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NOT A MATTER OF "IF", BUT OF "WHEN": THE STATUS OF U.S. RESPONSE FOLLOWING A RDD ATTACK

JOINT HEARING

BEFORE THE

OVERSIGHT OF GOVERNMENT MANAGEMENT, THE FEDERAL WORKFORCE, AND THE DISTRICT OF COLUMBIA SUBCOMMITTEE

AND

AD HOC SUBCOMMITTEE ON STATE, LOCAL AND PRIVATE SECTOR PREPAREDNESS AND INTEGRATION

OF THE

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NOT A MATTER OF "IF", BUT OF "WHEN": THE STATUS OF U.S. RESPONSE FOLLOWING A RDD ATTACK

THURSDAY, NOVEMBER 15, 2007

U.S. SENATE,
OVERSIGHT OF GOVERNMENT MANAGEMENT,
THE FEDERAL WORKFORCE, AND THE DISTRICT
OF COLUMBIA SUBCOMMITTEE, JOINT WITH THE
AD HOC SUBCOMMITTEE ON STATE, LOCAL, AND
PRIVATE SECTOR PREPAREDNESS AND INTEGRATION,
OF THE COMMITTEE ON HOMELAND SECURITY
6AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittees met, pursuant to notice, at 10:07 a.m., in Room 342, Dirksen Senate Office Building, Hon. Daniel K. Akaka, Chairman of the Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia, and Hon. Mark L. Pryor, Chairman of the Ad Hoc Subcommittee on State, Local, and Private Sector Preparedness and Integration, presiding.

Present: Senators Akaka, Pryor, and Coleman.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. I call this joint hearing of the Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia, and the Subcommittee on State, Local, and Private Sector Preparedness and Integration, to order.

Senator Pryor and I are jointly chairing this hearing. I want to thank him and his staff for making this joint hearing possible. I will be chairing the first panel and he will be chairing the second.

At this time, I would like to welcome our witnesses to this hearing and I want to thank you very much for being here.

Today's hearing is the latest in a series I have held over the last several years on various aspects of nuclear and radiological terrorism. In March, the OGM Subcommittee examined U.S. programs underway to secure the highest-risk radiological materials in other countries. Today, we will examine how well prepared the Nation is to respond to a radiological dispersal device (RDD) attack.

Detonating a dirty bomb in the United States is one of al Qaeda's top goals and we must be realistic about the consequences of such an attack. Three aspects of our response concern me: First, the ability of Federal agencies to respond in a coordinated and effective way to a dirty bomb attack; second, if they have sufficient guidance

to do so; and third, the technical capabilities of government agencies to take care of victims and clean up contamination.

The goal of a dirty bomb attack is to create fear and to inflict economic damage. Having an effective Federal response, the resources to address people's fears, and the ability to mitigate and to reduce the economic damage from such an attack will make the consequences of a dirty bomb attack less severe.

Our first panel will examine whether or not the agencies of the Federal Government are working together to be able effectively to respond to a terrorist attack involving a dirty bomb. Even if the Federal response is well coordinated, other questions remain. Do agencies have adequate technical expertise to clean up operations and to conduct them and to properly diagnose and care for those injured during such an attack? Are existing assets well protected so that they are available when we need them?

I look forward to this hearing from our witnesses regarding the kinds of capabilities they have in place and what is needed to ensure our continued preparedness over the long term.

In a report released in September 2006, the Government Accountability Office found that the Department of Energy may not be providing enough physical security for its fixed-wing aircraft and helicopters which carry radiation survey equipment that could be used in the aftermath of a dirty bomb attack. I look forward to hearing from DOE today about the measures they have put in place to better protect the unique capabilities they already have. It is not enough to have these assets on the books; they must be available for use when they are needed.

At this time, I would like to call on Senator Coleman for any remarks he may have.

OPENING STATEMENT OF SENATOR COLEMAN

Senator COLEMAN. Thank you, Mr. Chairman. Just briefly, first, I want to thank you for holding this very important hearing.

A number of months ago, we had the opportunity through the Permanent Subcommittee on Investigations to look at the issue of individuals getting materials for use in a dirty bomb, radiological materials that are used, for example, in the construction industry. We worked with Mr. Aloise from the Government Accountability Office, and I believe we found some holes in the system. Holes that we subsequently have tightened up.

But during the course of that hearing, we had testimony from Commissioner McGaffigan (who has passed away), from the Nuclear Regulatory Commission. In our exchange, we talked about the psychological impact that dirty bombs can have. So often, the focus has been on nuclear weapons and nuclear bombs, but the reality is that the psychological impact of a dirty bomb, the impact upon the community, the impact upon the economy, is something that we really need to better understand. We need to better educate people about the nature of the threat, and we have to make sure that we have the highest level of preparation.

