pathogens are currently being considered by the Ad Hoc Group of State Parties to the Biological and Toxin Weapons Convention (BTWC).

[15] Comments made by Janet Kause during the "Bioterrorism in the United States: Calibrating the Threat" Seminar, Carnegie Endowment for International Peace, Washington D.C., January 2000.

[16] A good summary of the technical constraints inherent in weaponizing biological agents can be found in Seth Carus, *Bioterrorism and Biocrimes: The Illicit Use of Biological Agents in the 20th Century* (National Defense University, Washington D.C.: Center for Counterproliferation Research, 1999) 26-29.

affect other segments of society. It is possible to envision at least three major effects that might result.

Economic Disruption

Perhaps one of the most immediate effects of a major act of biological agro-terrorism would be economic disruption, generating costs that could be expected to cross at least three levels. First, there would be direct losses resulting from containment measures and the eradication of disease-ridden livestock. Second, indirect multiplier effects would accrue both from compensation paid to farmers for the destruction of agricultural commodities[17] and revenue deficits suffered by both directly and indirectly related industries.[18] Third, international costs in the form of protective embargoes imposed by major external trading partners would manifest. One study from California, which presented eight different scenarios associated with a theoretical FMD outbreak, concluded each day of delay in instituting effective eradication and control measures would cost the state $1 billion in trade sanctions.[19]

Loss of Political Support and Confidence

A successful bio-attack against the U.S. agricultural sector could also serve to undermine confidence and support in state governance. Successfully releasing contagious agents against livestock might cause people to lose confidence in the safety

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[17] Although the U.S. has no standardized system of compensation in place, Federal funds would be forthcoming in the event of a large-scale agricultural disaster such as a multi-focal outbreak of FMD.

[18] As the 2001 outbreak of FMD in the United Kingdom illustrates, the extent of these costs can be very high. By the year's end, well over US$1.6 billion had been paid in compensation to farmers affected by mass culling operations, with losses to tourism as a result of cancellations brought about by the quarantine of farms located in or near popular holiday destinations such as the Lake District estimated to have been in the range of US$4 billion (at an exchange rate of US$1=0.60 pence). See "Farmers Paid GBP1 Bn For Culled Animals," *The Daily Telegraph* (UK), June 30, 2001; "After Foot and Mouth," *The Economist*, May 5, 2001; "Spring Returns to Rural Britain, But Not Tourists," *The Washington Post*, March 16, 2001.

[19] Author interview, California Department of Food and Agriculture (CDFA) officials, Sacramento, September 2000. See also "Eastern Oregon Farmers Ready to Eradicate Cattle Disease Threat," *The Oregonian*, August 17, 1999.

of the food supply and could possibly lead them to question the effectiveness of existing contingency planning against weapons of mass destruction in general.

The actual mechanics of dealing with an act of agricultural bioterrorism could also generate public criticism. Containing a major disease outbreak would necessitate the slaughter of hundreds of thousands of animals, particularly in cases where no concerted vaccination was in place. Euthanizing such volumes has the potential to generate vigorous opposition from the general population - not to mention farmers and animal rights advocates - particularly if slaughtering involved susceptible but non-disease showing herds (so-called fire breaker operations) and/or wildlife.[20]

Social Instability

Beyond immediate economic and political impacts, bio-terrorist assaults against agriculture have the potential to create public angst and could, possibly, stimulate socially disruptive rural-urban migrations. Several animal diseases are zoonotic in nature, meaning they have the ability to "jump" species and affect humans. Should an epidemic of any one of these diseases occur in the U.S., it could have severe repercussions in terms of galvanizing a mass public scare throughout the country, particularly if human deaths actually occurred. Terrorists could use this to their advantage, allowing them to create a general atmosphere of fear and anxiety without actually having to carry out indiscriminate civilian-oriented attacks (and "accepting" all this entails in terms of attracting mass reprisals and alienating actual or potential support).

BIOLOGICAL ASSAULTS AGAINST AGRICULTURE AND TERRORISM MODUS OPERANDI

Despite the ease by which an act of agro-terrorism could be carried out and the severe ramifications that a successful assault could elicit (especially in terms of

[20] To be sure, mass eradication has occurred in the past in the US without triggering widespread civil disquiet. However, such operations have not involved large-scale husbandry (for the most part focusing on poultry flocks) nor have they been the subject of intensive media interest and scrutiny. It is these latter aspects that have relevance in terms of assessing the possible fall-out from culling measures, largely because they necessarily mean there has never been a visual point of reference to prepare the American general public for the consequences of eradicating highly visible animal herds.

economic and political fallout), it is unlikely to constitute a primary form of terrorist aggression. This is because such acts would probably be viewed as "too dry" in comparison with traditional tactics in the sense that they do not produce immediate, visible effects. The impact, while significant, is delayed – lacking a single point of reference for the media to focus on (and highlight).[21]

In this light, it is perhaps understandable that biological attacks against agriculture have not emerged as more of a problem. Indeed since 1912, there have been a mere twelve documented cases involving the sub-state use of pathogenic agents to infect livestock or contaminate related produce. Of these, only two incidents could in any way be termed terroristic in nature: the 1984 Rajneeshee salmonella food poisoning in Oregon and the 1952 Mau Mau plant toxin incident in Kenya.

This being said, agro-terrorism could emerge as favored form of secondary aggression that is designed to exacerbate and entrench the general societal disorientation caused by a more conventional campaign of bombings. The mere ability to employ cheap and unsophisticated means to undermine a state's economic base and possibly overwhelm its public management resources give livestock and food-related attacks a beneficial cost/benefit payoff that would be of interest to any group faced with significant power asymmetries.

Thank you for your time. I will be happy to respond to any questions that you might have.

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[21] See, for instance, Brian Jenkins, "Future Trends in International Terrorism," in Robert Slater and Michael Stohl eds., *Current Perspectives on International Terrorism* (London: Macmillan Press, 1988).

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The Threat of Agroterrorism in the Heartland
Presented by Colleen M O'Keefe, D.V.M., M.S to the
Senate Governmental Affairs Committee
November 19, 2003

Illinois recognized the possible threat of the introduction of Foreign Animal Diseases (FAD) as early as the spring of 1998. The presence of classic swine fever (hog cholera) in the Netherlands, Dominican Republic, BSE in England and Foot and Mouth Disease in Argentina, the ease of world travel, and O'Hare Airport increased the threat of bringing in a FAD either accidentally or intentionally. The threat of FAD is a serious concern both for the economy of Illinois and the whole United States.

Illinois is home to nearly 2 million cows, over 4 million hogs, 120,000 dairy cattle and 74,000 sheep and goats. Illinois generates annually nearly $7.5 billion in farm income, with the livestock industry generating $1.4 billion in cash receipts. The diagnosis of a FAD in Illinois would have drastic repercussions to the economy of the State and the whole United States. The movement of all animals and exports of animal products would be immediately halted if a disease like foot and mouth were diagnosed. Consumer confidence would be shaken and meat products that would be available would be extremely expensive to buy, even if consumers would. The diagnosis of a foot and mouth disease or classic swine fever would be more devastating to our economy than the diagnosis of Bovine Spongiform Encephalopathy (BSE, Mad Cow Disease) was to Canada or Great Britain's economy.

If either accidentally or through an act of agroterrorism, a FAD is introduced into Illinois it is critical that the disease be quickly diagnosed, the area quarantined and the disease eradicated. The economic devastation of FAD increases as the time to diagnosis and containment lengthens. The emergency plans we have formulated are attempting to provide the most rapid response to provide containment of any outbreak.

History: In the spring of 1998 the Illinois Department of Agriculture (IDOA), in cooperation with USDA veterinary services put together an emergency plan that mirrored that of the Federal Regional Emergency Animal Disease Eradication Organization (READEO). It was immediately apparent that the IDOA would not have the manpower, equipment and supplies necessary in the event of a FAD outbreak, however by joining with the Illinois Emergency Management Agency it would allow the IDOA access to all of the other State agency resources. During 1999 several tabletop exercises and workshops were conducted to test the plan and answer questions. In July 2000 our State and Federal field staff were given "Incident Command Training" to promote all groups to work together in a coordinated effort. This is the command structure used by all federal emergency organizations and gives everyone a common language.

In 2001 the Emergency Animal Disease/Animals in Disasters Annex was added to the Illinois State Emergency Operations Plan allowing the use of and which spells out how State resources from other agencies would be used in an emergency response. A Memorandum of Understanding has been signed with the University of Illinois College of Veterinary Medicine and College of Agriculture to provide assistance and expertise in the event of an emergency animal disease outbreak. In 2002 Illinois passed legislation allowing the State to sign on to the Emergency Management Assistance Compact (EMAC) facilitating state-to-state emergency assistance.

Since the State of Illinois has several nuclear power plants, the IDOA in conjunction with the Illinois Department of Nuclear safety has in place plans to deal with radioactive contamination of livestock and crops.

In the spring of 2003, the IDOA held 5 regional meetings for private veterinarians. These meetings were held to raise awareness of the threat of FAD and bioterrorism and make veterinarians aware that they could be the first responders in a disease outbreak. In October of 2003 a 2-day meeting was held for veterinarians to begin training as first responders. This meeting provided a refresher course on FAD introduced them to emergency response procedures and asked them to indicate the level of cooperation the IDOA could expect of them if their assistance was needed. Our goal was to recruit one veterinarian for each of our 102 counties to assist the local emergency management teams.

The State laboratories have been upgraded for the potential bio-terrorism threat. A BL-3 laboratory has been built in Galesburg and each laboratory has an alkaline digester to deal with potential pathogens.

Future Plans: Presently the IDOA is working on putting together a model emergency animal disease/animals in disaster plan that can be annexed to county emergency response plans. The Department is also putting together regional and county veterinary response teams to mobilize in the event of animal disease emergencies or animals involved in natural disasters.

A major concern in any FAD is the need for disposal of animals. This is an area that must be preplanned. The IDOA is in the process of setting up a statewide plan for massive animal disposal.

Since the major economic threat is to the animal sector of agriculture our limited staff and funds have been primarily used to develop the animal emergency plan. The next area of planning will have to be for the fertilizer, feed and seed security.

Regional Plan: In evaluating animal disease risk it was found that this is a regional, not a single state, issue. Illinois alone monthly exports approximately 217,800 head of swine, 2,800 head of cattle and 600 sheep and goats that are all susceptible species. Illinois imports 127,500 head of swine, 14,300 cattle and 330 sheep and goats monthly. It is important to remember that there is a large number of animals in transit since it is cheaper to transport animals to feed than feed to animals. With this in mind the Central States Animal Emergency

Coordinating Council was formed through an effort by Illinois in January of 2002. This council was composed of representatives from the Departments of Agriculture and Emergency Management in Illinois, Indiana, Iowa, Kentucky, Missouri, North Carolina, Wisconsin and the USDA. North Carolina was included because of the large number of swine (approximately 20,000 head per day) exported from North Carolina to the Midwest. After meetings, work groups and tabletop exercises the following findings were made in December of 2002:

1. The Regional Plan will not and must not usurp state authority or responsibility to address a foreign animal disease. The overall goal of the Regional Plan is to enhance communication and work together toward a common system of tracking and monitoring animal movements. Council members believe enhanced communication among the states will assist in effectively managing a disease outbreak.

2. There is a serious discrepancy among states in terms of computer technology, mapping expertise, and animal tracking. Additionally, states with the appropriate mapping technology and data collection are the exception, rather than the rule. Accordingly, numerous states don't have the hardware or software capacity to utilize the technology some states possess. USDA must immediately implement an electronic system to track livestock movements and monitor disease outbreaks. At the very least USDA should identify states, such as members of the Council, to conduct a pilot project of an electronic tracking system that could be duplicated nationwide.

3. Post-outbreak livestock movement protocol will be critical in any animal emergency, not only in terms of preventing the spread of disease but in facilitating normal marketing of healthy livestock in order to minimize the economic damage that will result. The Council realizes and acknowledges that political pressure will be to immediately halt all livestock movement. The Council urges USDA to immediately address this issue and bring together all interested parties to develop a workable solution that protects the economic viability of America's livestock operations.

4. State officials must be made aware of the government's indemnity plan before an emergency arises. The Council encourages USDA to immediately define and publish indemnity rates for livestock in the event of a foreign animal disease outbreak.

5. Disposal of animals will be subject to environmental and political pressure. States must resolve, with the appropriate authorities, how disposal of livestock will occur well in advance of an outbreak. The Council would also recommend that states commit, in advance, the funding for digesters, air curtain burners or other disposal mechanisms.

6. State and Federal Departments of Agriculture and animal health officials will never have enough people to fully address a foreign animal disease. It will take multiple agencies, private organizations and associations in a real event. Training and testing (of agency, industry, associations, organizations, and producers) must become an integral part of our everyday lives.

The following recommendations were made:

1) Expanding the scope of the Council. In addition to the Council the Multi-State Partnership in Resource Sharing has also been formed. This council is still in the formative phase.

2) Develop an electronic tracking system. The USDA has started this with the implementation of the farm and animal ID systems starting January 2004.

3) Seek additional funding. Additional funding will be needed to maintain the Council or the Partnership, the relationships that have been developed, and the response to a foreign animal disease/animal emergency.

4) Address technology, personnel and communication needs. Many states have fundamental needs in these areas, including: a) GPS mapping of livestock and all the hardware and software required, b) training for veterinarians, lab staff, livestock producers and others to create a corps of first responders at the local level, and c) a group of identified epidemiologists who are familiar with the response plan and able to leap into action on a moment's notice.

5) Expand relationships with USDA/APHIS personnel. Federal/state cooperation could be enhanced through greater federal participation in regional exercises.

6) Coordinate a network of state labs to maintain routine diagnoses in extraordinary circumstances. Approximately one-third of the animal disease diagnostic labs in the US are represented in the Council. The Council urges USDA to expand the number of labs eligible to perform FAD testing to maintain routine diagnoses in extraordinary circumstances.

Needs: Staffing is also an issue. The IDOA is putting together a comprehensive emergency plan, coordinating with the IEMA and other states with less than 3 individuals, none of which are employed full time on emergency management issues. Illinois is not alone in attempting to become well prepared with limited staffing.

It is critical for our State laboratories (animal disease and agricultural products) to have the most current equipment and highly trained staff. The state laboratory system through the years while still providing top notch diagnostic work on animal diseases has now evolved to a much larger role in protecting human health, the food chain, the environment and provide surveillance for FAD. To continue to meet these mandates it is critical that our laboratories have the best available equipment. With constantly changing and improving technology, our laboratory equipment is rapidly becoming outdated and sometimes fails to provide the level of testing necessary to protect the public interests. Our laboratories need to:

- Serve as a component of a nationwide early warning system for the detection of bioterrorist events through early detection of outbreaks of foreign animal diseases.
- Detect natural or intentional contamination of our food supplies
- Provide diagnostic services for the detection of animal disease outbreaks involving

agents that impact human health (anthrax, Brucellosis, tuberculosis)

- Provide early recognition and participate in surveillance programs for newly emergent diseases of animals and human beings (West Nile, monkeypox)
- Recognize economically important diseases [Foot and Mouth, bovine spongiform encephalopathy (BSE), classic swine fever (hog cholera)]. It is imperative that state laboratories be allowed to test for FAD's and not just Plum Island as it now stands. In the face of an outbreak, the federal laboratory system will rapidly be overwhelmed, causing a serious delay in diagnosis and containment.
- Provide monitoring of the food and water supplies against potential pathogens and toxins involved in food and water born diseases, both naturally and intentionally contaminating food and water [antibiotics, insecticides, heavy metals (lead, arsenic, mercury)].

To meet these requirements the laboratories need modern equipment and experienced personnel trained to run standardized, rapid, diagnostic tests. To protect our personnel we need to upgrade our facilities to meet biocontainment requirements.

Funding for GPS technology, infield computers and mapping soft ware is critical to having the ability to mount a rapid response. It is imperative that states be able to accurately locate animals at risk, slaughter facilities, and warehouses and identify sensitive environmental concerns in the case of an outbreak. The States will need well-trained professionals at all levels of government and private veterinary practioners to serve as first responders. To provide a high level of competence, continued training and exercises are necessary.

Dr. Penrose Albright
Assistant Secretary for Science and Technology
Department of Homeland Security

Good morning Chairman Collins, Senator Lieberman, and Members of the Committee. I am pleased to appear before you today to report on the progress the Science and Technology Directorate of the Department of Homeland Security is making in the areas of prevention, protection, response and recovery to acts of agroterrorism against the American people. The Department's mission is to protect America from terrorist threats or strikes — including those directed at agriculture and food.

I want to begin by giving you a brief overview of the structure of the Department and its Science and Technology Directorate, so that you may better understand where the agricultural component fits into the overall picture.

The Department mobilizes the efforts of what used to be 22 federal agencies under a common mission and chain of command. This greatly enhances the Department's ability to react swiftly and effectively to threats against our nation. It also facilitates better coordination with homeland security partners in the private sector and state and local governments including first responders.

DHS Directorates

The Department has four key interconnecting directorates and each is involved with agricultural aspects of homeland security. The Border and Transportation Security Directorate is responsible for securing our borders, airports, ports and other modes of transportation. This directorate has a primary interface with six other agencies, including the U.S. Department of Agriculture's Animal and Plants Health Inspection Service (APHIS). The Emergency Preparedness and Response (EPR) Directorate takes the necessary steps to ensure that we are prepared for and able to recover from a natural disaster or terrorist attack. EPR has direct ties to both Health and Human Services and the U.S. Department of Agriculture in the area of biological threats to food products.

The Information Analysis and Infrastructure Protection (IAIP) Directorate gathers and assesses intelligence and information about threats and vulnerabilities from other agencies and takes preventive and protective action. Agriculture and food are two of 14 Critical Infrastructure and Key Assets identified in the President's National Strategy for Homeland Security. As such, they fall into the domain of the IAIP Directorate. The Department of Commerce's Critical Infrastructure Assurance Office (CIAO) and the FBI's National Infrastructure Protection Center were folded into this directorate, providing additional resources to gather and assess information.

The Science and Technology Directorate (S&T) serves as the primary research and development arm of DHS and its priority is to find technology solutions to meet pressing homeland security challenges. S&T is specifically tasked with marshalling the intellectual capital of the engineering and scientific communities to develop fresh and effective approaches to safeguard the American public. The Plum Island Animal Disease Center (PIADC) became part of the Department of Homeland Security as mandated by the Homeland Security Act on June 1, 2003. S&T collaborates with APHIS and the USDA's Agricultural Research Service (ARS) on research at PIADC.

These four directorates are designed to exchange information and coordinate operations to ensure that the Department functions effectively on a day-to-day basis and that it is prepared to act decisively in the event of a terror threat or strike or natural disaster.