I fear in this dangerous world that it is not a matter of if, as the title of this presentation indicates, but rather a matter of when. The ability for a terrorist to be able to detonate a dirty bomb is

something that we need to understand. It can happen and we have to be prepared to deal with it.

So I just want to thank you for holding this hearing. I am only going to be able to stay through the first panel. But there needs to be an education process that goes on, not just at the Federal level, but also at the local level. As a former elected mayor, I know firsthand that we have got to make sure that the first responders at the local level are prepared, and we also need to do a better job of simply educating our citizens about what this is all about and how we can respond.

So this hearing is timely, it is important, and I look forward to hearing from the witnesses.

Senator AKAKA. Thank you very much, Senator Coleman. I want to thank you for joining us at this hearing.

I would like to welcome our witnesses to the Subcommittee hearing today: Gene Aloise, Director of Natural Resources and Environment at the Government Accountability Office; Glenn M. Cannon, Assistant Administrator for Disaster Operations at the Federal Emergency Management Agency; Steven Aoki, Ph.D., Deputy Under Secretary of Energy for Counterterrorism at the National Nuclear Security Administration; Thomas Dunne, Associate Administrator for Homeland Security at the Environmental Protection Agency; and Dr. Kevin Yeskey, Deputy Assistant Secretary for Preparedness and Response at the Department of Health and Human Services. Dr. Yeskey will be supported by Dr. Richard Hatchett, Associate Director for Radiation Countermeasures Research and Emergency Preparedness at the National Institute for Allergy and Infectious Diseases, National Institutes of Health at the HHS.

As you know, it is the custom of this Subcommittee to swear in all witnesses. I would ask all of you to stand, raise your right hand and take this oath.

Do you swear that the testimony you are about to give the Subcommittee is the truth, the whole truth, and nothing but the truth, so help you, God?

Mr. ALOISE. I do.

Mr. CANNON. I do.

Dr. AOKI. I do.

Mr. DUNNE. I do.

Dr. YESKEY. I do.

Dr. HATCHETT. I do.

Senator AKAKA. Thank you very much. Let the record note that the witnesses answered in the affirmative.

Before we start, I want to let you know that your full written statements will be made a part of the record. I would also like to remind you to keep your remarks brief, given the number of people testifying at this hearing.

Mr. Aloise, will you please begin.

TESTIMONY OF EUGENE ALOISE,[1] DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. ALOISE. Thank you. Thank you, Mr. Chairman. Mr. Chairman and Members of the Subcommittee, I am pleased to be here today to discuss DOE's use of aerial background radiation surveys and physical security measures at DOE's two remote sensing labs. My remarks are based on our September 2006 report on DOE's nuclear response efforts.

DOE has long maintained an emergency response capability to quickly respond to potential nuclear and radiological threats to the United States. This capability took on increased significance after the attacks of September 11, 2001, because of concern that terrorists may try to smuggle materials into the United States and detonate a nuclear or radiological dispersal device (RDD).

In response, DOE developed the expertise to search for and locate potential nuclear and radiological threats in U.S. cities and help minimize the consequences of such threats. One of DOE's unique capabilities is that it is able to conduct aerial background radiation surveys with helicopters and planes equipped with radiation detectors to establish radiation levels against which future levels can be compared to more easily detect a radioactive threat.

Although DOE has dispersed these emergency response capabilities across the country, a number of assets are primarily located at two key facilities in Nevada and Maryland. These facilities house, among other things, specialized search teams, planes and helicopters with radiation detection equipment, and laboratories that design specialized equipment. DOE requires that these facilities be adequately protected to defend against possible terrorist attacks.

Regarding aerial radiation surveys, in our view, there are real benefits to conducting these surveys of U.S. cities. The surveys can be used to help detect radiological threats in the United States more quickly because law enforcement officials could focus on sources of radiation not previously identified, and they can be used to measure contamination levels after a radiological attack to assist in or reduce the cost of clean-up efforts. DOE officials estimate that information from the surveys could save millions and perhaps tens of millions of dollars in clean-up costs. The surveys do have some limitations, including difficulty in detecting certain well-shielded nuclear and radiological materials.

Nonetheless, in 2005, New York City's Police Department asked DOE to conduct a survey of the New York City metro area. The survey cost about $800,000 and was funded with DHS grants. NYPD officials told us that the survey was tremendously valuable because it identified more than 80 locations with radiological signatures that needed to be investigated. In fact, while investigating the 80 locations, they found radium, a radiological material linked to diseases such as bone cancer, at a local park that once was an industrial site. Officials used this data to close and clean up the area.

Despite these benefits, New York is the only major U.S. city that has conducted such a survey because neither DOE nor DHS is in-

[1] The prepared statement of Mr. Aloise appears in the Appendix on page 39.

forming cities about the surveys, and neither agency has mission responsibility for conducting them. In addition, DOE officials told us that they have limited equipment and funding and DHS doesn't believe it has the expertise or capability to conduct the surveys. As a result, U.S. cities may be missing an opportunity to be better prepared for a terrorist attack.

Regarding the security of the two remote sensing labs, there are a number of critical assets that are available only at the labs and their loss would hamper DOE's ability to quickly prevent or respond to a nuclear incident. These capabilities include highly-trained personnel and specialized equipment, helicopters and planes. In our view, the current physical security measures at the two labs may not be sufficient to protect against a terrorist attack. For example, one lab does not have a fence, vehicle barriers, or other protection around the building. While both labs are located on Air Force bases, access is not strictly limited and GAO's team gained access multiple times with little or no scrutiny. However, DOE believes the security at the labs is sufficient and has no contingency plans in the event one or both labs were attacked.

Over a year ago, we recommended that DOE and DHS evaluate the costs and benefits of aerial surveys and inform State and local governments about them. We also recommended that DOE consider strengthening the physical security of the remote sensing labs. To date, little has been done to implement our recommendations.

Mr. Chairman, that concludes my statement. I would be happy to respond to any questions you or other Members may have.

Senator AKAKA. Thank you very much, Mr. Aloise. Mr. Cannon.

TESTIMONY OF GLENN M. CANNON,[1] ASSISTANT ADMINISTRATOR, DISASTER OPERATIONS DIRECTORATE, FEDERAL EMERGENCY MANAGEMENT AGENCY, U.S. DEPARTMENT OF HOMELAND SECURITY

Mr. CANNON. Chairman Akaka, Senator Coleman, I am here to represent a new FEMA, one that takes our Nation's all-hazard preparedness, protection, response, recovery, and mitigation systems and capabilities to a new level.

Building on the lessons we have learned in recent years and with your continued support, we are taking steps to significantly increase FEMA's core disaster response capabilities. This new FEMA has adopted a more forward-leaning and collaborative disaster response approach and we are strengthening our capabilities by building stronger regions and stronger ties with our partners across all levels of government, the private sector, and the nonprofit community.

FEMA's all-hazards approach encompasses activities involving RDD events. In fact, the law requires that DHS develop and implement measures to prepare for and respond to chemical, biological, radiological, and nuclear threats. In the event of a major RDD incident, the Secretary of Homeland Security is responsible for domestic incident management. In responding to such an event, the Secretary may select a coordinating agency, most likely the Department of Energy, to provide technical expertise to support DHS,

[1] The prepared statement of Mr. Cannon appears in the Appendix on page 60.

FEMA, and the FBI. The FBI would have lead responsibility for RDD criminal investigations.

The National Response Plan and its eventual successor, the National Response Framework, outlines specific guidance for RDD incident responses. This is discussed more thoroughly in my written testimony.

FEMA is responsible for coordinating the complex planning and response activities of its Federal, State, Tribal, and local partners. For example, FEMA chairs the Federal Radiological Preparedness Coordinating Committee, an interagency body that provides a national-level forum for the development and coordination of radiological prevention and preparedness policies and procedures. It also provides policy guidance for Federal radiological incident management in support of emergency management and preparedness activities at all levels of government.

The emergency support functions in the NRP are the operational-level mechanism for providing assistance to all levels of government in functional areas, such as decontamination and monitoring, mass care, energy, public health and medical services. More detail on those interagency activities is also provided in my written testimony.

FEMA's own resources are critical to ensuring interagency coordination. Our National Response Coordination Center, supported by our regional centers, provides a central point of communications for any response. Our written testimony explains these capabilities in greater detail, but the key point I would like to make is that with these resources, government agencies can truly work together as a team in response to a radiological dispersal device (RDD) incident.

While FEMA has the critical responsibility to coordinate the response activities of our Federal partners, my written testimony explains in more detail the support capabilities of the key partners in a RDD event, including the Departments of Energy, Defense, Justice, the Veterans Affairs, Environmental Protection Agency, and Health and Human Services, among others. Of course, FEMA and DHS have resources that can be deployed. FEMA's Emergency Response Teams, the Urban Search and Rescue Task Forces, the Mobile Emergency Response Support Detachments, our Prepositioned Equipment Program, the Joint Nuclear Incident Response Team, and the Joint Domestic Emergency Support Team will all play a vital role in responding to a RDD event.