In its planning, the S&T Directorate has been guided by the Homeland Security Act of 2002, current threat assessments, our understanding of existing capabilities or those that can be anticipated in the near term, and by the priorities outlined in the President's National Strategy for Homeland Security. In short, we are shaping the Directorate to serve as the Department's hub for research and development for exposing and countering chemical, biological, radiological, nuclear, high-explosive and cyber threats against the United States and its people.

Progress in Operations of Key Offices

The Department of Homeland Security's S&T Directorate commenced operations in March 2003. While we are a start-up operation that is still evolving, I'm pleased to report we have made good progress in short order. In October 2003, S&T's Office of Systems Engineering and Development (SED) was stood up, the last of the Directorate's four key offices to become operational. Directors with strong credentials have been appointed to each office and we continue to strategically add highly skilled technical, professional and support staff. In addition to SED, the offices of the Directorate include Plans, Programs and Budgets; Homeland Security Advanced Research Projects Agency; and Research and Development.

The Science and Technology Directorate is implementing its activities through focused portfolios that address chemical, biological, radiological and nuclear and cyber threats; support the research and development needs of the operational units of the Department; and receive valuable input from private industry and academia as well as national and Federal laboratories.

Office of Plans, Programs and Budgets

The Office of Plans, Programs and Budgets (PPB) is operating under my supervision. I have organized this office into several portfolios, each of which is focused on a particular discipline or activity. Taken together, these portfolios span the breadth of the Directorate's mission. A key mission for the S&T Directorate is to act as the Department's focal point and advocate for countermeasures to weapons of mass destruction. Therefore, we have portfolios that address countermeasures for chemical, biological, radiological, nuclear, cyber, and high-explosives threats. A further key mission for the Directorate is to provide the research, development, testing and evaluation for our customers in the other directorates. And so we have portfolios focused on borders and transportation security, intelligence analysis and critical infrastructure, and emergency preparedness and response. Finally, there is a portfolio dedicated to

developing standards for technologies for homeland security to better aid Federal, State, and local agencies in being smart buyers of homeland security technologies.

Homeland Security Advanced Research Projects Agency

In accordance with Title III of the Homeland Security Act, we have created the Homeland Security Advanced Research Projects Agency (HSARPA) in an effort to develop viable concepts for advanced technologies to support every aspect of the Homeland Security mission. HSARPA's Chemical/Biological Technical Office is fully operational and is presently engaging the private sector to develop detection systems and countermeasures for chemical and biological threats.

In 2004, more than 55 percent of the S&T Directorate's funding will go directly to the private sector through HSARPA or other Science and Technology entities, with about 90 percent of these funds dedicated to near-term technologies that can be developed quickly. The remaining 10 percent is available for longer-term revolutionary research for breakthrough technologies.

HSARPA will similarly address radiological, nuclear and high-explosives countermeasures. In addition to the private sector, our procurement activities will seek to engage our nation's research and development community, including federally funded research centers, universities and other government partners.

Office of Systems Engineering and Development

The Office of Systems Engineering and Development (SED) leads the implementation and transition of large-scale or pilot systems to the field through a rapid, efficient and disciplined approach to project management.

In some cases, military technologies could be candidates for commercialization, but rigorous systems engineering processes need to be applied to ensure a successful transition. The role of SED is to identify and then in a disciplined manner retire risks associated with such technologies to ready them for commercial applications. In doing so, the office must view each technology through the prism of affordability, performance and supportability — all critical to end-users. Products must be user friendly, have a minimum of false alarms, require little or no training and consistently provide accurate results. SED will demonstrate and test solutions before they are released to the field, and will validate that those solutions meet user expectations.

Office of Research and Development

The S&T Directorate's Office of Research and Development (ORD) provides the nation with an enduring capability for research, development, demonstration, testing and evaluation of technologies to protect the homeland. This office also provides stewardship to the scientific community to preserve and broaden the leadership of the United States in science and technology.

ORD is responsible for the operations of the National Biodefense Analysis and Countermeasure Center (NBACC). NBACC is dedicated to protecting health and agriculture by advancing the scientific community's knowledge of bioterrorism threats and vulnerabilities. NBACC integrates facilities and technical expertise in biodefense through a hub-and spoke-structure. The NBACC hub is based on the National Biodefense Campus at Fort Detrick in Maryland. The spokes include the Plum Island Animal Disease Center and facilities and programs at the national and DHS laboratories, universities, private sector and other government agencies.

Biodefense characterization, bioforensics and agricultural security are the key programmatic thrusts of NBACC that are executed through PIADC and four other research and operations centers: Biothreat Assessment Support Center; Biodefense Knowledge Center; Bioforensics Analysis Center; Bio-Countermeasures Testing and Evaluation Center; and the Plum Island Animal Disease Center.

Securing the Agricultural Infrastructure

The Department and S&T must consider and address a number of factors in its approach to protecting the agricultural infrastructure. The United States agricultural and food system is a large, nationwide system of production, processing and distribution. The opportunities, both geographically and within the system, for intentional introduction of biological agents introduce additional complexity into securing these critical components of the national infrastructure.

The historical approach to keep foreign animal diseases such as foot-and-mouth disease out of the continental United States has been to secure and protect our borders against the unintentional introduction of animals carrying such diseases. A bioterrorism event, on the other hand, would be the result of the intentional introduction of one or more biological agents at multiple locations within our borders simultaneously.

Therefore, we have a need to clearly understand the scope and scale of this challenge, and to develop a national strategy and the necessary tools to prevent, detect, respond, and recover from such potential events.

Through their research and regulatory programs, the USDA, and the Food and Drug Administration (FDA) provide the foundation for national agricultural animal and plant health and for public health. USDA has established programs on foreign animal diseases and their pathogens; zoonoses (i.e., diseases infecting both humans and animals); diseases of domestic animals and their pathogens; vectors and reservoirs of animal and human disease pathogens; plant/crop diseases and their pathogens; and food safety. The FDA also has a strong research program to address food safety and security concerns.

The S&T strategy is thus designed to overlay protection from agricultural terrorism onto this foundation. Thus, two of the four high-consequence biological scenarios that

comprise the research programs of the S&T Biological and Chemical Countermeasures Portfolio address major concerns for agriculture and food — specifically, the deliberate introduction of foot-and-mouth disease into the United States, and a classified food security event.

Plans for FY 2004 call for defining and elaborating on the technical and research requirements and gaps for these scenarios by:

- End-to-end systems studies and analyses which focus S&T programs on developing and fielding technologies that will contribute to improved agricultural biosecurity. Such studies include the use of epidemiological and economic models, and planning and simulation tools and table top exercises, to explore and better understand the requirements for policy and decision making as well as R&D in the overall strategy
- Development of a joint DHS/USDA national strategy and R&D program for foreign animal diseases, with an aggressive timetable for deployment of next-generation veterinary diagnostics, vaccines, and anti-virals

We expect that the lessons learned from a thorough analysis of the initial two DHS biological scenarios will provide valuable perspective, approaches, and tools to apply to additional scenarios, in collaboration with our USDA partners.

Foreign Animal Disease & Plum Island Animal Disease Center

Foot-and-mouth disease (FMD) virus infects cloven footed animals such as cattle, swine, sheep, and deer, and is one of the most infectious biological agents known. It is not infectious to humans.

The U.S. has been free from FMD since 1929. As the isolation and manipulation of the FMD virus requires low- to medium-range technology, this pathogen is of potentially high consequence if intentionally introduced to U.S. livestock.

Research on the intact FMD virus is currently restricted to the PIADC. At Plum Island, the research program led by ARS and the diagnostic program conducted by APHIS are unique. Therefore, PIADC is recognized as a critical national asset that is essential for protecting the U.S. livestock that is vital to the nation's economy and food supply.

S&T is currently developing a collaborative strategy for the operations and research programs on Plum Island with colleagues at APHIS and ARS and customers and stakeholders representing key industry groups. This strategic planning includes:

- A 60-day study of facilities and security status and requirements at PIADC
- End-to-end analysis of the R&D requirements for a comprehensive program on FMD, including identification of research and technology gaps and milestones for

deployment of diagnostics, vaccines, and anti-virals over 1-, 3, and 5-year timeframes

- Facilities, staffing, and funding required to support this research activity
- Coordination of the PIADC program with the National Biodefense Analysis and Countermeasures Center (NBACC) at the Ft. Detrick Biodefense Campus
- Identification of critical inter-agency and inter-departmental coordination required for incident, crisis, and consequence management and communications for the facility
- Development of a joint DHS/USDA comprehensive national strategy for foreign animal disease with emphasis on FMD, for reporting to Congress in January as required by both the DHS and USDA Appropriation Committees.

The joint DHS/USDA comprehensive national strategy for foreign animal disease includes the drafting of a Technology Development Roadmap. The Roadmap includes the identification of major technology requirements (and gaps), with major milestones during Year 1, Years 1-3, and Years 3-5 in the following areas

- Development, and, if cost effective, deployment of a prototype surveillance capability, along with development of outbreak response plans;
- Development at NBACC of a forensics capacity for agroterrorsim threats;
- Development and characterization of a strain/sample archive;
- Development of rapid detection capabilities;
- Development of new, rapid assays
- Development of new adjuvants, antivirals, immune stimulators, and novel vaccines

These activities are significant new investments to enhance the national capacity to respond to agroterrorism.

What is S&T doing?

Consistent with the Roadmap, current S&T initiatives and activities on agricultural biosecurity include:

- Conducting end-to-end systems studies to fully understand the scope and R&D requirements for foreign animal disease and food security scenarios. This includes models, simulations, and tabletop exercises to explore the epidemiological and economic consequences and trade-offs following policy and crisis management decisions.
- Developing key enabling technologies and tools such as rapid assays and diagnostics to prevent, detect, respond, and recover from the intentional or unintentional introduction of biological agents, initially for human/public health (e.g., BioWatch), which will/can have future applications in the national agriculture and food systems.

- Collaborating with ARS, APHIS and the FDA to enhance national plans for mitigation and response to high-consequence threats, with particular attention to identifying and resolving key decision checkpoints and inter-departmental coordination issues in the national response plan, e.g., decisions to stop movement, cull infected herds, and vaccinate to rapidly contain a foreign animal disease outbreak.
- Reviewing and, as appropriate, remediating the key decision checkpoints and inter-departmental coordination facilities, security, and critical operational requirements for PIADC, including systems assessments, plans, and timetable for corrective actions
- Development of an advanced detection/surveillance systems, known as the BioWatch Program, to identify pathogens of concern for human/public health. We are exploring the potential implementation of this technology in agricultural scenarios.
- Performing end-to-end systems studies with USDA and FDA in food security to specify, design, and guide development of detection/surveillance systems at critical nodes in food production systems
- HSARPA Broad Area Announcement and awards via the Technical Support Working Group for new detection technologies for biological agents (e.g., botulinum toxin)
- Establish university-based Homeland Security Centers of Excellence, including one dedicated to agriculture and food in FY 2004
- Leverage technical expertise and national infrastructure of the federal government laboratories and private sector to address critical national requirements

What are S&T and USDA doing together?

Important current areas of collaboration between S&T and USDA include:

PIADC Interagency Agreement

- DHS operations and maintenance
- DHS foreign animal disease programs in collaboration with ARS, and with APHIS for bioforensic analyses supporting attribution of agro-bioterrorism threats
- Joint R&D programs on FMD diagnostics
- APHIS FMD vaccine bank, foreign animal disease training and diagnostics (including serotype/strain content and efficacy of FMD antigens [vaccine seed-stock] stored in the vaccine bank)

National Strategy for Agricultural Biosecurity

- End-to-end analysis of the R&D requirements for a responsive program on high consequence diseases of livestock, with a focus on FMD. Includes identification of research and technology gaps and milestones for deployment of diagnostics, vaccines, and anti-viral therapeutics over 1-, 3, and 5-year timeframes
- Determine requirements for facilities, staffing, policies, and funding to support this joint research activity

- Coordinate the PIADC program with plans for NBACC on the Ft. Detrick National Biodefense Campus and national laboratory detection and diagnostic programs (hub-and-spoke concept)
- Identify critical inter-agency, inter-departmental, and federal-state coordination required for incident, crisis, and consequence management and communications
- Develop a joint DHS and USDA national strategy for foreign animal disease with an initial emphasis on FMD
- Joint DHS and USDA report to Congress, consistent with Sec 302(2) of the Homeland Security Act of 2002, and as required by the DHS and USDA Appropriation Committees

Conclusion

The S&T programs on foreign animal disease and food security are initially focused on two high consequence scenarios, with the goal of understanding these scenarios in sufficient detail to make a significant impact on the nation's capability to prevent, detect, respond, and recover from them.

S&T is leveraging its programmatic and research strengths, and established working relationships with key federal biodefense agencies, to complement the technology base and research capabilities available at USDA laboratories and land-grant universities.

The collaboration between S&T and USDA (APHIS, ARS) on the operation and research programs of Plum Island and NBACC will continue to be a major programmatic and operational focus in FY 2004 and beyond.

The systems studies in FY 2004 on foreign animal diseases and food security scenarios will further define the research requirements for the Portfolio's strategy and budget for FY 2005 and beyond, including the identification of critical nodes of the national food infrastructure, and the detection and surveillance requirements for selected pathogens at these nodes.

While the Directorate has made some significant early progress in the area of protecting the nation from acts of agroterrorism, challenges remain and we have a great deal of work before us. But we are confident that we are moving in the right direction with our current collaborative strategy with USDA, FDA and other stakeholders, and our plans to systematically fortify the vulnerabilities in agricultural infrastructure and protect it from threats and attacks.

Chairman Collins, Senator Lieberman, Committee Members, this concludes my prepared statement. I will be happy to take your questions now.

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Food and Drug Administration
Rockville, MD 20857

STATEMENT OF

LESTER M. CRAWFORD, D.V.M, PH.D.

DEPUTY COMMISSIONER

FOOD AND DRUG ADMINISTRATION

BEFORE THE

COMMITTEE ON GOVERNMENTAL AFFAIRS

UNITED STATES SENATE

NOVEMBER 19, 2003

FOR RELEASE ONLY UPON DELIVERY

Introduction

Good morning, Chairman Collins and Members of the Committee. I am Dr. Lester M. Crawford, Deputy Commissioner of the Food and Drug Administration (FDA or the Agency) in the Department of Health and Human Services (HHS or the Department). I am pleased to be here today with my colleagues from the U.S. Department of Agriculture (USDA) and the Department of Homeland Security (DHS). FDA appreciates the opportunity to discuss our food counterterrorism activities.

In my testimony today, I will first briefly describe FDA's overall role in counterterrorism activities. Then, I will discuss FDA's ten-point plan for ensuring the safety and security of the nation's food supply. Within the discussion of the ten-point plan, I will describe FDA's recent actions to implement the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act).

FDA's Role in Counterterrorism Activities

FDA is the Federal agency that regulates 80 percent of the nation's food supply–everything we eat except for meat, poultry, and certain egg products, which are regulated by our partners at USDA. FDA's responsibility extends to live food animals and animal feed. FDA is also responsible for ensuring that human drugs, human biological products, medical devices, and radiological products as well as veterinary drugs are safe and effective and that cosmetics are safe. In addition, FDA is responsible for assuring that the health consequences of foods and medicines are accurately and honestly represented to the public, so that they can be used as effectively as possible to protect and improve the public health.

FDA's primary mission is to protect the public health. Ensuring that FDA-regulated products are safe and secure is a vital part of that mission. While performing our mission, FDA plays a central role in the nation's defense against terrorism. First, terrorists could use an FDA-regulated product, such as food, as a vehicle for biological, chemical, or radiological agents. Second, FDA-regulated products, such as human drugs, vaccines, tissues, blood, and blood products as well as veterinary drugs, will play a central role in countering or preventing the effects of terrorism. It is FDA's responsibility, working closely within HHS and with other Federal agencies, state, and local governments, industry, and the public, to reduce the chance that an FDA-regulated product could be used to terrorize Americans. We also help ensure that the nation's public health system is prepared to deter a potential threat and is ready to respond to an act of terrorism.

Ten-Point Plan for Ensuring the Safety and Security of the Nation's Food Supply

Food safety and food security continue to be top priorities for this Administration. The events of September 11, the discovery of terrorist cells in Europe, the potential threat of a terrorist attack on the nation's critical infrastructure – all of these challenge us to sharpen our focus on protecting Americans from those who could harm us through our food supply. A terrorist attack on the food supply could have both severe public health and economic consequences, while damaging the public's confidence in the food we eat.

Therefore, today, FDA's food safety mission includes food security as well. The changes in food safety and security that we are implementing are the most fundamental enhancements in our food safety activities in many years.

On July 23, 2003, FDA Commissioner Mark B. McClellan issued a report to HHS Secretary Tommy G. Thompson entitled, "Ensuring the Safety and Security of the Nation's Food Supply." The report outlines a comprehensive ten-point program to protect the safety and security of our food supply. The ten-point program is based on four overall principles:

- Food security and safety are integrated goals. By building upon the Nation's core food safety/public health systems and expertise, FDA is enhancing food security and improving food safety in the process.
- The food safety and security system is comprehensive, addressing the full range of assessment, prevention, and response needs throughout the food production and distribution chain.
- The food safety and security system is built on a solid foundation of a national partnership with other entities involved in food safety and security that fully integrates the assets of state, local and tribal governments, other Federal agencies, and the private sector.
- Americans must have confidence that the government is taking all reasonable steps to protect the food supply and is providing Americans with timely and relevant information about threats.

Consistent with these principles, the Agency is employing the following overall strategies:

- Awareness: develop increased awareness among Federal, state, local, and tribal governments and the private sector by collecting, analyzing, and disseminating information and knowledge;
- Prevention: develop capacity to identify a specific threat or attack on the food supply;
- Preparedness: develop effective protection strategies to "shield" the food supply from terrorist threats;
- Response: develop capacity for a rapid, coordinated response to a foodborne terrorist attack; and
- Recovery: develop capacity for a rapid, coordinated recovery from a foodborne terrorist attack.

In these efforts, FDA has many partners – Federal and state agencies, academia, and industry. We are working closely with our Federal partners such as USDA, DHS, the Homeland Security Council at the White House, the Department of State, and the U.S. Trade Representative, as well as with law enforcement and intelligence-gathering agencies. I also want to emphasize our close working relationships with our sister public health agency, the Centers for Disease Control and Prevention (CDC), Customs and Border Protection (CBP) in DHS, and USDA's Food Safety and Inspection Service (FSIS), our counterpart agency responsible for meat, poultry, and certain egg products. Some of our other Federal partners include USDA's Animal and Plant Health Inspection Service (APHIS), USDA's Foreign Agriculture Service, USDA's Agricultural

Research Service, USDA's Food and Nutrition Service, Department of the Army Veterinary Services Activity, Department of Commerce's (DOC) National Oceanic and Atmospheric Administration, the Environmental Protection Agency (EPA), the Department of Treasury's Alcohol and Tobacco Tax and Trade Bureau (TTB), the Federal Bureau of Investigation, and the Central Intelligence Agency.