We can also leverage our partners within DHS, such as Customs and Border Patrol, the U.S. Coast Guard, Immigration and Customs Enforcement, the Transportation Security Administration, and the National Infrastructure Coordination Center, for their extensive personnel resources, technical expertise, and other support. Again, I refer you to my written testimony for additional details.

Knowing that it is not just a matter of "if" but of "when", FEMA is instrumental in making sure that all of our partners work together to be prepared for all hazards, including a RDD event. For example, our National Exercise Program (NEP) is just one of the mechanisms used to evaluate and ensure our preparedness. The NEP is a national interagency-wide program that prioritizes, focuses, and coordinates national security and homeland security

preparedness-related exercises. Results from these exercises provide information that informs the policy process, allow evaluation of the capability to perform in a crisis or emergency, and ultimately are used to improve the government's preparedness posture.

This fall, TOPOFF 4 was the first in the TOPOFF series to focus on RDDs and it allowed all levels of government to evaluate capabilities required to respond to near-simultaneous events of a similar type. My written testimony provides more details on FEMA's responsibilities, including our role in coordinating the wide-ranging activities of our partners. Thank you.

Senator AKAKA. Thank you very much, Mr. Cannon. Dr. Aoki.

TESTIMONY OF STEVEN AOKI, PH.D.,[1] DEPUTY UNDER SECRETARY OF ENERGY FOR COUNTERTERRORISM, NATIONAL NUCLEAR SECURITY ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Dr. AOKI. Chairman Akaka, Senator Coleman, thank you very much for the opportunity to appear today to discuss the Department of Energy's role in national response to a terrorist attack involving a Radiation Dispersal Device (RDD). I submitted a written statement that describes the capabilities that DOE could contribute. So this morning, in the interest of brevity, I will just focus on a few key points.

First, it is important to keep in mind that the scale of a RDD event is significantly smaller than, for example, a nuclear detonation. There is certainly going to be a significant problem managing, guiding public reaction to what is an unprecedented occurrence, and there certainly is going to be a very complicated restoration and recovery process, but the actual number of injuries, of casualties directly caused by radiation released in a RDD is going to be relatively small.

Second, DOE's emergency response specialists function, as Mr. Cannon just noted, as part of an interagency team. We support the Department of Homeland Security in its designated role as the Federal incident manager for disaster response and recovery. In addition, if an incident is connected to terrorism, we support the FBI's investigatory and law enforcement role. For a RDD event, the National Response Plan assigns the Department of Energy to be the coordinating agency for technical support until such time as that responsibility is handed over to EPA during a transition from the response phase to the longer-term recovery phase. Even after relinquishing our primary role, we will continue to provide technical support to EPA and our other Federal partners, as needed.

Third, our ability to tap into our national laboratories means that we can bring a considerable depth of expertise to bear in an emergency like a RDD attack. In this kind of event, we would expect to send to the incident scene a Federal Radiological Monitoring and Assessment Center (FRMAC), that would be manned by personnel from multiple Federal agencies. They would coordinate radiation measurements in the field, ensuring that Federal, State, and local officials receive a complete and consistent picture of the

[1] The prepared statement of Dr. Aoki appears in the Appendix on page 76.

situation. They would also provide expert assistance in interpreting the data.

We maintain 28 regionally-based Radiation Assistance Program (RAP), teams who are trained to deploy to an incident site to make on-the-ground measurements of radioactive contamination. These teams are supported by DOE's aerial measuring system that can make radiation measurements from helicopters and fixed-wing aircraft. We would make available, often within minutes of an event, computer-generated models of the dispersion of radioactive material through the atmosphere, assisting officials in advising the public and in directing their own response measures.

DOE also provides expert consultations on the medical treatment of people exposed to radioactive materials through a program known as the Radiation Emergency Assistance Center/Training Sites (REAC/TS). This year, REAC/TS successfully brought a cytogenetic dosimetry laboratory back online after not having its program functioning for many years, adding significantly to the Nation's readiness to diagnose patients who have received high radiation doses. All of these activities can be linked by dedicated field-deployable emergency communications equipment.

Taken together, our response to a major RDD event could involve hundreds of people in the field, supported by additional scientific expertise, computer modeling capability, and specialized facilities at our national labs.

One of the challenges facing the Department of Energy will be to ensure that as we consolidate and transform the nuclear weapons complex, we preserve the unique technical capabilities and workforce that underlie our Emergency Response Program. In doing so, we must also wrestle with the hard fact that people with some critically-needed skills, for example, radiochemistry, will increasingly be in short supply as the number of university graduates in these areas diminishes.

Another challenge will be developing appropriate tools and procedures to ensure that the information developed by our specialists can be properly interpreted by officials at the Federal, State, and local level charged with making public safety decisions who are not themselves experts on radioactivity. This need continues to be underscored by exercises, including the recently-concluded TOPOFF 4.

Public communications remains a concern, as well, in view of the unprecedented nature of a RDD attack.

Finally, and although it is not the subject of today's hearing, I want to emphasize our belief that the best approach to protecting the country against nuclear or radiological terrorism is to increase security of the materials that could be used in such attacks. This is an area where DOE has major efforts, both domestically and internationally.

That concludes my prepared statement and I look forward to your questions. Thank you.

Senator AKAKA. Thank you very much, Dr. Aoki. Mr. Dunne.

TESTIMONY OF THOMAS P. DUNNE,[1] ASSOCIATE ADMINISTRATOR OF HOMELAND SECURITY, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. DUNNE. Good morning, Mr. Chairman and Members of the Subcommittee. I am Thomas P. Dunne. I am the Associate Administrator of Homeland Security at the U.S. Environmental Protection Agency, and thank you for the opportunity to discuss EPA's efforts to prepare for and respond to an attack with a Radiological Dispersion Device.

Since the September 11, 2001 attack on the World Trade Center, EPA has made a significant effort to improve its emergency response and homeland security functions, including the creation of my Office of Homeland Security. In addition, EPA has reorganized emergency response functions under the Office of Emergency Management. We have hired 50 additional On-Scene Coordinators. We have created an additional Environmental Response Team. We have established a National Decontamination Team. And we have developed an EPA national approach to response.

In an incident or attack involving a radiological device, EPA would be expected to respond with other Federal agencies through the National Response Plan. During the early phase of a response, EPA's primary role would be to assist the Department of Homeland Security and the Department of Energy in characterizing environmental impacts and providing recommendations to State and local decisionmakers regarding the actions needed to protect the public. As a situation transitioned to the longer-term recovery phase, at some point, EPA will take over the leadership of the environmental characterization and we would assume responsibilities for managing the Federal radiological clean-up activities.

EPA maintains personnel and assets ready to respond to radiological emergency response situations and we provide technical expertise and support, when needed. We have approximately 350 personnel for emergency responses and we also built in a Response Corps to expand our capability.

EPA's trained personnel and specialized equipment includes 250 On-Scene Coordinators and special teams under the National Oil and Hazardous Substance National Contingency Plan, and they would include the National Decontamination Team, the Radiological Emergency Response Team, the Emergency Response Team, and the National Counterterrorism Evidence Response Team. We have 3,700 field-ready contractors, and according to a recently-conducted EPA survey, EPA contractors could provide an additional 4,500 personnel to support large-scale incidents, and we have now developed a Response Corps that has nearly 1,000 staff members.

In the area of environmental laboratory capabilities and capacity, EPA has begun a demonstration study aimed at improving national radiological laboratory capacity through enhancing State laboratories, and we are developing guidance and training, such as rapid radiochemistry methods, lab incident response analysis guidance documents for environmental media, and radiochemistry training for laboratory personnel to enhance capacity of commercial laboratories throughout the United States.

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[1] The prepared statement of Mr. Dunne appears in the Appendix on page 81.

We understand that the American people expect a timely response to a radiological incident or attack and that is the goal that EPA and all the Federal agencies we work with are striving for. However, it is a goal that presents some real challenges. For instance, EPA has conducted an assessment of the environmental sample demand for the National Homeland Security Planning Scenario Number 11, which involves a detonation of radiological devices in three major urban business districts. EPA's analysis of the Nation's existing laboratory radiological capacity revealed a significant capacity gap. This capacity gap will result in a lack of timely, reliable, and interpretable data and will delay national and local response and consequence management activities.

In addition to the capacity gap, EPA's assessment also revealed capability and competency gaps specific to radiological or nuclear incident responses and overall nationally declining infrastructure for radiological laboratories. If there were multiple large-scale attacks, the system we currently have in place would be strained. Today's technology and trained personnel are simply not sufficient to meet the needs of such a response, and in the case of a radiological incident or attack, this is magnified by the dose limits we enforce in order to protect responders from radiation.

In addition, while field detection capabilities can quickly be used to take action to evacuate or relocate the public following an incident, more extensive and time consuming fixed lab analysis will be needed to allow EPA and others to assess whether or not the public can return to their homes. Therefore, it is unlikely that the public expectations for quick reoccupation of an impacted area would be met.