Now, I would like to describe the program areas in the ten-point plan.

1. Stronger FDA

Thanks to bipartisan Congressional support, a FiscalYear 2002 supplemental included counterterrorism funds for FDA. This enabled FDA to hire over 800 employees, 655 of whom were hired by FDA's Office of Regulatory Affairs (ORA) as additional field personnel. Of the 655 field personnel, 635 were hired to address food safety and security issues, primarily at the border. These staff have all been hired, trained, and deployed. Three hundred support consumer safety investigations at 90 U.S. ports of entry, 100 support laboratory analyses on imported products, 33 are for criminal investigations of import activities, and the remaining personnel support domestic efforts.

The continuous threat of terrorism requires FDA to remain vigilant in its effort to recruit and retain a competent, trained workforce if we are to maintain a high level of readiness. A key component of FDA's strategic plan is to assure a high-quality professional workforce. Capable personnel with the appropriate expertise are critical for the success of FDA and for the Agency's ability to maintain a high level of public trust in its activities. FDA's responsibilities require a

very special workforce, one that can keep up with rapid changes in the industries that it regulates and one that is capable of developing and implementing effective and innovative public health measures. Our workforce includes a solid cadre of experienced physicians, toxicologists, chemists, microbiologists, statisticians, mathematicians, biologists, pharmacologists, veterinarians, and other highly qualified and dedicated professionals.

FDA continues to find innovative ways to educate and train our staff and further develop the necessary scientific, technical, and investigational skills to integrate food safety and security activities. FDA has not only mobilized the new staff but also has redirected and trained current investigators and scientists to ensure that the Agency has the necessary expertise to respond to an event that could threaten the safety and security of the food supply. FDA has hired or re-trained scientific experts in biological, chemical, and radiological agent research, detection methodology, and preventive technologies. It has also acquired substantial knowledge of these agents. ORA has developed a succession plan to ensure that the Agency will continue to have highly trained and competent scientists, investigators, analysts, and managers to accomplish the Agency's overall mission of consumer protection. FDA has created many new human resources policies to attract and keep high-caliber employees. We realize that recruitment and retention of our highly skilled and often specialized workforce requires thoughtful planning so that we will be ready to effectively and efficiently meet future challenges.

2. Imports

The volume of imported food shipments has been rising steadily in recent years, and this trend is likely to continue. In Fiscal Year 2003, FDA has the challenge of assuring the safety and security of more than 5.4 million imported food entries. With the additional field employees that we mentioned earlier, we have expanded FDA's presence at ports of entry, increased surveillance of imported foods, increased domestic inspections, and enhanced our laboratory analysis capacity. More specifically, within the last two years, we have more than doubled the number of ports that have an FDA presence from 40 to 90 ports. We have increased by more than six-fold the number of food examinations at the border. This past fiscal year, we surpassed our goal of 48,000 import examinations, conducting 78,569 food import examinations compared to 12,000 just two years ago. This increase was so significant due, in large part, to increased surveillance of imported food products during Operation Liberty Shield when the nation was at a heightened security alert status.

3. Implementation of the Bioterrorism Act

Title III of the Bioterrorism Act provided the Secretary of Health and Human Services with new authorities to protect the nation's food supply against the threat of intentional contamination and other food-related emergencies. FDA is responsible for implementing these food safety and security provisions. These new authorities will improve our ability to act quickly in responding to a threatened or actual terrorist attack, as well as other food-related emergencies.

The Agency has been working hard to implement this law effectively and efficiently. On October 10, 2003, we published two interim final regulations to implement Section 305, Registration of Food Facilities, and Section 307, Prior Notice of Imported Food Shipments. We have also published proposed regulations to implement Section 303, Administrative Detention, and Section 306, Maintenance and Inspection of Records for Foods. We intend to publish final regulations on these two provisions by the end of the year.

The interim final rule on registration requires domestic and foreign facilities that manufacture or process, pack, or hold food for human or animal consumption in the U.S. to register with FDA. FDA will have, for the first time, a complete roster of foreign and domestic food facilities. In the event of a potential or actual terrorist incident or an outbreak of foodborne illness, the registration information will enable FDA to quickly identify and locate the facilities that may be affected. FDA expects up to 420,000 facilities to register under this requirement.

The Bioterrorism Act requires facilities to register by December 12, 2003. FDA's electronic registration system became operational on October 16, 2003, giving facilities time to register by the statutory deadline. The system is available 24 hours a day, seven days a week, to anyone with access to the internet. We are also providing technical assistance to persons who need help with the registration process. Facilities are strongly encouraged to use the electronic system to register. As of the morning of November 17th, 49,975 facilities have registered. This includes 22,708 domestic and 27,267 foreign facilities.

The interim final regulation on prior notice requires the submission to FDA of prior notice of food, including animal feed, that is imported or offered for import into the U.S. This advance information will allow FDA, working closely with CBP, to more effectively target inspections to ensure the safety of imported foods. CBP represents the Administration's attempt to build a single lead border authority, which was part of the rationale for establishing the DHS. FDA expects to receive about 25,000 notifications about incoming shipments each day. The timeframes for submitting prior notice are the least amount of time that FDA needs to meet our statutory responsibility to receive, review, and respond to the prior notice submission. They take into account different modes of transportation. The regulations allow two hours for arrival by land by road, four hours for arrival by air or land by rail, and eight hours for arrival by water.

The HHS and DHS co-signed the regulations. FDA and CBP worked collaboratively to ensure the new regulations promote a coordinated strategy for border protection. Thanks to this collaboration, most of the current imported food shipments can comply with the prior notice requirement by using CBP's Automated Commercial System (ACS). Prior notice can be submitted either through ACS or FDA's Prior Notice System Interface beginning December 12, 2003, when the requirement takes effect. FDA and CBP are committed to the joint implementation of an automated approach that will: (1) reduce submission of redundant data to the extent possible; (2) build on current operational procedures; and (3) implement the law with minimal disruption to current entry practices.

In addition, FDA and CBP intend to sign a Memorandum of Understanding to commission CBP employees to serve on FDA's behalf at ports where FDA may not currently have staff or to

augment FDA staff in the enforcement of FDA's prior notice. This ability to utilize CBP staff was a key factor in our ability to shorten the amounts of time required for prior notice.

In developing these interim final regulations, FDA conducted extensive outreach, both domestically and abroad, to ensure that affected parties were aware of the proposed requirements and could have the opportunity to provide meaningful comment for the Agency to consider before finalizing the regulations. FDA listened carefully to stakeholders' comments to develop rules that are workable. We believe these rules will enhance food safety and security without hindering trade.

FDA also held a worldwide satellite downlink on October 28 to discuss the implementation of the registration and prior notice regulations. FDA's outreach plan includes foreign country visits to Canada, Mexico, and the European Commission; videoconferences with more than 20 countries in partnership with the World Bank's Global Long Distance Learning Network; domestic grassroots meetings and satellite telecasts; industry association meetings; and numerous educational materials and technical assistance.

While these rules take effect December 12, 2003, we are receiving comments until December 24, 2003. To increase security while ensuring that the regulations are implemented efficiently and with minimal disruption, FDA intends to initially emphasize education over enforcement. During this time, FDA and CBP will educate those involved in importing food about how they can comply with the regulations and will work with trade associations and

foreign governments to make sure all parties are well informed of the new requirements. We will continue our outreach efforts on both rules both domestically and abroad.

4. Industry Guidance and Preventive Measures

FDA has issued guidance on the security measures the food industry may take to minimize the risk that food will be subject to tampering or other malicious, criminal, or terrorist actions. We have issued such guidance, "Security Preventive Measures Guidance Documents," for food producers, processors, and transporters, for importers and filers, for retail food stores and food service establishments, and for cosmetic processors and transporters. In addition, we have issued specific security guidance for the milk industry. During domestic inspections and import examinations, FDA's field personnel continue to hand out and discuss these guidance documents to firms that have not previously received it. Three of the guidance documents are final – producers, processors, and transports; importers and filers; and milk industry. The other two guidance documents for retail food stores and food service establishments and cosmetic processors and transporters are in draft status. We anticipate publishing these documents in final format in the near future.

5. Vulnerability and Threat Assessments

As part of our efforts to anticipate threats to the food supply, we have conducted extensive scientific vulnerability assessments of different categories of food, determining the most serious risks of intentional contamination with different biological or chemical agents during

various stages of food production and distribution. FDA's initial assessment utilized an analytical framework called Operational Risk Management (ORM) that considers both the severity of the public health impact and the likelihood of such an event taking place. FDA has incorporated threat information received from the intelligence community.

To validate our findings, FDA contracted with the Institute of Food Technologists to conduct an in-depth review of ORM and provide a critique of its application to food security. This review validated FDA's vulnerability assessment and provided additional information on the public health consequences of a range of scenarios involving various products, agents, and processes.

FDA also contracted with Battelle Memorial Institute to conduct a "Food and Cosmetics, Chemical, Biological, and Radiological Threat Assessment." The assessment also affirmed the findings of FDA's ORM assessment. In addition, it provided another decision-making tool for performing risk assessments. Further, the Battelle assessment made a number of recommendations that addressed research needs, the need for enhanced laboratory capability and capacity, and the need for enhanced partnerships between Federal, state, and local governments to ensure food security. FDA is addressing each of these recommendations.

FDA is continuing to update and refine these assessments regarding the vulnerability of

FDA-regulated foods to intentional contamination from biological, chemical, and radiological agents. These refinements use processes adapted from techniques developed by the U.S. Department of Defense (DOD) for use in assessing the vulnerabilities of military targets to asymmetric threats. Results of these updated assessments will be used to develop technology interventions and countermeasures, identify research needs, and provide guidance to the private sector.

6. Operation Liberty Shield

In March 2003, the Federal government launched Operation Liberty Shield to increase security and readiness at a time of elevated risk for terrorist attack. Operation Liberty Shield was a comprehensive national plan designed to increase protections for America's citizens and infrastructure while maintaining the free flow of goods and people across our border with minimal disruption to our economy and way of life. FDA's efforts during Operation Liberty Shield were targeted towards increasing the Agency's surveillance activities in the food and cosmetic areas in an effort to enhance security of these products. This targeted approach was based on the vulnerability assessments described above and included domestic inspections and import examinations, sample collections of targeted commodities, and import reconciliation examinations. Domestic and import reconciliation examinations were conducted to ensure that: the targeted food/cosmetic was what it purported to be; there were no unexplained differences in the quantity of products ordered and what was subsequently received; that there were no visible signs of tampering or counterfeiting; and that sampled products were not adulterated with contaminants of concern. During each and every domestic inspection or import examination,

FDA personnel handed out and discussed FDA's "Security Preventive Measures Guidance Documents."

7. Emergency Preparedness and Response

FDA has established an Office of Crisis Management to coordinate the preparedness and emergency response activities within FDA and with our Federal, state, and local counterparts. Over the past two years, FDA has participated in and conducted multiple emergency response activities including exercises coordinated with other Federal and state agencies. For example, FDA and USDA's FSIS have focused on strengthening our working relationships through joint testing of several response plans in an exercise environment. FDA has also reviewed food security and rapid response and recovery procedures with industry groups and trade associations.

In May of this year, FDA participated in the government-wide TOPOFF2 counterterrorism exercise led by the DHS and the Department of Justice. This was a national, full-scale, fully functional exercise intended to simulate two separate terrorist attacks: detonation of a "dirty bomb" in Seattle and aerosol release of plague in Chicago. The ensuing response involved participation from 17 Federal departments and agencies, the state governments of Washington and Illinois, the local governments of the affected cities, and the Canadian Government. FDA's response was coordinated from our Emergency Operations Center on an around-the-clock basis throughout the exercise, working together with all of FDA's Centers.

From September 8 – 10, 2003, FDA participated in Exercise Global Mercury. Global Mercury involved the G-7 countries plus Mexico and was designed to test international communications during a public health emergency in the international community. Coordination of HHS participation was done through the Secretary's Command Center. Other U.S. players in the exercise were CDC and the Department of State. Throughout the exercise, FDA's experts from our Center for Drug Evaluation and Research and our Center for Biologics Evaluation and Research provided assistance on issues relating to a hypothetical smallpox outbreak occurring in several different countries.

On October 7, 2003, FDA hosted the first trilateral food terrorism tabletop exercise via videoconference with Mexico and Canada. The exercise was conducted from FDA's Office of Crisis Management/Emergency Operations Center. Participants included FDA's Center for Food Safety and Applied Nutrition (CFSAN), ORA, Office of International Programs, Southwest Import District, New York District, Mexico's Federal Commission for Health Risk Protection (COFEPRIS), Health Canada, and the Canadian Food Inspection Agency. The objectives of the exercise were to elicit discussion of emergency preparedness and response activities, to ensure that all players have a common understanding of the communications plans and systems that could be utilized in response to an international terrorism event, and to use videoconferencing to practice international response communications. The players were pleased with the opportunity to participate in the exercise and found it to be a valuable learning experience. At the Trilateral Meeting on October 29, 2003, in Baltimore, Maryland, a discussion was held on the lessons learned including the challenges related to notification, sharing of data including classified

information, and sharing of intelligence information between and among the three countries. Another trilateral exercise will be conducted in 2004.

FDA's Office of Crisis Management/Emergency Operations Center will also coordinate FDA participation in other interagency exercises being conducted in 2003 and 2004 and will conduct two additional exercises to test updated response plans for chemical/biological and radiological emergencies.

8. Laboratory Enhancements

An additional step in enhancing our response capability is to improve our laboratory capacity. A critical component of controlling threats from deliberate food-borne contamination is the ability to rapidly test large numbers of samples of potentially contaminated foods for a broad array of biological, chemical, and radiological agents. To increase surge capacity, FDA has worked in close collaboration with CDC and USDA/FSIS to expand the Laboratory Response Network by establishing the Food Emergency Response Network (FERN) to include a substantial number of counterterrorism laboratories capable of analyzing foods for agents of concern. We are seeking to expand our capacity through agreements with other Federal and state laboratories. As of November 2003, there are 63 laboratories representing 27 states which have expressed interest in participating in FERN, including five Federal agencies, thus providing a framework to build upon. Participation continues to grow. By working together with our Federal and state partners, we would have the ability to test a much higher than normal volume of samples. With CDC, we recently announced grants that states can use to buy special laboratory equipment and reagents and to develop the skills of those working in the laboratory.

This is one small step towards the development of a national network of laboratories that are ready to assess and respond to a food security emergency.

We also are expanding Federal, state, and local involvement in our eLEXNET system by increasing the number of laboratories around the country that participate in this electronic data system. eLEXNET is a seamless, integrated, web-based data exchange system for food testing information that allows multiple agencies engaged in food safety activities to compare, communicate, and coordinate findings of laboratory analyses. It enables health officials to assess risks and analyze trends, and it provides the necessary infrastructure for an early-warning system that identifies potentially hazardous foods. At present, there are 101 laboratories representing 50 states that are part of the eLEXNET system. We are continuing to increase the number of participating laboratories. Moreover, during the U.S./Canada/Mexico Trilateral Cooperation Meeting held in Baltimore, Maryland, at the end of October, the three governments agreed to establish a pilot to use eLEXNET to share food sample data among the three countries' laboratories.

In addition, FDA's ORA has signed an Interagency Agreement with the U.S. Department of the Army to design and develop two mobile laboratories to be deployed at borders, ports, or other locations, to enhance our ability to provide timely and efficient analyses of imported food. The mobile laboratories are expected to be ready for deployment in 2004.

9. Research

To prioritize research needs and avoid duplication, FDA coordinates with its sister agencies within HHS, such as CDC, and with other Federal partners such as USDA, DHS, DOD, and the Department of Energy. Within FDA, we have embarked on an ambitious research agenda throughout the Agency to address potential terrorist threats. To enhance food security, FDA has significantly redirected existing research staff to ensure that appropriate resources are focused on priority food safety and security issues. For example, research sponsored by FDA's CFSAN is aimed at developing the tools essential for testing a broad array of food products for a multiple number of biological and chemical agents. We are actively working with our partners in government, industry, and academia to develop such methods. FDA's work with AOAC International, an association of analytical chemists, on validating analytical methods for the detection of biological, chemical, and radiological agents in foods is considered the "gold standard" against which other validations programs are judged. Likewise, FDA's research on microbial genomics and analytical chemistry is widely recognized for its importance to other Federal agencies charged with forensic investigations of terrorism events.

In July 2003, FDA received $5 million in one-time funding to support a new research program to develop technologies and strategies to prevent and minimize potential threats to the safety and security of the nation's food supply. The White House Office of Management and Budget allocated these funds from the 2002 supplemental appropriations to FDA for food security research, including efforts to develop new prevention and mitigation technologies and to improve the ability to assess foods for contamination with chemical, biological, and radiological agents.

In compliance with Section 302 of the Bioterrorism Act, on October 16, 2003, we submitted a report to Congress, "Testing for Rapid Detection of Adulteration of Food," about the research that is underway. FDA has commenced more than 90 different research projects to develop tests and sampling methodologies to increase the detection of adulteration of food. A number of the research projects are designed specifically to develop tests suitable for inspections of foods at ports of entry. For example, commercially available test kits are currently being analyzed for a variety of food matrices to evaluate their suitability for use in the field at ports of entry. This is a good start – a small down payment – in the overall research agenda needed to fully protect the security of the U.S. food supply.

10. Interagency and International Communication and Collaboration

Food security requires effective and enhanced coordination across many government agencies at the Federal, state, and local level. FDA's activities in public health security are coordinated through the HHS Secretary's Command Center. This relationship facilitates communication between all HHS Operating Divisions, the Department, and other Federal agencies and departments, including DHS. FDA has also worked closely with the Interagency Food Working Group of the White House Homeland Security Council on three initiatives – development of a national network of food laboratories, identification of vulnerabilities and subsequent mitigations for commodities of concern, and the development of a national incident management system.

FDA holds regularly scheduled interagency conference calls with representatives from USDA's APHIS and FSIS, CDC, EPA, DOD, DOC, TTB, and CBP. On February 4, 2003, FDA, in conjunction with the National Association of State Departments of Agriculture, the Association

of State and Territorial Health Officials, USDA, and CDC sponsored a one-day executive level meeting with the Secretaries of State Departments of Agriculture and the State Departments of Health titled "Homeland Security – Protecting Agriculture, the Food Supply and Public Health – the Role of the States." FDA is also working closely with Canada and Mexico in an effort to assess and strengthen our public health and food security systems and infrastructures at our mutual borders.

In addition, ORA's Office of Criminal Investigations (OCI) maintains professional relationships with domestic and foreign law enforcement agencies to receive and act on any information regarding product tampering. OCI is FDA's liaison with the intelligence community (the Central Intelligence Agency, National Security Agency, and others). OCI agents serve on several interagency committees including the FBI's Joint Terrorism Task Forces, the U.S. Attorney's Office Anti-Terrorism Task Forces, and DHS' Bureau of Immigration and Customs Enforcement Task Forces around the country. OCI has a specialized staff with the capability and background to analyze information from law enforcement and intelligence community sources to assist in terrorism-related threat assessments pertaining to FDA-regulated products.