Mr. Chairman, that concludes my prepared remarks. Again, I want to thank you for inviting me to today's hearing and I would be pleased to answer any questions that you or the Members may have.

Senator AKAKA. Thank you very much, Mr. Dunne. Now we will hear from Dr. Yeskey.

TESTIMONY OF KEVIN YESKEY, M.D.,[1] DEPUTY ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE, ACCOMPANIED BY RICHARD J. HATCHETT, M.D., ASSOCIATE DIRECTOR FOR RADIATION COUNTERMEASURES RESEARCH AND EMERGENCY PREPAREDNESS, NATIONAL INSTITUTES OF HEALTH, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Dr. YESKEY. Good morning, Chairmen Akaka and Pryor, and Senator Coleman. Thank you for the opportunity to discuss the domestic preparations HHS has made for radiologic incidents. The Office of the Assistant Secretary for Preparedness and Response's mission is to lead the Nation in preventing, preparing for, and responding to the adverse effects of public health emergencies and disasters and the vision we see as a Nation prepared.

Like our response counterparts in other agencies, the ASPR has taken an all-hazards approach to health preparedness planning. My oral comments today will focus on the HHS's preparations spe-

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

cific to radiation events and the initial observations by HHS through its participation in the Top Officials (TOPOFF) 4 exercise, which involved several simulated attacks using Radiologic Dispersal Devices.

The Pandemic and All Hazards Preparedness Act created the ASPR and focused the leadership for all Federal public health and medical preparedness and response functions in that office. HHS has implemented an incident command system that is complementary to and consistent with the National Response Plan and the National Incident Management System. HHS supports the overall lead of DHS in coordinating the Federal response. In responses, we place HHS staff in operations centers at the State, regional, and Federal levels and deploy our staff to the Joint Field Office.

HHS has developed an ESF–8, Emergency Support Function 8 Playbook, focused on RDDs, which provides a comprehensive guide for managing Federal health and medical operations in response to a RDD. These response steps are pre-planned and pre-scripted in the preparation of the playbooks.

HHS has representatives on the advisory team for environment, food, and health—a collection of experts from a variety of Federal agencies that advise State, local, and territorial governments on ways to protect people and the environment following a radiological incident. ASPR has worked with State, Tribal, territorial, and local officials to enhance their levels of preparedness. Our Regional Emergency Coordinators work with States and local jurisdictions to coordinate and enhance preparedness within their regions.

For all disasters, systems are needed to rapidly expand research capabilities to meet the needs of the event. Regarding surge capacity for radiation events, the Strategic National Stockpile can rapidly deploy medical countermeasures after notification to deploy. The National Disaster Medical System Response Teams can deploy to provide acute care to victims. NDMS hospitals can provide surge beds for victims who require inpatient clinical care. HHS also works with the American Burn Association to assess burn bed availability on a weekly basis.

We also participate in the Radiation Injury Treatment Network (RITN), in collaboration with the National Marrow Donor Program and the National Cancer Institute Cancer Centers. This voluntary network includes centers that have concentrations of experts in oncology and hematology and are used to caring for patients with bone marrow suppression.

ASPR and the National Library of Medicine have developed a web-based site with just-in-time information on medical management of radiation injuries for physicians and nurses. In the event of an incident, clinicians at all levels could refer to this website for the most current treatment protocols for patients injured by a RDD.

With regard to TOPOFF 4, HHS was fully engaged. We had liaisons in operations centers at the State, regional, and Federal levels. HHS deployed public health and medical response teams to Portland, the site of the largest simulated activities. HHS took the opportunity to exercise a number of functions, to include the ESF–8 RDD Playbook, Secretarial Declaration of a Public Health Emergency, issuance of an Emergency Use Authorization for Prussian

Blue in children under the age of two, and deployment of our Incident Response Coordination Team. We felt well integrated into the overall Federal response and had very good communications at the local, State, and Federal levels. HHS staff participated in regular national incident communications conference line calls, which facilitates coordination of public communications across the Federal interagency partnership. HHS also produced several Public Service Announcements that aired on a virtual news network.

Despite the successes, we also identified areas for improvement and efforts are already underway to take the lessons observed in TOPOFF 4 and incorporate them into our RDD Playbook. A major lesson observed is that enhanced laboratory capacity to measure radionuclides in patients will facilitate patient management. With our interagency partners, HHS has developed a concept for a radiation laboratory network.