Conclusion

FDA plays a critical role in the nation's defense against terrorism. Although we are better prepared than ever before, we are continuously working to improve our ability to detect and respond to terrorist threats. Through the new authorities in the Bioterrorism Act and the measures outlined in the ten-point plan, we are making tremendous progress in our ability to ensure the safety and security of the nation's food supply. There is a lot to do, but we have a plan to get there.

Thank you for this opportunity to discuss FDA's food safety and security activities. I would be pleased to respond to any questions.

Testimony of
Dr. Chuck Lambert
Deputy Under Secretary
Marketing and Regulatory Programs

United States Department of Agriculture

Before the
Committee on Governmental Affairs

United States Senate

November 19, 2003

Madam Chairwoman and Members of the Committee, thank you for this opportunity to speak with you on behalf of the U.S. Department of Agriculture (USDA) about agro-terrorism and our efforts to prevent and respond to a possible terrorist attack.

There are many agencies within the USDA that have been working to protect agriculture against terrorist attacks. Each one focuses their efforts on their area of expertise. Soon after September 11, Secretary Veneman asked Deputy Secretary James Moseley to head USDA's Homeland Security Council, organized around two primary goals: protection of the food supply and agricultural production, and protecting USDA facilities, infrastructure, and staff. Today, I will focus on the work of the Animal and Plant Health Inspection Service (APHIS) and the Food Safety and Inspection Service (FSIS) that mans the front line of this defense.

APHIS' mission is to protect the health and value of American agriculture and natural resources. To accomplish this mission, APHIS has a safeguarding system in place to prevent introductions of foreign agricultural pests and diseases. Should there be an introduction, however, APHIS also has response mechanisms in place to contain and eradicate a pest or disease.

Since September 11, APHIS has heightened its already vigilant efforts to prevent foreign agricultural pests and diseases from entering the United States, either intentionally or unintentionally. APHIS has undertaken numerous short- and long-term measures to bolster its infrastructure. This has taken place through increased funding; closer coordination with industry, State, and other Federal organizations; improved research; enhanced surveillance; emergency preparedness; rapid response; program reviews; and enhanced security to ensure America's food supply is protected and remains prosperous. More than ever, APHIS is confident in its ability to detect and respond to the accidental or intentional introduction of animal or plant pest and diseases.

Sharing Information

Events over the past 2 years have led APHIS to take steps to increase its network of partners and better share information with cooperators. In any emergency situation, the better prepared–with

information and training–everyone is, the more effective the response will be. USDA knows that there can never be enough people involved in safeguarding activities. APHIS, for example, is proactively training and talking to stakeholder organizations like the National Association of State Departments of Agriculture, the United States Animal Health Association, university systems, and county extension agents about how to effectively safeguard the United States against the potential introduction of a foreign plant or animal pathogen.

To get the information out to those who will see the diseases first, APHIS, in 2001, held three two-week long Foreign Animal Disease Awareness Training Seminars for Federal-State veterinarians from all 50 States. These seminars help Federal and State animal health managers prepare for both accidental and intentional introductions of foreign animal diseases, improve communications, and strengthen cooperative partnerships. In addition, APHIS has been holding Emergency Preparedness Satellite Seminars yearly to share vital information with veterinary practitioners across the country on how to identify and respond to an animal health emergency. More than 1,700 Federal and State veterinary officials and emergency planners, military representatives, and veterinary college students and professors have participated in the satellite broadcasts.

APHIS has been working on the development of an educational module on livestock bio-security for producers and veterinarians. The module, called "Food Security: The Threat to American Livestock," will provide American agricultural first responders with a greater understanding of the asymmetric threats facing our Nation's food production system. The intent is to make available immediate access to resources and relevant information that will enable first responders to more efficiently identify, manage, and facilitate recovery from a foreign animal disease outbreak. The module offers comprehensive information on infectious disease threats, either accidentally or intentionally introduced, to livestock within the United States. We are planning to offer the module on password-protected CDs and a password protected website.

Working with our Federal counterparts is essential. In the event of an agro–terror attack on our homeland, the Department of Homeland Security (DHS) and APHIS will work as partners to safeguard America's food and agricultural resources. DHS will lead the team of first responders to contain and manage the threat while APHIS provides crucial scientific and diagnostic expertise. This expertise will be critical in managing a potential disease outbreak as well as assisting intelligence and first-responder agencies to find those responsible for the terrorist attack. In preparation, APHIS has established a liaison at DHS who is responsible for the inclusion of agro-terror response information into existing DHS first responder training, as well as beginning the development of specific agro-terrorism training for traditional first responders.

APHIS has also entered into interagency agreements with other government agencies such as the Defense Threat Reduction Agency and the U.S. Army Research, Development, and Engineering Command. These agreements are allowing APHIS to benefit from activities such as open source intelligence gathering on potential threats to U.S. agriculture and the evaluation of newly developed rapid diagnostic equipment.

Improving Detection and Surveillance

Pest and disease detection is a critical component of our safeguarding system. Of the 2002 Homeland Security supplemental funding, $20.6 million helped to establish national animal and plant diagnostic laboratory networks; $4.5 million was used to strengthen state-level surveillance for animal diseases and $4.3 million was used to assist states to improve their capability to detect plant pests and diseases. USDA's Cooperative State Research, Education and Extension Service distributed the money to geographically disperse State laboratories to fund facility and equipment upgrades.

On the animal side, 12 States received funding for improving facilities, equipment, reporting systems, and training. Five regional plant diagnostic centers have been established in California, Kansas, Michigan, New York, and Florida. The new laboratory networks will significantly enhance diagnostic capability in the United States and reduce the time needed to return test results during outbreak situations.

APHIS continues to improve its capabilities in the area of animal disease detection. For example, APHIS regularly holds foreign animal disease diagnostician training for Federal and State veterinary medical officers at the Plum Island Animal Disease Center in New York. More than 300 active State and Federal officials have received this training and are ready to respond to suspicious animal disease cases.

We know that smuggled agricultural products present a higher risk of introducing exotic pests and diseases into the United States than does international trade. With this in mind, APHIS created the Safeguarding, Interdiction, and Trade Compliance (SITC) team 3 years ago to address this risk to U.S. agriculture. The team is now working in partnership with the Department of Homeland Security and State and local law enforcement officials to mitigate the risk of smuggled commodities in shipments from foreign companies and passengers.

In addition, APHIS monitors pest and diseases overseas in order to determine the risk or possibility that the disease could impact U.S. agriculture. APHIS has implemented the Offshore Pest Information System, which will monitor and document changes in distribution and outbreak status of specific, designated high risk exotic plant pests and animal diseases, including pathways, in their countries of origin. APHIS currently has 64 Foreign Service Officials stationed in 27 countries on six continents; these officials are working closely with their foreign counterparts to collect this information and provide data to the Agency's headquarters. Based on this information, U.S. safeguarding efforts can be focused accordingly.

For example, soybean rust is a disease that could devastate the soybean growers within the United States, and APHIS remains very concerned about the likelihood and effect of an introduction into the United States. Because of this, APHIS is currently conducting a comprehensive pathway risk analysis for soybean rust. The program is collecting information from importers, exporters, the soybean industry, scientific experts, and foreign governments in order to better determine the potential pathways for the spread of soybean rust to the United States. Once this analysis is completed, it will be reviewed by APHIS to determine the appropriate next steps to take, including the possible development of new regulations. These efforts will help prepare for natural introductions of the disease as well.

Managing an Emergency

It is important that we remain prepared for the introduction of a foreign animal or plant disease, whether it be intentional or unintentional. In preparation, APHIS has evaluated its emergency response capabilities and has implemented new developments to hone its response capabilities. Of the 2002 Homeland Security supplemental funding, $14 million was used to strengthen state capabilities to respond to animal disease threats.

One of the most important developments in increasing the effectiveness of our emergency response is the implementation of the National Interagency Incident Management System, or NIIMS. The implementation of NIIMS is consistent with Presidential Homeland Security Directive – 5, which directs that the U.S. Government will have a single, comprehensive approach to incident management, including a National Incident Management System (NIMS). The NIMS, currently under development, will update and make applicable across all disciplines, the NIMS. By providing uniformity in organizational structure and terminology for emergency responders, NIIMS, and the forthcoming NIMS, will facilitate coordination among responders from different agencies and jurisdictions. This concept of emergency response coordination has been used widely in the emergency management community, including USDA's Forest Service in responding to fires.

NIIMS/NIMS provides tools that help leadership determine the seriousness of an incident by assessing the potential duration and geographic spread of the situation. It provides a classification system to guide the commitment of personnel and material resources. NIIMS/NIMS also allows leaders to adapt the scope of the response efforts to address incidents that grow in size and complexity.

APHIS has put the NIIMS model to use with great success in combating an outbreak of exotic Newcastle disease (END), a virulent and deadly disease of poultry, in the southwestern United States. The disease affected California, Arizona, Texas, and Nevada. During this outbreak, liaisons from the Forest Service worked with APHIS officials to use NIIMS in our response to the outbreak.

The use of NIIMS during the END response has enhanced our leadership effectiveness and our ability to work with partners. Our emergency response teams' organizational structure parallels that of other emergency responders at the Federal, State, and local levels. Our experience using the new system will also help us to make any necessary refinements to our response plans and organizational structure and continue improving our ability to respond to emergencies.

During the END response, we unveiled another enhancement to our emergency response capabilities that will further help us coordinate with our counterparts and stakeholders: the newly designed APHIS Emergency Operations Center. The Center is a state-of-the-art facility that features a variety of technologically advanced communications systems.

The advanced communications features included in the center significantly improve APHIS' ability to respond to animal and plant health emergencies. Communications capabilities include video teleconferencing, video projection to screens throughout the center, advanced computer

interfaces, Geographical Information System (GIS) mapping, and a strong multimedia component. This technology has greatly enhanced the necessary communication between headquarters and regional response sites during the END response.

The Center is designed to serve as the national command and coordination center for APHIS emergency management programs. The Center gives an incident response coordinator direct access to incident sites, and the Center's advanced technology allows the Emergency Operations Center team members to communicate with field personnel and USDA leadership. The Center's design includes such security features as secure information storage, a generator for emergency power, and a telephone system independent of the building's system.

During an emergency, the Center can support 40 or more personnel and operate 24 hours a day, 7 days a week. When an emergency operation is not underway, the facility will be used to monitor and report on international and domestic surveillance for diseases of concern and to conduct advanced training.

Select Agents

APHIS is also responsible for the implementation of the Agricultural Bio-terrorism Protection Act of 2002, a subpart of the Public Health Security and Bio-terrorism Preparedness Response Act of 2002. Under the Agricultural Bio-terrorism Protection Act, entities that possess, use, or transfer agents or toxins deemed a severe threat to animal or plant health or products must notify and register with the Secretary of the U.S. Department of Agriculture (USDA). Under the Public Health Security and Bio-terrorism Preparedness Response Act, entities that possess, use, or transfer toxins or agents deemed a severe threat to public health must register with the Secretary of the U.S. Department of Health and Human Services (HHS).

Agents and toxins that appear on both the HHS and USDA's lists of agents and toxins have been designated "overlap agents" since both USDA and HHS have regulatory authority over them. An entity/facility that needs to register in order to possess, use, or transfer an overlap agent must submit its registration information to either APHIS or the Centers for Disease Control and Prevention (CDC), but is not required to submit the application to both APHIS and CDC.

In December 2002, USDA and HHS simultaneously published interim rules to regulate the possession, use, and transfer of select biological agents and toxins in the *Federal Register*. Under these rules, all entities that possess, use, and transfer select biological agents and toxins must be fully registered by November 12, 2003, or become subject to civil and criminal penalties.

In November of this year, USDA and HHS issued an amendment to the rule that allowed for the issuance of ***provisional*** registration certificates and grants of access to select agents and toxins. This amendment allows for the issuance of provisional registration certificates, pending completion of security risk assessments conducted by the U.S. Attorney General, for individuals and entities that possess these agents or toxins and that have submitted all required information by November 12, 2003. The provisional measures will provide additional time for the U.S. Attorney General to complete security risk assessments. On November 12, APHIS issued 75 provisional registration certificates. Three entities did not receive certificates.

USDA is dedicated to the implementation of these regulations. We have approximately 25 staff members working on the select agent program and APHIS spent approximately $1 million on select agents in fiscal year 2003. The budget request for Fiscal Year (FY) 2004 is $3.8 million.

Food Safety and Inspection Service

Events surrounding September 11, 2001 have heightened not only the already vigilant efforts of APHIS, but also those of the USDA's Food Safety and Inspection Service (FSIS). FSIS is responsible for ensuring that the nation's meat, poultry, and egg products are safe, secure, wholesome, and accurately labeled. FSIS has made great strides by introducing science-based policies designed to reduce the risks of food-borne illnesses. Food security is vital to our nation's homeland security and FSIS has assessed its emergency preparedness and response capabilities in light of this reality.

Each day, FSIS has more than 7,600 inspectors and veterinarians in more than 6,000 Federal meat, poultry, and egg product plants, and at ports-of-entry, to prevent, detect, and respond to food-related emergencies. With a strong food safety infrastructure already in place, FSIS has been focusing on fortifying existing programs and improving internal and external lines of communication. FSIS has an extensive system in place to properly respond to a food emergency resulting from terrorism and as part of the Homeland Security supplement the Agency used $1.5 million to hire an additional 20 inspectors for imported meant and poultry.

FSIS Office of Food Security and Emergency Preparedness

To date, FSIS has undertaken a number of initiatives to protect meat, poultry, and egg products from the potential of a terrorist attack. Immediately following September 11, 2001, FSIS established the Food Bio-security Action Team (F-BAT). The charge of F-BAT was to coordinate all activities related to bio-security, counter-terrorism, and emergency preparedness within FSIS. These activities are coordinated with USDA's Homeland Security Council, other government agencies, and industry. Currently, FSIS' newly created Office of Food Security and Emergency Preparedness (OFSEP) has assumed the responsibilities of F-BAT and serves as the centralized office within FSIS for food security issues.

OFSEP interacts closely with USDA's Homeland Security Council and represents the agency on all food security matters throughout the Federal government, as well as in State and local activities. The Office's mission is to lead in the development of the agency's infrastructure and to prepare for, prevent, and respond to, deliberate attacks or other threats to the U.S. food supply.

As the lead coordinator and primary point of contact on all food security and emergency preparedness activities within FSIS, OFSEP focuses primarily on:

- Emergency preparedness and response;
- Federal/State/Industry Relations;
- Continuity of operations (COOP);
- Scientific expertise in chemical, biological, and radiological terrorism; and,
- Security clearance and safeguarding classified information.

To ensure coordination of these activities involves all program areas of the agency, OFSEP established a new standing advisory group, the Food Security Advisory Team (FSAT), comprised of representatives of the major program areas within FSIS, to provide program-specific technical support.

Expanding Coordination with Federal, State, and Local Agencies

FSIS collaborates and coordinates closely with its State partners to ensure an effective prevention and response program. Some of the many State organizations FSIS works with include the Association of Food and Drug Officials (AFDO); the Association of State and Territorial Health Officials (ASTHO); and the National Association of State Departments of Agriculture (NASDA). Most recently, FSIS teamed with FDA in cosponsoring a joint meeting between ASTHO and NASDA, entitled *"Homeland Security: Protecting Agriculture, the Food Supply, and Public Health – The Role of the States."* The purpose of this meeting was to enhance collaboration between State public health and agriculture agencies and the Federal government. Both the Secretary of Agriculture and the Secretary of Health and Human Services were on hand for this joint meeting. APHIS and FSIS receive threat information and written reports from the intelligence community to update the Department on terrorist threat reporting relative to food and agriculture. This intelligence allows APHIS and FSIS to prioritize their response based upon both perceived vulnerability and what is known of the terrorist threat.

FSIS also works closely with the White House Homeland Security Council, the Department of Homeland Security (DHS), and the USDA Homeland Security Staff to coordinate strategies to protect the food supply from an intentional attack. For example, FSIS, FDA and DHS are working with industry partners to encourage the establishment of a new food information sharing and analysis organization for the food sector. This public/private partnership will aid in the protection of the critical food infrastructure by increasing information sharing about threats, incidents, and vulnerabilities related to food.

By partnering with other agencies, including the Centers for Disease Control and Prevention (CDC), FDA, the USDA's Agricultural Research Service (ARS), DHS, APHIS, EPA, as well as international partners such as the Canadian and Mexican governments' food inspection agencies, and State and local health agencies, FSIS is in a pivotal position to share information and to strengthen critical infrastructure protection activities concerning food from farm to table.

The White House Homeland Security Council has recognized the need for a coordinated approach to food security matters and has assembled an Interagency Food Working Group (IFWG) to consider policy issues related to protecting the food supply and minimizing it as a target for terrorist activity. The IFWG has representatives from twelve Federal agencies, including FSIS. In addition, FSIS co-chairs three subgroups of the IFWG, most notably the Vulnerability Assessment/Food Shields Subgroup, the Incident Command Subgroup, and the Laboratory Subgroup.

In addition to its partnerships with the White House and Federal agencies, FSIS has entered into a working relationship with the U.S. Public Health Service (PHS) and the Office of the Surgeon General. In April 2003, FSIS signed a Memorandum of Agreement with the Surgeon General and the PHS that allows expanded numbers of PHS Commissioned Corps Officers to be detailed

to the agency. Not only will these officers help FSIS respond to food-borne disease outbreaks and assist in preventing food-borne illness, but they will assist in the agency's homeland security efforts as well. Since the Commissioned Corps Officers are available 24 hours a day, seven days a week, this affords a greater flexibility to respond immediately during heightened security alerts or an actual threat to the food supply.

Enhanced Surveillance and Detection Activities

In fiscal year 2003, FSIS undertook many new initiatives, as well as strengthened its existing infrastructure, to enhance its ability to detect any potential intentional threat to the food supply.

FSIS has strengthened its controls to protect the public from the entry of contaminated product from abroad. FSIS continually assesses foreign country inspection systems to ensure that they maintain food safety standards and operations equivalent to the U.S. inspection system. To supplement the activities of its import inspectors, FSIS has added import surveillance liaison inspectors who are on duty at U.S. ports-of-entry. As of March 2003, 20 of these inspectors have been conducting a broader range of surveillance activities than traditional import inspectors. They also work to improve coordination with other agencies that are tasked with ensuring the safety of imported food products.

Also in 2003, FSIS made significant enhancements to its national surveillance system for monitoring and tracking food-related consumer complaints. The Consumer Complaint Monitoring System (CCMS) serves as a real-time early warning system for potential terrorist attacks on the food supply. CCMS uses an electronic database to record, triage, and track food-related consumer complaints. The CCMS has been upgraded to provide 24/7 coverage and complaints can be entered at FSIS field offices and accessed at headquarters in order to provide a more real-time response.

As part of FSIS' initiative to better prepare its workforce to respond to a potential terrorist attack, employee Directives were issued in March to instruct in-plant and laboratory personnel on how to respond when the DHS raises the Homeland Security Advisory System threat level to Orange or Red. The Directives include additional inspection tasks and laboratory testing requirements. They also encourage FSIS personnel to cooperate with establishments by alerting plant management to the threat level change and verifying that they are carrying out necessary food security procedures. FSIS is developing additional components to the Directive that will address computer security, import re-inspection, communication, and human health surveillance monitoring.

In March 2003, as *Operation Iraqi Freedom* began, the Federal government initiated *Operation Liberty Shield* to increase security and readiness in the United States. FSIS participated in this multi-department national team effort to increase protection for America's citizens and infrastructure while maintaining the free flow of goods and people across our borders. During this time, FSIS implemented two new Directives and other activities to focus its efforts at preventing food and agro-terrorism. For example, FSIS enhanced its inspection of meat, poultry, and egg products and FSIS import inspectors increased their security oversight at ports-of-entry. In addition, during this time random laboratory samples included an analysis for dangerous chemical, biological, and radiological threat agents that can be introduced into food.

FSIS, as well as FDA and APHIS, was selected to participate within the multi-department International Trade Data System (ITDS) in fiscal year 2004. This new initiative will establish a single, automated system for sharing data on inspection and certification of products entering the United States, and it will provide commercial enterprises with a single government source for interaction with the various agencies that regulate imports. In addition, this new system will eliminate duplication, increase security, and reduce costs to the government. The ITDS system will greatly enhance the already cooperative efforts of FSIS and its food safety partners, including the Department of Homeland Security.

Strengthening Laboratory Capabilities

In FY 2003, FSIS made important progress on the scientific front. FSIS laboratories expanded their capability to test for non-traditional microbial, chemical, and radiological threat agents and increased their surge capacity. In addition, construction is underway on a Bio-security Level-3 laboratory that will enable FSIS to conduct analyses on a larger range of potential bio-terrorism agents. Construction should be completed in December.

Additionally, FSIS is participating with HHS, EPA, the Department of Energy, and the States, to integrate the nation's laboratory infrastructure and surge capacity. Over 60 laboratories representing 27 States and five Federal agencies have agreed to participate in the Food Emergency Response Network, or FERN. FERN, which is coordinated by FSIS and FDA, focuses on method validation, research, training, proficiency programs, surveillance, response and surge capacity, and communication. By providing a greater capability to test for biological, chemical, and radiological agents in food, FERN will provide the nation with a strong scientific infrastructure to better protect the food supply.

FSIS also participates in the Electronic Laboratory Exchange Network, or eLEXNET. This internet-based system will be the mechanism by which the FERN laboratories report results from all bio-terrorism or chemical terrorism related analyses. FSIS also participates in the CDC Laboratory Response Network that provides training and microbiological methods to participants.

FSIS' Information Sharing and Outreach Activities

As I mentioned earlier, in an emergency situation, the better prepared we are, the more effective our response will be. In 2003, FSIS has continued to work with consumers and the food industry, to share information on the best ways to keep our food supply secure.

Just as all parts of the food supply chain work to ensure that meat, poultry, and egg products are safe and wholesome, each part of the food supply chain also plays a role in ensuring that products are secure from intentional contamination. FSIS has made a strong effort to reach out to industry to encourage food security programs. In May 2002, FSIS released voluntary security guidelines for food processors. The guidelines were designed to help plants identify ways to strengthen their security plans.

In August 2003, the Agency published guidelines for those that transport and distribute FSIS-regulated products. These voluntary guidelines are designed to help facilities and shippers that

process or transport meat, poultry, and egg products strengthen their food safety and security plans. Using these guidelines, FSIS is currently working with food processing plants, transporters, and distributors to encourage reviews of their security procedures.

And just this week, FSIS released a new document entitled *Food Safety and Food Security: What Consumers Need to Know*. This publication offers comprehensive and practical information about safe food handling practices, food-borne illness, and ways to keep food safe during an emergency. It also includes information on how to report any suspected instances of food tampering.

All of these documents, plus further information on FSIS' efforts to protect the food supply from intentional contamination, are available to the public in several languages on the agency's Web site. FSIS also continues to reach out to consumers, industry, and the public through the use of the agency's food security exhibit at conventions, food security conferences, and USDA public meetings.

When information is shared between all stakeholders committed to providing safe meat, poultry, and egg products to consumers, everyone is better prepared to react when an emergency situation arises.

FSIS Preparedness Efforts

As FSIS works to provide food security information to external groups, the agency is also working to ensure that its own employees are well trained and prepared to handle crisis situations. When the agency's voluntary food security guidelines were released, employees were trained in the application of the guidelines. FSIS has also initiated a comprehensive two-year training and education effort for all agency employees. This food security awareness training focuses on preventing attacks on the food supply and emphasizes the importance of cooperation between Federal, State, and local governments, and the private sector. Because of this, representatives from other Federal agencies, State governments, and local responders have also attended this FSIS training.

FSIS is preparing educational materials for agency personnel to supplement the food security training. This booklet, which FSIS is working to distribute by the end of this year, will include information on the role of employees in protecting the food supply.

To test agency preparedness, FSIS has sponsored and participated in tabletop training exercises to familiarize staff and managers with their responsibilities in the event of an intentional attack on the food supply. In late 2002, USDA conducted "Crimson Sky," an exercise for Department and agency officials to become familiar with crisis operations. FSIS followed this exercise with 'Crimson Winter,' an agency sponsored simulation that involved the agency's food safety partners. Federal agencies, including APHIS, FDA, CDC, and DHS, participated, as did State and local agencies that would be involved in responding to an attack on the food supply. This exercise proved helpful by allowing the agency to recognize areas for improvement in its response plans, and to address those issues before a real crisis occurred.

Training, practice, and simulation exercises help to develop clear roles and responsibilities that allow for a more efficient and effective response when a true crisis emerges. To further develop protections for the food supply, FSIS has completed vulnerability assessments to determine the product commodities and processes that are vulnerable to attack, including potential threat agents that could be utilized for deliberate contamination of domestic and imported meat, poultry, and egg products. By assessing vulnerabilities, FSIS is able to use the information to develop strategies, policies, and countermeasures to reduce potential risks to the food supply.

FSIS continues to identify vulnerabilities in the food supply chain and dedicate resources to develop ways to minimize food security risks. These efforts will help to ensure the safety and security of the U.S. meat, poultry, and egg products.

Conclusion

The strong working relationships that we have with other Federal agencies, States, and industry are vital to our efforts to safeguard U.S. agriculture. Preserving traditional relationships and building new ones, such as with DHS, will strengthen our efforts. Likewise, I assure you that USDA remains committed--through our bio-security and emergency preparedness activities--to ensuring the continued good health and value of U.S. agriculture.

EXECUTIVE SUMMARY – Stripe Rust of Wheat
By Dr. H. F. Schwartz, Colorado State University, 11/18/03

The National Homeland Security Pest List contains numerous pathogens of small grains, including winter wheat and barley, such as Barley Yellow Dwarf Virus, Powdery Mildew (*Erysiphe graminis* D.C. f. sp. *tritici* E. Marchal), Stinking Smut (*Tilletia tritici* (Bjerk.) Wint.), Stem Rust (*Puccinia graminis* Pers. f. sp. *tritici* Eriks. & Henn.), and Stripe Rust (*Puccinia striiformis* West.). We have chosen to focus on Stripe Rust and Russian wheat aphid as model pests for developing diagnostic and response protocols for monitoring agricultural crop safety, and providing resources and training materials to enhance stakeholder roles and our understanding of the impacts of the introduction of a pest to a high value, multi-regional crop such as winter wheat and/or barley. The following information provides an overview on these priority pests in Colorado and the surrounding region.

Stripe rust is caused by the fungus *Puccinia striiformis*. The urediniospores are the source of inoculum for wheat and barley, and are disseminated by the wind. Although sensitive to ultraviolet radiation, they have been reported to travel more than 2000 km on the wind and remain viable. The pathogen and disease may affect wheat and human health: human health – allergenic response from spores; wheat yield loss – quantity; wheat quality reduction – seed size, milling properties; and commercial and seed trade disruption. In 2000, incidence of stripe rust was the most widespread in the United States in recorded history. It was found in 25 states and caused multimillion-dollar losses with yield reductions of up to 50% of the crop in some areas. The major weapon in combating this disease is the deployment of wheat varieties with natural resistance to varied races (strains) of the fungus. In 2000, in addition to the known races in the U.S., 21 more races were identified, some of which had virulences previously unknown in the United States. Because of their destructive potential and ease of dissemination, wheat rusts were among the plant diseases investigated as potential bioweapons by the United States in collaboration with Canada and England during World War II. With the signing of the Biological Weapons convention of 1972, these countries destroyed their stockpiles of bioweapons; however the Soviet Union continued bioweapon research until their dissolution, and wheat rust was one of the anticrop agents investigated in their studies. In addition to stripe rust, other pathogens of small grains on the Homeland Security Pest List that should be monitored for and that could be weaponized include: barley yellow dwarf virus, powdery mildew, stem rust and smut.

The RMIBR has selected Stripe Rust as a strategic planning process to assess crop risk and develop a response strategy that can be implemented to protect food supplies in the Rocky Mountain region. This pathogen follows a seasonal pattern of movement and dispersion in the central high plains from Central America (Mexico) up through the Midwest/high plains into Canada. The following overview summarizes information about this pathogen and its disease, with numerous research and training challenges that are associated with its detection and mitigation.

Stripe rust urediniospores are the only known source of inoculum for wheat infections. The life cycle of *P. striiformis* provides information about particular times when the organism is most likely to represent a threat to crops, the manner of dispersion, and overwintering. The disease is favored by a growing degree day (GDD_{48} , 50)

accumulation of 930, more than 30 rainy days, and total rainfall in excess of 300 mm during a growing season. The pathogen may overwinter in recently planted wheat, volunteer wheat, and non-cereal grasses.

The fungus can be detected via visual examination of pustules or sori (uredinia and telia), microscopic examination of spore morphology, and the use of PCR primers from mitochondrial DNA sequences. Current methods of identification of stripe rust rely on light microscopy and molecular marker (RAPD) analysis, which are able to distinguish among rust species attacking grasses. Neither of these methods is able to distinguish the "race" makeup of individual isolates of this pathogen. Knowledge of this pathogen's race makeup is crucial in choosing resistant wheat varieties, and, from a national biosecurity standpoint, because it is important to identify not only what race(s) is present in an infected wheat field, but also to determine the point of origin of a race – e.g., is a particular field infected with a race that is commonly found in that part of the United States, or a race that originates and is found only in the Middle East or some other region of the world.

Digital diagnostic tools will be used by surveyors to make a tentative visual identification of Stripe Rust (versus other pest symptoms). Samples of plant tissue and rust spores from each positive field will be transported to the laboratory on ice in a cooler for microscopic confirmation of urediniospores). PCR and RAPD analyses will also be conducted on each confirmed isolate of stripe rust from winter wheat or barley according to standard procedures to develop initial profiles of stripe rust isolates from Colorado and the surrounding region; and to determine if there are any molecular anomalies that could indicate the isolate was altered molecularly (and presumably introduced during a bioterrorist event). This rapid alert (24 – 48 hours after collection) would be crucial to notify Homeland Security officials of a potential "event" that would then trigger a response, containment and investigation by Homeland Security and USDA/APHIS/PPQ officials.

United States General Accounting Office

GAO

Testimony
Before the Committee on Governmental Affairs, U.S. Senate

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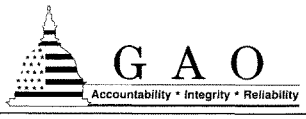
BIOTERRORISM

A Threat to Agriculture and the Food Supply

Statement for the Record by
Lawrence J. Dyckman, Director
Natural Resources and Environment



GAO-04-259T

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Highlights

Highlights of GAO-04-259T, a Statement for the Record for the Committee on Governmental Affairs, U.S. Senate

Why GAO Did This Study

When the President created the Department of Homeland Security, he included U.S. agriculture and food industries in the list of critical infrastructures needing protection. The Secretaries of Agriculture and of Health and Human Services have publicly declared that the U.S. food supply is susceptible to deliberate contamination. GAO was asked to provide an overview of the potential vulnerabilities of the food supply and agriculture sector to deliberate contamination and to summarize four recent GAO reports that identified problems with federal oversight that could leave the nation's agriculture and food supply vulnerable to deliberate contamination.

What GAO Recommends

The four GAO reports included recommendations to (1) the U.S. Department of Agriculture and the Food and Drug Administration (FDA) to strengthen import checks for detecting mad cow and foot-and-mouth diseases and to address security matters at food processors; (2) FDA to strengthen enforcement of the feed ban; and (3) the Department of Homeland Security to correct security deficiencies at Plum Island. The agencies generally agreed with GAO's recommendations and have taken, or are in the process of taking, actions to address the problems GAO found.

www.gao.gov/cgi-bin/getrpt?GAO-04-259T

To view the full statement, click on the link above. For more information, contact Lawrence J. Dyckman at 202-512-3841or dyckmanl@gao.gov.

November 2003

BIOTERRORISM

A Threat to Agriculture and the Food Supply

What GAO Found

Bioterrorism attacks could be directed at many different targets in the farm-to-table food continuum, including crops, livestock, food products in the processing and distribution chain, wholesale and retail facilities, storage facilities, transportation, and food and agriculture research laboratories. Experts believe that terrorists would attack livestock and crops if their primary intent was to cause severe economic dislocation. The U.S. agriculture sector accounts for about 13 percent of the gross domestic product and 18 percent of domestic employment. Terrorists may decide to contaminate finished food products if harm to humans was their motive.

Four recent GAO reports found gaps in federal controls for protecting agriculture and the food supply. Thus, the United States would be vulnerable to deliberate efforts to undermine its agriculture industries, deliberate tampering of food during production, and the release of deadly animal diseases, some of which also affect humans. GAO found, for example, border inspectors were not provided guidance on foot-and-mouth disease prevention activities in response to the 2001 European outbreak, inspection resources could not handle the magnitude of international passengers and cargo, and new technology used to scan shipments at a bulk mail facility was operating only part-time and in only that facility. Such careful controls over imported foods can help to prevent pathogens from contaminating U.S. cattle with devastating diseases that have struck many other countries. GAO also found that federal overseers did not have clear authority to impose requirements on food processors to ensure security at those facilities. Finally, GAO found security problems at Plum Island—a large government-operated animal disease research facility. GAO found that scientists from other countries, facility workers, and students had access to areas containing high-risk pathogens without having completed background checks and the required escorts.

Following are the four reports discussed in this testimony:

- *Foot and Mouth Disease: To Protect U.S. Livestock, USDA Must Remain Vigilant and Resolve Outstanding Issues*, U.S. General Accounting Office, GAO-02-808 (Washington, D.C.: July 26, 2002).
- *Mad Cow Disease: Improvements in the Animal Feed Ban and Other Regulatory Areas Would Strengthen U.S. Prevention Efforts*, U.S. General Accounting Office, GAO-02-183 (Washington, D.C.: January 25, 2002).
- *Food-Processing Security: Voluntary Efforts Are Under Way, but Federal Agencies Cannot Fully Assess Their Implementation*, U.S. General Accounting Office, GAO-03-342 (Washington, D.C.: February 14, 2003).
- *Combating Bioterrorism: Actions Needed to Improve Security at Plum Island Animal Disease Center*, U.S. General Accounting Office, GAO-03-847 (Washington, D.C.: September 19, 2003).

Madam Chairman and Members of the Committee:

I appreciate the opportunity to submit this statement for the record on the results of our work on potential threats, vulnerabilities, and risks faced by the nation's agriculture sector and its food supply. As you know, protecting the nation's agriculture industries and food supply has taken on increased sense of urgency in the wake of the terrorist attacks of September 11, 2001. And there is now broad consensus that American farms, food, and agriculture systems, which account for about 13 percent of the nation's gross domestic product, are vulnerable to potential attack and deliberate contamination.

In his October 2001 executive order establishing the Office of Homeland Security, the President added agriculture and food industries to the list of critical infrastructure sectors needing protection—acknowledging that the agriculture sector and the food supply are indeed vulnerable to bioterrorism. Both the Secretaries of Agriculture and of Health and Human Services have also publicly recognized that the U.S. food supply is susceptible to deliberate contamination. Within this backdrop, federal and state government agencies; industry; and academic institutions have taken steps, such as, assessing the potential threats, risks, and vulnerabilities and developing plans to rapidly detect and respond to any attack on the nation's agriculture sector and food supply.

This statement (1) provides a brief overview of the potential vulnerabilities of the food supply and agriculture sector to deliberate contamination and (2) summarizes four recent GAO reports identifying a range of problems with federal oversight that could leave the nation's agriculture sector and food supply vulnerable to intentional contamination. Included in this discussion are our 2002 reports on federal efforts to prevent devastating animal diseases—foot-and-mouth and bovine spongiform encephalopathy (BSE), also known as mad cow—from entering the United States, and our 2003 reports on security at food-processing facilities and at the Plum Island Animal Disease Center. Plum Island studies serious animal diseases, including some that can cause illness and death in humans. The four reports are discussed in greater detail in appendix I, which also provides the link to each report on GAO's Web page.

Summary

The U.S. agriculture and food sectors have features that make them vulnerable to bioterrorism attacks. These attacks could be directed at many different targets in the farm-to-table food continuum—including crops, livestock, food products in the processing and distribution chain,

wholesale and retail facilities, storage facilities, transportation, and food and agriculture research laboratories. Indeed, chemicals and infectious pathogens could be intentionally introduced at various points in that continuum. Most experts believe that terrorists would choose to attack livestock and crops if their primary intent was to cause severe economic dislocation. Such an attack would cause severe disruption—the U.S. agriculture sector accounts for about 13 percent of the U.S. gross domestic product and 18 percent of domestic employment. On the other hand, terrorists would choose to contaminate finished food products if harm to humans was their motive.

Four recently issued GAO reports found gaps in federal controls for protecting agriculture and the food supply. As a result of those gaps, the United States would be vulnerable to deliberate efforts to undermine its agriculture industries, intentional tampering of food during production, and the release of deadly animal diseases, some of which also affect humans. We found, among other things, that the volume of imported items entering the United States made it impossible for border inspectors to physically inspect every incoming cargo container or each and every international passenger's luggage—key pathways through which foot-and-mouth disease could enter the country. We also found that new equipment used to scan shipments at one large import bulk mail facility was operating only part-time and in only that bulk mail facility. We also reported that discrepancies in the accuracy of documents provided by the importer posed a risk that BSE-contaminated food might not be flagged for further inspection. Those careful controls over imported foods help prevent pathogens from contaminating American cattle with devastating diseases that have struck many other countries. In addition, we found that federal overseers did not have clear authority to impose requirements on food processors to ensure security at those facilities. And finally, we found security problems at Plum Island. For example, several scientists from other countries, facility workers, and students had access to areas containing high-risk pathogens, even though their background checks were incomplete and they did not have the required escorts.