We have made progress in developing the plans and surge capacities to deal with public health and medical consequences resulting from a RDD. We have used exercises like TOPOFF 4 to identify gaps and vulnerabilities that need to be addressed. We continue to work closely with our local, State, Tribal, territorial, and Federal partners on improving our responses. While our progress is considerable, there is still much more to accomplish.

That concludes my testimony. I would be glad to answer any questions. Thank you.

Senator AKAKA. Thank you very much, Dr. Yeskey.

Dr. Aoki and Mr. Cannon, there is some evidence that aerial radiation surveys, which include having a helicopter or airplane fly over an area with radiation detection equipment, can help manage the consequences of a dirty bomb attack or even prevent such an attack. The GAO report states that neither DOE nor DHS have embraced mission responsibility for funding and conducting aerial radiation surveys or even notifying city officials that such a capability exists.

Given the usefulness of an aerial radiation survey in mitigating the consequences of a dirty bomb attack, why is this the case? Dr. Aoki.

Dr. AOKI. Mr. Chairman, I think we can actually report some progress since the GAO report came out. We have now a pilot project that we are working jointly with the Department of Homeland Security in which we are looking at the City of Chicago actually acquiring some radiation detection equipment for their own helicopters and I believe there may be some DHS funding involved in that, and we will then help them develop plans for conducting aerial surveys and for using that equipment in the event of some sort of emergency involving the release of radiation. We hope that this will be a pilot project that would then give us a basis for looking at extending that sort of approach to other major metropolitan areas.

Senator AKAKA. Mr. Cannon.

Mr. CANNON. I would also comment that the Preparedness Directorate returned to FEMA in April, and it was through the Preparedness Directorate that those grants were made available or where that support would come from. We are able now that preparedness has returned to FEMA to take their activities and much

more closely integrate them and grant guidance for those grants into the programs supporting local governments and large metropolitan areas. So I think what we will be able to see in the future is a different approach to supporting the monitoring that you have spoken of, because it is absolutely essential to have that as rapidly as possible to support the response to the incident, including for the first responders.

I would add that some equipment that has been purchased through the anti-terrorism programs, such as radiation monitors, are on first responder fire apparatus, significantly tells us on the front end when they respond to an explosion whether or not radiation is available so that they can be better prepared to deal with the response. So the earlier we can get detection of radiation in the incident, the more accurately we can assess the situation and provide for the initial response.

Senator AKAKA. Dr. Yeskey, if three simultaneous RDDs were to be detonated around the United States similar to the attack exercised in TOPOFF 4, how important is it to process all of the human clinical samples taken from victims and is there sufficient laboratory capacity to do that?

Dr. YESKEY. Sir, laboratory capacity to do that is limited nationwide. It is important to have the ability to be able to determine who has been exposed and who has not been exposed so we can use the medical countermeasures for those people who were exposed. So it is important to have that capability for a RDD.

What we have looked at and the concept we have for the Radiation Laboratory Network would look at expanding that capability to test for radionuclides in patients. It would also look at assessing the cytogenetic biodosimetry in patients, not necessarily for a RDD but for a nuclear event. It would also look at addressing hematology surge capacity, the ability to do some basic blood tests on patients, which would also be an indicator of exposure. So it is an important component in the medical management of patients who might have been exposed.

Senator AKAKA. Let me pursue that a little more on the lab capacity. Would the EPA have the lab capacity to process all of the environmental samples?

Dr. YESKEY. I think I will defer to EPA.

Senator AKAKA. Mr. Dunne.

Mr. DUNNE. Mr. Chairman, as I mentioned in my statement, there is a significant gap and we have actually done an analysis of one major business district in a major city which I alluded to in my comments. I can tell you the capacity in this country, and that is Federal Government, State Government, and commercial labs, that do radiological chemistry is about 6,400 samples a week. Taking one of these cities—not three, just one—you are talking about a demand that would be about 9,600. So you have a gap every week of 3,200. At peak times, when you need the most number of samples, that demand could rise up to 13,000.

So, in effect, when you take a look, as we are talking about having to do 350,000 samples, under the existing capacity that is in this country right now, you are talking 2 years to get all the analysis done. That has nothing to do with whether or not the restora-

tion and clean-up is taking place, and you can't do that without the analysis.

Senator AKAKA. I see. Dr. Aoki, in your testimony, you mentioned the Radiation Emergency Assistance Center and Training Site as one of the key capacities DOE has to provide medical expertise and analysis for victims in the event of a dirty bomb attack. How many experts do you have staff the Center?