Overview of the Vulnerability of the U.S. Agriculture Sector and Food Supply to Intentional Contamination

Our current agriculture and food sectors have features that make them vulnerable to terrorist attacks. These include the high concentration of our livestock industry and the centralized nature of our food-processing industry. As a result, chemicals and infectious pathogens can be intentionally added at various points along the farm-to-table food continuum. Whether terrorists target food products or animals and crops for deliberate contamination, serious public health and economic consequences are at stake. The mere threat of such an attack would seriously undermine consumer confidence in the safety of our food supply and destabilize export markets.

The U.S. agriculture sector and food supply have been largely secure from deliberate contamination, except for a few such incidents. In 1984, for example, in what federal agencies describe as the first recorded event of bioterrorism in the United States, a cult group poisoned salad bars at several Oregon restaurants with *Salmonella* bacteria. As a result, 750 people became ill. A recent, deliberate food contamination also highlights how easily someone intent on causing harm can do so. In January 2003, the Centers for Disease Control and Prevention reported that 92 persons became ill after purchasing ground beef from a Michigan supermarket that was intentionally contaminated with nicotine. An employee of the supermarket that sold the contaminated meat has been indicted for intentionally poisoning 200 pounds of meat sold in his supermarket.

Naturally occurring outbreaks of diseases affecting livestock, as well as accidental contamination of food, further illustrate the potentially horrific effects of a deliberate and carefully choreographed event. For example, the United Kingdom has estimated that its outbreak of foot-and-mouth disease resulted in over $10 billion (U.S.) in losses to tourism and the food and agriculture sectors and the slaughter of over 4 million animals. Estimates of direct costs for a similar outbreak in the United States run as high as $24 billion with the destruction of about 13 million animals. Terrorists seeking ways to harm the United States could deliberately introduce foreign animal diseases into the country. In addition, according to a recent media report, the USDA calculated that a foot-and-mouth disease outbreak could spread to 25 states in as little as 5 days. Furthermore, according to the media report, a simulation exercise by the National Defense University in June 2002 predicted that a foot-and-mouth disease outbreak could spread to more than one-third of the nation's cattle herds. As that exercise demonstrated, diseases affecting livestock could have significant impacts on the U.S. economy and consumer confidence in the food supply.

With regard to food, one large-scale U.S. foodborne illness outbreak in 1994 sickened 224,000 people nationwide with *Salmonella enteritis* from eating a national brand of ice cream. That outbreak, though not deliberate in nature, is estimated to have cost about $18.1 million in medical care and time lost from work. Widely publicized illness outbreaks in 2002 resulted in illnesses, deaths, and costly food recalls. One involved ground beef produced by a plant in Colorado that caused at least 46 people in 16 states to become ill from *E. coli O157:H7*. The plant conducted a recall to remove about 18 million pounds of potentially contaminated beef that had entered commerce. The other outbreak involved fresh and frozen ready-to-eat turkey and chicken products. Those products, manufactured in a Pennsylvania plant, carried *Listeria monocytogenes*, caused 46 illnesses in eight states, as well as seven deaths and three stillbirths or miscarriages. The plant recalled approximately 27.4 million pounds of potentially contaminated poultry products that had entered commerce. However, most foodborne illnesses are not reported and the vast majority of foodborne outbreaks are never traced to a specific food source.

Recent GAO Reports Identified Weaknesses in U.S. Systems for Protecting Livestock and the Food Supply and Preventing the Release of Animal Diseases that Present Human Health Risks

We recognize that the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA)—the federal agencies with primary responsibility for safeguarding our agriculture and food sectors—have stepped up their prevention and response efforts. In addition, we recognize the concerted efforts to better safeguard U.S. borders that have been taken over by the Department of Homeland Security, which also recently took over the operation of the Plum Island Animal Research Facility from USDA. Nevertheless, serious questions remain about whether the agriculture sector and the food supply are sufficiently prepared for deliberate acts of terrorism. Over the last 10 years, GAO has issued many reports that, in aggregate, portray a national food safety system that is fragmented and problem-laden. It is that system, however, on which the nation must depend to prevent, prepare against, and respond to bioterrorism events against our food supply.

Four recently issued GAO reports, in particular, identified weaknesses in federal systems for protecting U.S. livestock against devastating animal diseases and ensuring security at food-processing facilities and at Plum Island—the nation's principal diagnostics laboratory for foreign animal diseases, including some that can transfer to humans. The information from these four reports will not provide a comprehensive presentation of potential risks; there are certainly other potential targets in the farm-to-table food continuum, including the food transportation sector, that we have not yet examined for vulnerability to intentional contamination.

These reports do, nonetheless, highlight weaknesses in U.S. systems for protecting critical agriculture and food safety sectors.

Two reports we issued in 2002—on foot-and-mouth disease and on mad cow disease—examined, among other things, U.S. measures for preventing those diseases from entering the United States.[1] We found that, because of the sheer magnitude of international passengers and cargo that enter this country on a daily basis and the inspection resources that are available, completely preventing the entry of those diseases may be infeasible. Foot-and-mouth disease can be carried on the shoes of international passengers and the packages they carry, in international mail, and in garbage from international carriers. We found that USDA did not provide timely guidance to border inspectors for screening cargo and international passengers after foot-and-mouth disease struck Europe in 2001. We also reported that only one international bulk mail facility used new scanning equipment to help inspectors more accurately identify products potentially carrying animal diseases that could contaminate U.S. cattle.

Our 2003 report on food-processing security noted that experts from government and academia agreed that terrorists could use food products as a vehicle for introducing harmful chemical or biological agents into the food supply.[2] We found that USDA and FDA had each, independently, published comprehensive security guidelines for processors to help them prevent or mitigate the risk of deliberate contamination at their facilities. Additionally, we reported that USDA and FDA did not have clear authority to require processors to take safety measures, such as installing fences, alarms, or outside lighting. These measures could improve security in the event of deliberate contamination. In addition, the field personnel at the two agencies did not have adequate training on security matters, which would hamper their ability to conduct informed discussion with processing plant personnel.

[1] *Foot and Mouth Disease: To Protect U.S. Livestock, USDA Must Remain Vigilant and Resolve Outstanding Issues*, U.S. General Accounting Office, GAO-02-808 (Washington, D.C.: July 26, 2002) and *Mad Cow Disease: Improvements in the Animal Feed Ban and Other Regulatory Areas Would Strengthen U.S. Prevention Efforts*, U.S. General Accounting Office, GAO-02-183 (Washington, D.C.: January 25, 2002).

[2] *Food-Processing Security: Voluntary Efforts Are Under Way, but Federal Agencies Cannot Fully Assess Their Implementation*, U.S. General Accounting Office, GAO-03-342 (Washington, D.C.: February 14, 2003).

In September 2003, we also reported fundamental concerns with security at the Plum Island Animal Disease Center that leave the facility vulnerable to security breaches.[3] We found that alarms and door sensors for the biocontainment area were not fully operational; outdoor lighting was not adequate to support security cameras; and certain assets, including the foot-and-mouth disease vaccine bank, were not adequately protected. Controls over access to the pathogens were also inadequate—scientists from other countries were given access to the biocontainment area without escorts while their background checks were incomplete; no background checks were done on students attending classes in the biocontainment area; and the cleaning crew were among the unauthorized staff entering the biocontainment area unescorted. Controlling access to pathogens is critical because a tiny quantity of pathogen could be removed without being detected and developed into a weapon. Lastly, we found that the security guards protecting the Island had been operating without authority to carry firearms or to make arrests; the facility's written plans for responding to a terrorist incident exceeded the capability of its security system and the emergency response plans were not adequately coordinated with state and local emergency and law enforcement responders. Our report noted that the Department of Homeland Security officials agreed with our identification of these problems and stated that they had initiated actions to address our concerns.

The four reports made recommendations to USDA, FDA, and the Department of Homeland Security for correcting the problems we found, and the agencies generally agreed with our recommendations. Appendix I discusses the four reports, our recommendations, and the agencies' positions in greater detail.

[3]*Combating Bioterrorism: Actions Needed to Improve Security at Plum Island Animal Disease Center*, U.S. General Accounting Office, GAO-03-847 (Washington, D.C.: September 19, 2003).

Contacts and Acknowledgments

For future contacts regarding this statement, please contact Lawrence J. Dyckman at 202-512-3841. Individuals making key contributions to this statement included Maria Cristina Gobin, Erin Lansburgh, Charles Adams, and Clifford Diehl. This statement will also be available on the GAO Web site at http://www.gao.gov.

Appendix I: Recent GAO Reports Highlight Gaps in Federal Efforts to Protect Agriculture and the Food Supply

Four recently issued GAO reports identified weaknesses in federal systems for protecting U.S. livestock against devastating animal diseases and ensuring security at food-processing facilities and at Plum Island—the nation's principal diagnostics laboratory for animal diseases. The following reports highlight weaknesses in U.S. systems for protecting critical agriculture and food safety sectors:

- *Foot and Mouth Disease: To Protect U.S. Livestock, USDA Must Remain Vigilant and Resolve Outstanding Issues*, U.S. General Accounting Office, GAO-02-808 (Washington, D.C.: July 26, 2002).

Because the livestock industry is a key element of the U.S. agricultural sector and economy, protecting U.S. livestock from foot-and-mouth disease is an important federal responsibility. The 2001 outbreak of this disease in the United Kingdom clearly illustrated the destruction that this highly contagious animal disease can cause to a nation's livestock industry and other sectors of the economy. Foot-and-mouth disease is one of the most devastating viral animal diseases affecting cloven-hoofed animals—such as cattle and swine—and has occurred in most countries of the world at some point over the past century. The last foot-and-mouth disease outbreak in the United States was in 1929.[1] According to federal officials, even a single case of the disease would cause our trading partners to prohibit U.S. exports of live animals and animal products and could result in losses of between $6 billion and $10 billion a year while the country eradicated the disease and until it regained disease-free status.

As part of our study, we examined whether U.S. measures for preventing foot-and-mouth disease from entering the United States were effective and whether the United States could respond quickly and effectively to an outbreak of the disease if it were to occur.

We found that, because of the sheer magnitude of international passengers and cargo that enter this country on a daily basis, completely preventing the entry of foot-and-mouth disease may be infeasible. The volume of incoming items make it impossible for border inspectors to physically inspect every incoming cargo container or each international passenger's

[1]The foot-and-mouth virus is relatively hardy and can survive in certain environments for considerable periods of time. For example, it can live in salted bacon for up to 183 days or in air-dried animal hides or skins for 6 weeks. Should a person step in manure from an infected animal, the virus can live on the shoes for up to 9 weeks in summer conditions or up to 14 weeks in winter.

luggage. The U.S. Department of Agriculture (USDA) has identified key pathways through which this highly contagious disease might enter the United States, such as on imported live animals or animal products; on the shoes of, or in packages carried by, international passengers; in international mail; and in garbage from international carriers. We also reported that, after the foot-and-mouth disease outbreak in the United Kingdom in 2001, USDA did not inform Customs of its decision to prohibit or restrict certain products or more vigilantly screen passengers arriving at U.S. ports of entry from the United Kingdom. USDA did not provide such official guidance until the Acting Commissioner of Customs formally requested such information more than a month after the outbreak began in the United Kingdom. USDA and the Department of Homeland Security (DHS) are working to increase defenses against diseases entering through those pathways.

We further reported that, should preventive measures fail, and the United States experience an outbreak, the country would face challenges in responding quickly and effectively. While considerable planning and testing of emergency response plans had occurred, we noted several factors that could limit a rapid response to a foot-and-mouth disease outbreak, including (1) the need for rapid disease identification and reporting; (2) effective communication, coordination, and cooperation between federal, state, and local responders; (3) an adequate response infrastructure, including equipment, personnel, and laboratory capacity; and (4) clear animal identification, indemnification, and disposal policies.

Our report recommended that USDA develop a formal mechanism to notify Customs as outbreaks of foot-and-mouth disease spread in other countries and develop uniform, nontechnical procedures that Customs inspectors could use to process international passengers and cargo arriving from disease-affected countries. USDA agreed with our recommendations. It said it would work with DHS to ensure that formal protocols are established for the seamless communication of animal disease risk information for border inspection.

- *Mad Cow Disease: Improvements in the Animal Feed Ban and Other Regulatory Areas Would Strengthen U.S. Prevention Efforts*, U.S. General Accounting Office, GAO-02-183 (Washington, D.C.: January 25, 2002).

  Mad cow disease—or BSE—is an always fatal, neuro-degenerative disease that had been found in cattle in 23 countries around the world at the time we issued this report. Cattle contract the disease through feed that contains protein derived from the remains of diseased animals. Scientists

generally believe an equally fatal disease in humans—known as variant Creutzfeldt-Jacob Disease—is linked to eating beef from cattle infected with BSE; over 100 people have died from the human variant. During long incubation periods—2 to 8 years in cattle and possibly up to 30 years in humans—the disease is undetectable.

As part of our study, we assessed the effectiveness of federal actions to prevent the emergence and spread of BSE and ensure compliance with the animal feed ban.

We found, among other things, that federal actions could not sufficiently ensure that all BSE-infected animals or products would be kept out of the United States or that if BSE were found, it would be detected promptly and not spread to other cattle through animal feed or enter the human food supply. The United States had imported about 125 million pounds of beef (0.35 percent of total imported) and about 1,000 cattle (0.003 percent of total imported) from countries that later discovered BSE—during the period when BSE would have been incubating. We reported that USDA's and the Food and Drug Administration's (FDA) import inspection capacity had not kept pace with the growth of imports. We also found that the one international bulk mail facility that used the newest technology in scanning equipment that would help inspectors more accurately identify products that could carry BSE was not being used during periods of operation when inspectors were not on duty. We further reported that Customs found discrepancies with the accuracy of importer-provided information and, as a result, BSE-risk imports may go undetected.

We also reported that FDA's enforcement of the feed ban, which was put in place to prevent the spread of BSE if it were found in U.S. cattle, was limited and that FDA inspection data were flawed. FDA had not identified and inspected all firms subject to the ban and had not acted promptly to compel firms to keep prohibited proteins out of cattle feed and to label animal feed that cannot be fed to cattle. FDA's data on inspections of feed facilities were so severely flawed that the agency could not know the full extent of industry compliance.

We noted that, if BSE were found in the United States, the economic impact on the $56 billion beef industry could be devastating—consumers might refuse to buy domestic beef; beef exports could decline dramatically; and sales in related industries, such as hamburger chains and soup and frozen dinner manufacturers, could be similarly affected.

We recommended that USDA and FDA, among other things, develop a coordinated strategy to identify resources needed to increase inspections of imported goods and that FDA strengthen enforcement of the feed ban and its management of inspection data. USDA and FDA agreed with these recommendations. Additional funds were requested and approved to strengthen border inspections. FDA has increased the number of feed-ban compliance inspections, and implemented a new feed-ban inspection data system.

- *Food-Processing Security: Voluntary Efforts Are Under Way, but Federal Agencies Cannot Fully Assess Their Implementation*, U.S. General Accounting Office, GAO-03-342 (Washington, D.C.: February 14, 2003).

  The food-processing sector is generally described as the middle segment of the farm-to-table continuum—it extends from the time livestock and crops leave the farm for slaughter and processing until food products reach retail establishments and the consumer. Experts from government and academia agreed that terrorists could use food products as a vehicle for introducing harmful chemical or biological agents into the food supply. In June 2002, the National Academies had also reported that terrorists could use toxic chemicals or infectious agents to contaminate food production facilities and that FDA should act promptly to extend the use of its Hazard Analysis and Critical Control Point methods for ensuring food safety to deal with the risk of deliberate contamination.[2] The Centers for Disease Control and Prevention had also reported on the need for vigilance in protecting food and water supplies. Within this context, in 2002 we examined federal efforts to enhance security at food-processing facilities.

  We reported that the two agencies with primary responsibility for ensuring for food safety—USDA and FDA—had each, independently, published comprehensive security guidelines for food processors to help them identify measures to prevent or mitigate the risk of deliberate contamination at their production facilities. Both agencies encouraged processors to review their current operations and to adopt those measures that they believed would be best suited for their facilities. FDA's guidance contains over 100 suggested security measures and USDA's some 68 such items. Among other things, the guidelines included recommendations for

[2]USDA requires meat and poultry plants to use a Hazard Analysis and Critical Control Point system and FDA requires that system for juices, fish, and shellfish.

improving personnel security by conducting screening and background checks and controlling entry into the facilities; securing hazardous materials by controlling access to storage areas; improving outside security by monitoring all access to the establishment; installing lighting; ensuring that in-house laboratories have comprehensive and validated security and disposal procedures in place; and that parking areas are a safe distance from the facility.

However, we also reported that USDA and FDA had determined that their existing statutes did not provide them with absolutely clear authority to impose security requirements at food-processing facilities. For example, neither agency had authority to require processors to implement measures to enhance security outside the food-processing environment, such as installing fences, alarms, or outside lighting. Nor did the agencies believe they had authority to require food processors to conduct employee background checks. Because of these uncertainties about their authority, the security guidelines they gave food processors are voluntary. Since the guidelines were voluntary, USDA and FDA have not been enforcing, monitoring, or documenting their implementation. We also found that most of USDA's and FDA's field staff had not received training on security matters. And, although the field staff were instructed to be vigilant and on "heightened alert," they were also told not to document or report their observations regarding security at the plants because the information could be obtained under a Freedom of Information Act request.

We also reported on recent congressional efforts to protect the nation's drinking water from terrorist acts that may offer a model for FDA and USDA to help them monitor security measures at food-processing facilities and to identify any gaps that may exist. Specifically, the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 requires community water systems to assess their vulnerability to terrorist attacks and develop emergency plans to prepare and respond to such events. They are also required to submit copies of their plans to the Environmental Protection Agency. The act specifically exempts these assessments from the Freedom of Information Act.

We concluded that FDA and USDA could not assess the industry's efforts to prevent or reduce their vulnerability to deliberate contamination. Lacking such baseline information, they could not be prepared to advise food processors on any additional actions needed. We also concluded that the lack of security training for field personnel hampered their ability to conduct informed discussion with facility personnel.

We recommended that FDA and USDA study their agencies' existing statutes and identify what additional authorities they may need relating to security measures. On the basis of the results of these studies, the agencies should seek additional authority from the Congress. While USDA agreed with our recommendation, FDA took no position. We also recommended that both agencies provide training for all field personnel to enhance their awareness and ability to discuss security measures with plant personnel. USDA and FDA agreed with the need for additional training.

- *Combating Bioterrorism: Actions Needed to Improve Security at Plum Island Animal Disease Center*, U.S. General Accounting Office, GAO-03-847 (Washington, D.C.: September 19, 2003).

  USDA scientists at the Plum Island Animal Disease Center are responsible for developing strategies for protecting the nation against animal diseases that could be accidentally or deliberately introduced in to the country. These scientists—often with the assistance of scientists from other countries—identify the pathogens that cause animal diseases in foreign countries and then work to develop vaccines against them. Some pathogens maintained at USDA's Plum Island laboratory, such as foot-and-mouth disease, are highly contagious to livestock and could cause catastrophic economic losses if they were released outside the facility. Questions about the security of Plum Island arose after the September 2001 terrorist attacks and when employees of the contractor hired to operate and maintain the Plum Island facilities went on strike in August 2002. About 10 months later, in June 2003, DHS became responsible for Plum Island while the USDA staff are continuing their research programs.

  In September 2003, we reported that our review of security at Plum Island identified fundamental concerns that leave the facility vulnerable to security breaches. We found that immediately after the September 2001 terrorist attacks, USDA began a concerted effort to assess security at many of its laboratories, including Plum Island. Using a risk management approach, USDA identified certain pathogens as the primary asset requiring protection, the potential threats to this asset, and the associated risk. USDA also began to upgrade security at Plum Island. For example, USDA hired armed guards to patrol the island and installed fingerprint recognition locks on freezers containing pathogens.

  Despite these improvements, we identified shortcomings in Plum Island's security arrangements. We found that Plum Island's physical security was incomplete and limited. For example, the alarms and door sensors that

were recommended for the biocontainment area were not fully operational; outdoor lighting was not adequate to support security cameras; and physical security was not sufficient for certain assets, including the foot-and-mouth disease vaccine bank. DHS officials said the alarms and door sensors will be in place by December 2003 and they were evaluating other physical security matters.

Furthermore, we found that Plum Island officials had not adequately controlled access to the pathogens. Eight scientists from other countries were given access to the biocontainment area without escorts while their background checks were incomplete; no background checks were done on students who regularly attended classes within the biocontainment area; and individuals entering the biocontainment area to perform nonlaboratory functions, such as cleaning, were not always escorted. Controlling access to the pathogens is particularly important because no security device is currently capable of detecting a microgram of pathogenic material. Therefore, a scientist could remove a tiny quantity of pathogen without being detected and potentially develop it into a weapon. Many facilities take measures to minimize this risk. For example, at the U.S. Army Medical Research Institute of Infectious Diseases, background checks must be updated regularly to evaluate the continued suitability and reliability of employees working with pathogens. According to DHS officials, they are taking action to revise policies for access to the biocontainment area.

We also found limitations in Plum Island's incident response capability. For example, the guard force had been operating without authority to carry firearms or to make arrests. Plum Island's incident response plan does not address what to do if an incident, such as a terrorist attack, exceeds the capability of the security system, and officials have not tested the facility's response capability to ensure its effectiveness. DHS officials told us they have started to take actions to fully address these incident response issues and are obtaining assistance from the Federal Protective Service.

Because of the strike that occurred in August 2002 and the hostility surrounding it, the risk that someone may try to steal pathogens has increased. One striker was convicted of tampering with the island's water distribution and treatment system as he walked off the job the day the strike began, and USDA officials suspect that this individual did not act alone. The intelligence community considers disgruntled employees as posing a security risk. Although USDA did consider the possibility that it could have a disgruntled worker, it did not reevaluate the level of risk, the

assets requiring protection, or its incident response plans for Plum Island in light of specific events related to the strike. Furthermore, USDA did not discuss the defined threat with the intelligence community and local law enforcement officials to ensure that threats particular to Plum Island and its vicinity were taken into consideration.

We concluded that further actions are needed to provide reasonable assurance that pathogens cannot be removed from the facility and exploited for use in bioterrorism. Particularly, it is important to better secure the foot-and-mouth disease vaccine bank to ensure its availability for combating an outbreak. The lack of comprehensive policies and procedures for limiting access to pathogens unnecessarily elevates the risk of pathogen theft. Moreover, because physical security measures alone are not adequate to secure pathogens, all laboratories containing these materials face the challenge of developing other approaches to mitigate the risk of theft. By consulting with other laboratories to discover methods they are using to mitigate the risk to pathogens, Plum Island officials can learn more about safeguards being employed elsewhere.

We recommended that DHS (1) correct physical security deficiencies at Plum Island; (2) limit access to pathogens and identify ways to mitigate the inherent difficulty of securing pathogens; (3) enhance Plum Island's incident response capability; and (4) reconsider the risks and threats to Plum Island and revise the security and incident response plans as needed. DHS has agreed with the report and has started to implement these recommendations.

Per Senator Daniel Akaka's (D-HI) request, Dr. Peter Chalk's comments regarding his legislation S. 427: Agriculture Security Assistance Act and S.430: Agriculture Security Preparedness Act are included within this document and are asked to be submitted in the record after my oral testimony before the Senate Governmental Affairs Committee on Wednesday, November 19, 2003.

S.427: Agriculture Security Assistance Act

SEC.2. FINDINGS

Under (4) Add:

(C) generate public criticism against Federal and State political structures.

Under (10) Add:

(C) integration of agricultural and food safety measures would serve to reduce jurisdictional conflict and duplication of effort.

SEC 899B. RESPONSE PLANS

Under (a) Change (1) STATE PLANS to Read:

The Secretary of Agriculture, in consultation with the Director of the Federal Emergency Management Agency, shall assist States in developing and implementing a comprehensive needs analysis to ascertain appropriate investment requirements for responding to outbreaks of agricultural diseases.

Under (d) Where Appropriate Add:

The provision of grants to help with the creation of dedicated Federal and State outreach programs between agricultural producers and emergency management personnel.

SEC 899C. BIOSECURITY AND AWARENESS PROGRAMS

Under (a) (2) Change to Read:

the immediate reporting of agricultural disease anomalies.

Under (b) (1) (A) Add:

(iii) to enhance consistency with indemnity payments to compensate farmers for destroyed livestock.

Add where appropriate the provision of Federal grants for the following additional measures:

1. Upgrading and expanding of veterinary science education, especially with regards courses that focus on large-scale husbandry and exotic/foreign disease treatment and recognition

2. Determining key bio-security gaps in food processing plants and assessing the immediate costs of improving security surveillance and preparedness at these facilities against the long-term benefits of instituting such upgrades.

S. 430: Agriculture Security Preparedness Act

SEC.2. FINDINGS.

Change (2) to Read:

the economic impact of a worst-case agricultural disease affecting multiple farms in multiple States could be measured in billions of dollars, including the cost of eradication, production losses, international trade losses, and other marker repercussions;

Change (4) to Read:

the introduction and spread of a plant or animal disease include--

Under (4) Add:

(G) the out-sourcing of traditional farming practices;

(H) the rapid distribution of plant and animal produce;

(I) wide availability of pathogens identified as having the potential to severely affect agricultural livestock and negatively impact on agricultural trade;

(J) the low technical and financial barriers associated with preparing and disseminating anti-crop and anti-livestock agents.

Change (6) to Read:

response planning and mitigation requires coordination between Federal, State, and local animal health and agricultural community, transportation officials, and representatives of the shipping and trucking industry;

SEC. 899A. DEFINITIONS.

Change (3) to Clarify:

Specify agroterrorism as a sub-state act (it involves entirely different considerations and assumptions to state anti-agricultural programs)

CHAPTER 1—INTERAGENCY COORDINATION

SEC. 899D. AGRICULTURAL DISEASE LIAISONS.

Under (a) Add:

(G) the Department of Homeland Security;

(H) the Federal Bureau of Investigation;

(I) the Central Intelligence Agency;

(J) the Defense Intelligence Agency (DIA).

Under (b), Change (B) to Read:

(B) state animal and human health officials;

SEC. 899E. TRANSPORTATION.

Change (1) to Read:

publish in the Federal Register proposed guidelines for mandating and restricting interstate transportation of an agricultural commodity or product in response to an agricultural disease;

Add two new sections at the end of Chapter 1:

1. Study on the feasibility of establishing a biosafety level (BSL) 4 diagnostics facility for studying and researching the most threatening and contagious animal diseases.

2. Study on the feasibility of establishing a national vaccination program to address foot and mouth disease (FMD).

CHAPTER 3 - RESPONSE ACTIVITIES

SEC. 899Q. INFORMATION SHARING.

Change Opening Sentence to Read:

The Secretary of Agriculture, in cooperation with the Attorney General, shall develop and implement a system to share real-time information across state jurisdictions and between relevant Federal, State and local officials during all stages of an agroterrorist act.

Additional Questions for Dr. Penrose Albright
Assistant Secretary for Science and Technology, Department of Homeland Security
Submitted by Senator Daniel K. Akaka
Senate Committee on Governmental Affairs
AGROTERRORISM: THE THREAT TO AMERICA'S BREADBASKET
November 19, 2003

1. Have you had the opportunity to review my two bills relating to agricultural security, S.427, the Agriculture Security Assistance Act, and S. 430, the Agriculture Security Preparedness Act, with specific respect to which aspects of the bills you believe would be helpful in increasing agricultural security and which issues require further legislation?

Answer: Yes we have, in the context of our ongoing planning activities on agricultural biodefense.

DHS is currently working with colleagues at USDA (APHIS, ARS) on a national strategy for agricultural biosecurity, which includes planning and coordination of joint activities at the Plum Island Animal Disease Center (PIADC), as well as examining the requirements for national response to foreign animal diseases (with initial emphasis on food-and-mouth disease, FMD).

To complement and extend these planning activities, DHS/S&T has initiated end-to-end systems studies for each of its seven reference scenarios for biological and chemical countermeasures, including one on foreign animal disease and FMD.

Major points of focus in the two bills are clearly relevant to the nation's capability to respond to agricultural threats, and thus to our planning, including:

- S.427: state, regional and national response plans; modeling and statistical analysis; geographical information systems
- S.430: interagency coordination; transportation and restrictions during a response; international agricultural disease surveillance; information sharing

As the date of introduction of the bills pre-dates 'standing-up' of DHS in March 2003, these (and other) important issues germane to the DHS mission must be parsed onto the responsibilities of the four DHS Directorates (B&TS, EP&R, IA&IP, S&T), and we are doing so in the context of our end-to-end systems studies of foreign animal disease referred to above.

2. During the hearing, a Governmental Accounting Office (GAO) report was cited which states that neither the Food and Drug Administration (FDA) nor the Department of Agriculture (USDA) believe that they have the authority to enforce security at U.S. food processing plants. GAO states:

...both FDA and USDA have instructed their field inspection personnel to refrain

from enforcing any aspects of the security guidelines because the agencies generally believe that they lack such authority.

Which agency, if any, has the authority to ensure proper security procedures are being followed at these plants? What is being done to ensure that someone is protecting this crucial stop in the food supply system?

Answer: Food processing plants are owned and operated by the private sector. While federal regulatory agencies (DHHS/FDA, USDA/FSIS) do have regulatory authority for food safety practices at these facilities, our understanding (consistent with yours) is that currently these agencies have 'little or no' authority to mandate changes in security practices in the name of homeland security (as opposed to food safety per se).

Initiatives with the private sector to develop necessary federal and private sector partnerships are currently being developed by the DHS Information Analysis and Infrastructure Protection (IA&IP) Directorate for all fourteen identified critical infrastructures, including those for agriculture and food. For example, the Information Sharing and Analysis Center (ISAC) for food and agriculture (which spans the agriculture, manufacturing and processing, and retail sub-sectors) provide one such mechanism for information sharing and cooperation. DHS/IA&IP Assistant Secretary Robert Liscouski and his colleagues can provide additional information on the ISAC programs and their status.

3. Another GAO report released in September 2003 reported that Plum Island Animal Disease Center did not have adequate security provisions. GAO officials acknowledge that security has been heightened since the report was released, but they are still concerned about the lack of authority possessed by the facility's guards who lack arrest authority. The guards do not possess arrest authority. Yet local police do not have jurisdiction on the island because it is federal land and are therefore reluctant to address criminal situations at the facility. Does the Department of Homeland Security believe it is important to give the guards arrest authority?

Answer: Yes, because arrest authority is a prerequisite for mutual aid agreements between PIADC and local authorities, as summarized below.

Security guards at PIADC are provided by subcontract, and do not have federal law enforcement or arrest authority.

Local law enforcement (e.g., Suffolk County) requires an authorized and recognized federal law enforcement presence on the Island as a precondition to signing a mutual aid agreement. At present, an agreement for mutual aid with Suffolk County is in place for fire fighting support, but not for law enforcement.

Federal Protective Services (FPS) officers would provide the necessary law enforcement presence. However, an FPS request to Congress for additional positions (including ones for planned for PIADC) was not approved.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
Rockville MD 20857

The Honorable Susan M. Collins
Chairman
Committee on Governmental Affairs
United States Senate
Washington, D.C. 20510-6250

MAR 1 0 2004

Dear Madam Chairman:

Thank you for your letter of January 20, 2004, in which you requested responses to questions submitted by Senator Daniel K. Akaka. The questions relate to the November 19, 2003, hearing titled, "Agroterrorism: The Threat to America's Breadbasket." We have restated the questions and responded below.

1. **Have you had the opportunity to review my two bills relating to agricultural security, S. 427, the Agriculture Security Assistance Act, and S. 430, the Agriculture Security Preparedness Act, with specific respect to which aspects of the bills you believe would be helpful in increasing agricultural security and which issues require further legislation?**

The Food and Drug Administration (FDA) provided technical assistance to your staff in 2002 when you were developing this legislation. However, there is not an Administration position on these bills. FDA is currently implementing the new authorities provided by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act) (PL 107-188). This landmark legislation represents the most fundamental enhancement to our food safety authorities in many years. If the Administration identifies additional authorities that are needed to increase agricultural security, the Administration will inform Congress.

2. **In your written testimony, you stated that 420,000 facilities that manufacture, process, pack, or hold American food are expected to register with the Food and Drug Administration (FDA) under the new regulations put forth by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188). You further reported that, as of November 17th, 49, 975 had registered. The deadline for registration is December 12, 2003. If facilities have not registered by the deadline, will they be barred from handling U.S. food products until they register? If so, what impact will this have on the U.S. food supply system in the immediate future?**

On October 10, 2003, Customs and Border Protection (CBP) and FDA jointly published the Registration of Food Facilities Interim Final Rule and the Prior Notice of Imported Food Interim Final Rule to implement Sections 305 and 307 of the Bioterrorism Act (Volume 68, *Federal Register*, page 58894). The Interim Final Rules became effective on December 12, 2003, as required by the Bioterrorism Act. In December 2003, FDA and CBP issued two compliance policy guides that describe our strategy for maintaining an uninterrupted flow of food imports while improving their safety in accordance with the Bioterrorism Act. *See http://www.cfsan.fda.gov/~dms/guidance.html.* The guides state that until August 12, 2004, the two agencies will primarily rely on educating the affected firms and individuals. During this period, the agencies will first focus on communication and education initiatives, begin escalating imposition of civil monetary penalties, and ultimately refuse imported food shipments. Regarding food mailed, brought or accompanied to the U.S. by individuals for non-personal use, FDA and CBP will continue their education efforts and generally use enforcement discretion before August 12, 2004, because of inadequate prior notice.

3. **A December 1, 2003 *New York Times* article noted that:**

> **...it is unlikely that the FDA, with its present resources, will ever be able to inspect considerably more than the 2 percent of imported produce it does now – far less than the portion of imported meats the Department of Agriculture inspects. Congress must close the gap in resources between the two regulators. The FDA also needs the authority to conduct audits within our trading partners.**

Do you agree with this assessment? What functions does the FDA need to perform that it is unable to at the present to protect our nation from agroterror attack?

FDA believes it is more effective to focus our resources in a risk-based manner rather than to focus simply on increasing the percentage of imported food shipments that are inspected. It is important to note that every shipment of FDA-regulated food for which entry information is filed with CBP is electronically reviewed by FDA's Operational and Administrative System for Import Support to determine if it meets identified criteria for further evaluation by FDA reviewers and physical examination and/or sampling and analysis or refusal. This electronic screening allows FDA to concentrate its limited inspection resources on high-risk shipments while allowing low-risk shipments to proceed into commerce.

With the new prior notice requirement, specific information mandated by the Bioterrorism Act (including much of the import entry data already transmitted to CBP), must be submitted to FDA before the imported food arrives in the U.S. This not only allows the electronic system to electronically review and screen the shipments for potential serious threats to health (intentional or otherwise) before food arrives in the U.S., but it also will allow FDA staff to review prior notices for those products flagged by the systems as potentially presenting the most significant risk. FDA staff review of prior notices began upon the effective date of the Interim Final Rule (December 12, 2003).

FDA has co-located its prior notice review staff at CBP's National Targeting Center to utilize their Automated Targeting System as an additional tool to enhance the agency's ability to focus attention on those imported foods that may pose a serious threat to public health. We anticipate that the combined use of FDA's and CBP's screening systems will enable both agencies to effectively target shipments posing the greatest risk in order to further focus their border inspection efforts.

As we mentioned in our testimony, thanks to bi-partisan Congressional support, a fiscal year 2002 supplemental included counterterrorism funds for FDA. This enabled FDA to hire over 800 employees, 655 of whom were hired as additional field personnel. Of the 655 field personnel, 635 were hired to address food safety and security issues, primarily at the border. With these additional employees, we have expanded FDA's presence at ports-of-entry, increased surveillance of imported foods, increased domestic inspections, and enhanced our laboratory analysis capacity. Within the last two years, we have more than doubled the number of ports that have an FDA presence from 40 to 90 ports. We have increased by more than six-fold the number of food examinations at the border.

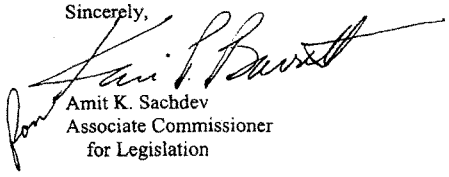
In addition, in December 2003, FDA Commissioner Mark B. McClellan, M.D., Ph.D., and CBP Deputy Commissioner Douglas Browning, signed a memorandum of understanding (MOU) that allows FDA to commission CBP officers in ports and other locations to conduct, on FDA's behalf, investigations and examinations of imported foods. This unprecedented FDA-CBP collaboration significantly strengthens the implementation of the Bioterrorism Act to ensure the security of imported foods. Building on FDA's and CBP's long history of close cooperation, the MOU upgrades the two agencies' teamwork in training, day-to-day operations, and information sharing. As part of the MOU, FDA can commission all the CBP officers the two agencies consider necessary to conduct examinations and investigations in accordance with FDA's recently issued Prior Notice Interim Final Rule.

With regard to FDA's authority to conduct foreign inspections or audits with our trading partners, FDA annually conducts approximately 200 inspections of food manufacturing facilities in countries that export FDA-regulated foods to the U.S. These inspections are conducted at the discretion of the government of the particular exporting country. In this context, FDA works with our food safety counterparts in other countries to coordinate and conduct the inspections. The inspections normally proceed without difficulty, and FDA takes any necessary regulatory action based on the outcome of the inspections.

In our testimony, we described FDA's ten-point plan for ensuring the safety and security of the nation's food supply. Through the new authorities in the Bioterrorism Act and the measures outlined in the ten-point plan, we are making tremendous progress and are continuously working to improve our ability to detect and respond to terrorist threats.

We appreciate your continued interest in FDA's food safety and security activities. We look forward to continuing to work with you and your staff on these issues.

Sincerely,



Amit K. Sachdev
Associate Commissioner
for Legislation

Additional Questions for Dr. Charles Lambert
Deputy Under Secretary for Marketing and Regulatory Programs
U.S. Department of Agriculture
Submitted by Senator Daniel K. Akaka
Senate Committee on Governmental Affairs
AGROTERRORISM: THE THREAT TO AMERICA'S BREADBASKET
November 19, 2003

Have you had the opportunity to review my two bills relating to agricultural security, S 427, the Agriculture Security Assistance Act, and S. 430, the Agriculture Security Preparedness Act, with specific respect to which aspects of the bills you believe would be helpful in increasing agriculture security and which issues require further legislation?

The Department of Agriculture (USDA) very much appreciates the intent of these bills—to increase our nation's agricultural security and ability to respond to agricultural emergencies in a swift and coordinated manner. In this regard, USDA is engaged in myriad efforts to ensure that we continue to bolster our agricultural safeguarding programs, especially domestic pest and disease surveillance programs; refine our emergency response plans for specific agricultural pests and diseases; provide response and diagnostic training to our State and industry producers; and enhance our ability to communicate with all of our Federal, State, local and other cooperators during emergency situations.

In total, these efforts have helped us immensely as we worked to address several recent critical emergency agricultural situations in the United States, including the detection of bovine spongiform encephalopathy in a cow in Washington State in 2003 and, most recently, detections of both low- and highly pathogenic avian influenza in the Delmarva area and Texas. These situations presented significant challenges to USDA and our State and industry partners, but they also provided us with opportunities to gauge the effectiveness of our emergency response programs and planning.

Because the Chairman of the Senate Committee on Governmental Affairs has not asked USDA to formally comment on the bills, we feel that this is not the appropriate venue for communicating our comments on the legislation. We would be happy to do so should the Committee request that USDA provide its official position on the bills. We feel this is especially important given that S. 430 includes significant provisions regarding USDA's coordination with other Departments and agencies across the Federal Government.

On November 12, 2003, *The Washington Post* reported that the federal government had failed to certify the security of all U.S. laboratories and scientists that handle dangerous pathogens by the November 12 deadline set out in the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188). It stated that none of the 513 laboratories and 5,400 of the 9,000 scientists who applied for approval had been certified. When asked about the Department of Agriculture's (USDA) role in this process at the hearing, you stated:

> ***We have seventy-five provisional approvals and three that have been denied. We will continue to accept and review additional applications as they become available.***

I have been informed that laboratories that are conducting ongoing research whose reviews have not yet been completed received a provisional certification on November 12, 2003.

It is also my understanding that the Federal Bureau of Investigations (FBI) is responsible for completing the individual background checks and that this may be where the process is slowing down.

Q. Can you clarify your statement from the hearing with specific respect to the number provided by the Washington Post and explain what is indicated by the term "provisional approval"? Did the 75 laboratories cited receive the temporary certification I mentioned above or were they actually reviewed and approved?

A. All 75 entities cited in the Washington Post were thoroughly reviewed before provisional certification was granted. Following these biosecurity reviews, provisional certification was granted to all but 3 of the entities in question that submitted applications by November 12, 2003. The facilities that were granted provisional certification were able to show that their biosafety protocols met the standards set forth in the Agricultural Bioterrorism Act of 2002. Under the Act, an entity's biosafety measures must be commensurate with the risk that an agent or toxin poses and the entity must establish security measures that provide graded protection in accordance with the threat posed by an agent or toxin.

Q. Could you please provide the details of the provisional certification, including its expiration date?

A. Provisional certification is designed to provide additional time for the Attorney General to complete security risk assessments for those individuals working at entities possessing, using or transferring biological agents or toxins. Entities that possessed select agents were required to register with the Department of Health and Human Services and/or USDA by November 12, 2003. Provisional approval was only given to entities that submitted applications on or before the November 12th deadline. Provisional certification was necessary to ensure that research and educational programs were not disrupted while the Attorney General conducted security risk assessments on individuals employed by these entities. The provisional certification does not expire. An entity's provisional certification will be in effect until the Attorney General completes background checks on the necessary individuals employed by the entity. At that time, APHIS will issue a certificate of registration. If, however, problems are identified, APHIS will suspend or revoke the provisional certification.

Q. Would you agree with the statement that much of the slow-down in the review process can be attributed to the FBI? If so, can you describe the time line in which applications were delivered to the FBI?

A: No. Although application packages were due to the FBI several months earlier, many were not delivered with all required information until early November, 2003. In recognition of required risk assessment processing time, a provisional certification was established for those employees who had submitted the required application packages to the FBI by November 12, 2003.

During the hearing, a Governmental Accounting Office (GAO) report was cited which states that neither the Food and Drug Administration (FDA) nor USDA believe that they have the authority to enforce security at U.S. food processing plants. GAO states:

> ***...both FDA and USDA have instructed their field inspection personnel to refrain from enforcing any aspects of the security guidelines because the agencies generally believe that they lack such authority.***

Does USDA have the authority to ensure proper security procedures are being followed at these plants? If so, what is being done to ensure that USDA personnel in the field are aware of this authority?

USDA's responsibilities for enforcing security at U.S. food processing plants reside with the Food Safety and Inspection Service (FSIS). In May 2002, the agency distributed the FSIS Security Guidelines for Food Processors to all Federal and State inspected plants that produce meat, poultry, and egg products to assist them in identifying ways to strengthen their biosecurity protection. FSIS monitored the implementation of food security guidelines through the agency's Performance Based Inspection System (PBIS). The agency's field inspection force was directed to report any significant breaches of food security to the plant manager and the district office. Through PBIS, FSIS has the means to order emergency food security monitoring procedures, to review the plant's voluntary security measures, at any time in any plant nationwide.

The FSIS Office of Field Operations maintains constant contact with its field inspection force to keep them informed of ongoing food security monitoring procedures. In March 2003, FSIS issued a Directive to the field, which details the steps to be followed in the event that a Threat Condition Orange or Red is declared by the Department of Homeland Security. In the event of such threats, the FSIS Office of Food Security and Emergency Preparedness notifies all field employees of the heightened threat condition. Field employees communicate the threat level to plant management and verify that appropriate food security monitoring procedures are being followed.

FSIS believes that it has the legal authority under the Federal Meat Inspection Act, Poultry Products Inspection Act, and Egg Products Inspection Act to take certain actions

to enhance food security at meat, poultry, and egg processing establishments. In a September 10, 2002, letter from USDA's Office of General Counsel (OGC) to the General Accounting Office, OGC stated that, "FSIS could require facilities to develop and maintain such a plan, especially with regard to an establishment's response to an actual threat involving product tampering, since this is directly related to food adulteration." The agency is currently exploring measures, including proposed regulations, to improve food security using its existing authorities. If the agency decides to propose and adopt these regulations, and if, after implementing the measures under consideration, the agency determines the effectiveness of such measures is limited in preventing intentional contamination of meat, poultry, and egg products, FSIS will consider other alternatives.

Terrorists' Interest in Agroterrorism

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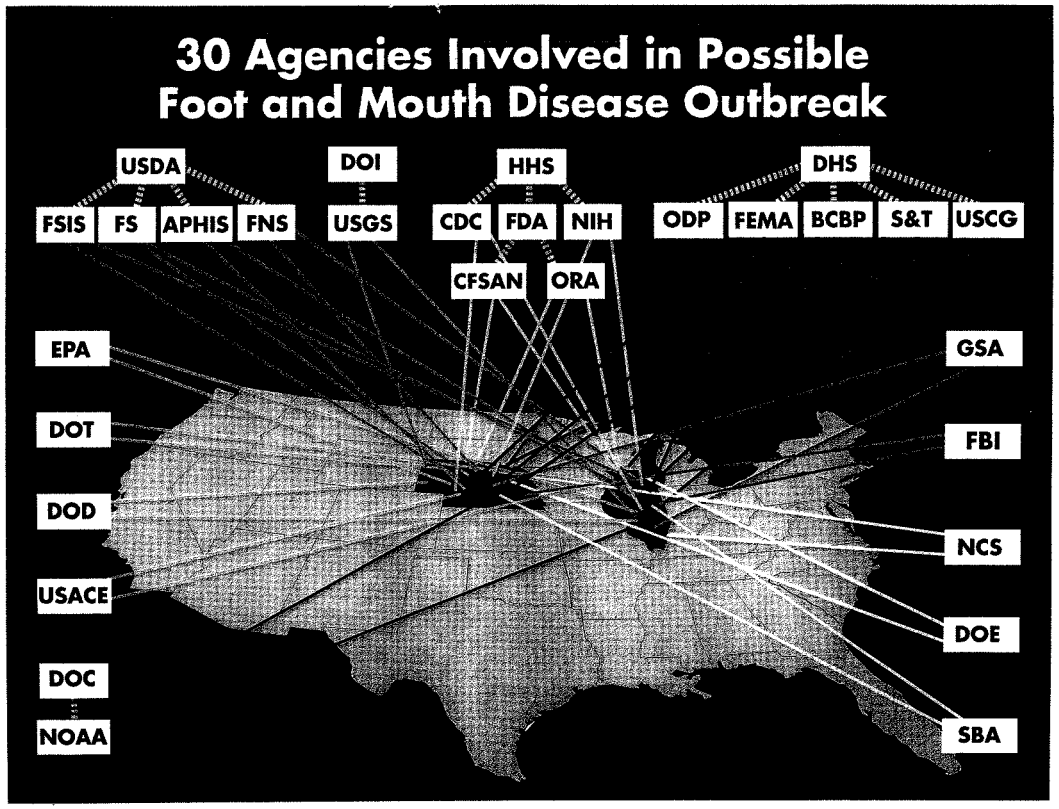

The Midwest Alliance for Agroterrorism Countermeasures

A University – Private Sector – National Laboratory Partnership
University of Missouri

Testimony by Dr. Abner W Womack
University of Missouri
Co-Director of the Food and Agricultural Policy Research Institute

Before the U. S. Senate Committee on Governmental Affairs

November 19, 2003

The opinions and conclusion expressed in this written testimony are the author's alone and should not be interpreted as representing the University of Missouri or any of the sponsors of its research.

THE MIDWEST ALLIANCE FOR AGROTERRORISM COUNTERMEASURES

Testimony by Abner W. Womack, Co-Director
Food and Agriculture Policy Research Institute, University of Missouri, Columbia.

Thank you Madam Chairman and distinguished members of the Senate Government Affairs Committee for the opportunity to submit testimony on this important subject. I am Co-director of the Food and Agricultural Policy Research Institute at The University of Missouri. A considerable portion of our budget comes from the federal government to evaluate the implications of farm-program and trade policies. During the 2002 Farm Bill debate our Institute evaluated over 40 program options requested by the House and Senate Agricultural Committees. Our research covers all major agricultural commodities – both crops and livestock produced and consumed in the U.S. and major foreign countries.

Why does the federal government fund this type of national and international policy research at the consortium of the University of Missouri and companion universities? Among many reasons given by Congress is simply that estimates on policies under consideration need verification from the heartland of agriculture. This community has direct interaction with all major sectors. Within the borders of Missouri, Kansas, Nebraska and Iowa is approximately 25 percent of the nation's crop and grasslands and 20 percent of the livestock industry. Bordering states make up a combination of 70 percent of American agriculture. Two major rivers traverse these states, moving substantial quantities of agricultural inputs and products destined for foreign markets. The Kansas City Board of Trade is an active indicator of domestic and global agriculture and major cities in the Alliance harbor some of the largest agricultural industries in the world.

Given this substantial agricultural base and the growing threat from agroterrorism, the University of Missouri took the lead in forming the Midwest alliance for a national research resource.

The motivation for the alliance is security and the concern over the likely paths that terrorist acts could take. Isolated incidences of deadly viruses like mad-cow disease or anthrax will require detailed, painstaking laboratory analysis. Depending on the sources, especially in the livestock and meat processing industry, all the stages from the farm gate to the retail market will receive detailed investigations.

This leads to the seconed stage, economics. As witnessed in Europe, Canada and Japan, isolated incidences become national and international in scope. The immediate concern over food security locks down entire industries. Testing and eradication of animals are necessary until public confidence is restored. In the mean time, substantial economic damage to the industry and the consumer in higher retail prices is likely. Canada experienced an isolated incidence of mad-cow disease resulting in the closing of the

boarder to U.S. trade. Canada exports 50 percent of its beef production and the net result has been substantial losses to the industry with over a 50 percent decline in beef prices for the entire Canadian beef industry.

Taking these concerns into consideration, the universities and partners in the Alliance have concentrated on experiences gained from a long history of managing multidimensional programs, many of which have been regional and national in scope. While located in the heartland, this Alliance has established a research test bed oriented such that detection, response and communication can be directed to any major region in the country. The responses built into this system have been tested over the last 20 years. They contain information and analytics that can react immediately to define and address top priority issue should the nation's agriculture be threatened.

This experience has been further refined given that the University of Missouri and the Partnership institutions continually evaluate agricultural policies and concerns that have global reach. To further understand this point one only has to consider the eight major objectives contained in the debate for national agricultural policy. It is the responsibility of congress to ensure that farm programs

-provide an adequate net farm income for crops and livestock producer,
- ensure that an adequate safe food supply is available at a reasonable price,
- maintain a competitive trade position,
- enhance environmental and conservation quality,
- maintain a viable input industry,
- maintain adequate reserves in the event of crop production problems,
- complement thriving rural communities, and
- meet all objectives met at the least cost to the government.

Obviously this all encompassing set of objectives requires analytic and information flow through all sectors. This is exactly the environment that the University of Missouri and the Alliance has chosen as a research base for several years. Quick response and turn around of analysis has been refined through direct interactions with the political process.

Experience with the food system

From the consumer side, the first and foremost issue will be confidence in a safe and adequate food supply. This is a $650 billion industry reflecting one of the lowest food expenditures of any country in the world at $2,200 per capita per year. A threat to the meat industry, for example, will create immediate concerns about food safety, contamination, adequate supplies, pricing and spillover into other commodities, including foreign trade.

The proximity of the Alliance to these processing and production centers has fostered considerable research that directly intersects with many of these industries. And national interaction models of all commodities can quickly trace actions from a local into a national/international setting.

Experience with the farm – production sector
From the farm side, gross sales of crops and livestock reflect an approximate $200 billion industry that includes over 350 million acres of land, 150 billion pounds of meat and 170 billion pounds of milk. There are several generations of associated research as production agriculture is complemented by the primary research of all land grant institutions. This research is complemented by an extensive network of skilled faculty in the field. This is one of only a few such networks in existence, where localized information in any part of the production system can be accessed immediately for processing and evaluation by literally hundreds of skilled technicians. This is an absolutely essential component necessary for rapid response.

Experience in International Markets
International trade is also a major research focus of this alliance. The farm belt is dissected by two major rivers, the Mississippi and the Missouri. Continuous barge traffic makes its way to New Orleans for overseas markets. This traffic and trade is crucial to U.S. agriculture, reflecting a movement of over 150 million metric tons worth about $56 billion in 2003. Trade flow models projecting these routes and final destinations are continually modified and refined so that traces can be immediately derived from any major disruption in the system.

Experience with Environmental and water quality
Environmental implications are likely to revolve around water and air quality. Many cities, rural and urban, use water from major rivers and reservoirs. Given the importance of water in the production and consumption of food and fiber the alliance is heavily involved in what is termed "watershed analysis." Tracking systems based on DNA are already in place, such that sources of contaminates can be quickly determined and strategies devised to eliminate or minimize the problem. Current EPA guidelines have been the stimulus for this broad-based analysis. In many cases this involves field tests with finely-tuned monitoring systems that detect movements in water runoff into rivers and streams. These teams are networked locally such that interested citizens have complete access to the entire development, data collections, and final evaluations and recommendations. As you would expect many researchers are involved in this type of analysis. It involves many hours of time in specialized laboratories already established on agricultural campuses in the Midwest.

Experience with Agricultural Input Industry
The input industry is a crucial component of this network supporting agriculture. The industry generates approximately $180 billion annually. Its support ranges from financial institutions lending money for ag productions, to industries associate with seed, feed, fertilizers, herbicide, pesticides, machinery, and transportation.

Animal and Human Health
Virus strains inserted into either the crop or livestock inputs are a major threat. Health issues associated with contaminated products are further complicated by the fact that certain human diseases can be transmitted through animals, the West Nile Virus being one example.

As witnessed in Europe during the bovine spongiform encephalopathy (mad-cow disease) outbreak and the most recent BSE problems in Canada, an outbreak can paralyze an entire country. Swift measures of containment and eradication will become the highest priority in this situation.

Our veterinarian networks become the focal point for swiftly dealing with these problems. Tagging and immediately tracing sources will be enhanced through existing networks enabling scientists in the Alliance to readily communicate problems, priorities and strategies.

Experience with Rural Communities

Rural communities where the majority of crops and livestock are produced will be vulnerable. Hence an outbreak can be devastating to the local economy that experiences any major target or threat. The devastation is likely to be of the magnitude experienced in Europe and Canada. If so, this will require swift assessment of damage and a substantial information and analytical capability to address the losses. Although problems may originate at the local level, this damage will permeate the entire local economy. Fortunately there are capabilities in place for substantial analysis and information relative to impact assessment.

Madam Chairman, this broad-based set of experiences by the partners associated with the University of Missouri in this Alliance is a major reason for locating the Midwest Agroterrorism Countermeasures Partnership at the University of Missouri. The University and companion alliances have seasoned experience, information, analytics and sophisticated communication networks in place. Also, the administration has many years of managing research centers that are designed for quick response. This is evident in our policy research which represents an institute with many years of involvement in global agriculture with a corresponding network of companion universities and the U.S. Congress.

This cooperation allows each member to focus on strengths that are necessary to complement the entire set of policy objectives that guide our food system at the national level.

The Alliance is enhanced by location. The majority of production agriculture, transportation and processing are directly related to research and experience across the entire range of university and research institutions. It is for these many reasons that research imbedded in these long-standing institutions will produce the best return on the government dollar. The systems offer tremendous leverage from years of previous research, experience and corresponding information networks and established communication systems.

○