Dr. AOKI. I actually don't know the number of staff. We will have to get that for you, Senator. The capacity of the Center, though, is, in fact, small. It is designed to really deal with a—process the number of patients that correspond to a high-level of exposure in a very acute sort of incident, and so I think the number is something like 50 patients per week who can be assessed through that Center.

The important thing that REAC/TS does is actually do outreach and training, as its name implies, for medical personnel from around the country, and we actually do maintain rosters of people who have received that training and can make that information very quickly available to whoever needs it, whether that is HHS or FEMA. So it is really a core cadre of expertise that can then reach out into a broader medical community.

Senator AKAKA. Dr. Aoki, if three simultaneous dirty bomb attacks were to occur in the United States, would the Center have the ability to process all the samples taken from the victims?

Dr. AOKI. No, and I think that is actually in some ways not the scenario that we are really looking at for handling people who have been exposed to radiation in a RDD attack. Again, the very large numbers of people who would be exposed, receive relatively low doses and the capability of REAC/TS really is designed to assess people who have received high doses of radiation. So the laboratory capability that Dr. Yeskey was speaking of is actually where we would be turning for the majority of laboratory analysis that is required for people who have been exposed in a RDD event.

Senator AKAKA. Finally, can you tell me if the Center is certified under the Clinical Laboratory Improvement Amendments so that HHS could use its capabilities to process those samples?

Dr. AOKI. I don't actually know the answer to that. I will have to give you a response.

Senator AKAKA. Would you know, Dr. Yeskey?

Dr. YESKEY. No, sir, I don't know.

Senator AKAKA. All right. Well, let me call on Senator Coleman for his questions.

Senator COLEMAN. Thank you, Mr. Chairman.

Dr. Aoki, in your testimony at the very end, the written testimony, you describe the difference between the consequences resulting from detonation of a RDD and the obviously lesser consequences from detonation involving fissionable nuclear material. The real impacts and things we are concerned about here are psychological, and, as you know, the economic. It could have devastating effects on the local economy with impacts on a national scale, so it is not the death toll from the incident itself but it is the psychological panic and the resulting economic displacement. If it were Wall Street, you would be shutting down Wall Street for perhaps a very long time.

Who has responsibility and what is being done to better educate the public about the real impact of a dirty bomb so as to lessen the potential psychological impact? Which agency has responsibility and what is being done in that regard?

Dr. AOKI. Well, I think the primary responsibility probably falls to DHS. However, we have a job to do here in actually providing information and scientific expertise that can be used as the basis for developing that information for the public.

Senator COLEMAN. And I am looking for the distribution. Actually, Mr. Cannon, I am going to turn to you. I will add to that question, because I was reviewing some of the editorials in the October 18 *Oregonian* newspaper, which was talking about the TOPOFF 4 exercise and highlighted the concerns of citizens who felt the public was left out of the exercise, was not well informed or educated what to do after dirty bomb attacks.

So my question for you is two-fold. First, what is going on to educate the broader public about the impacts of a dirty bomb before an attack, and second, can you detail what FEMA is doing to address the concerns raised in the *Oregonian* about involving the public and educating them about what to do after a dirty bomb attack?

Mr. CANNON. Yes, sir. There are a couple of programs that we operate within DHS–FEMA that are written at a level for the general public. FEMA has a guide entitled, "Are You Ready?" It is a step-by-step guide for people to prepare for all kinds of hazards and it is written at a level so that they can understand it. It is an in-depth guide to citizen preparedness. Within that is a section on RDDs and it is accessible to everyone at FEMA.gov, "Are You Ready?" So we use that in all of our outreach programs.

Additionally, FEMA has had a program called (REPP), the Radiological Emergency Preparedness Program, for years, which was focused initially on safety around nuclear power facilities, and if you lived in the area of one of those, what you would do in the event of an issue. That program also has returned to FEMA now. So we will look at the protection action guides and the work that they have done and expand that to all radiation-nuclear incidents, not just around power plants.

And finally, in terms of the *Oregonian* and local governments, we have developed a new tool which we call the Gap Analysis, which is a planning tool which we utilize through our regions, 10 FEMA regions, with all State and major local governments, and it looks at their preparation for all these events that may occur in the national planning scenarios and we look for places where we could do some more work to improve that preparedness. That program kicked off last March. We focused initially on the hurricane States, and as we move this year, we are going to focus on all hazards. And in there, part of that will be the kinds of plans that States and locals have to prepare for these kinds of events.

I am sure I don't need to remind you, but the way we deal with emergency management in our country is we start at the local level and then it moves on up from there. So we want to make sure that at the local level, we do everything we can to support that local incident commander through the Unified Command System, and part

of that will be working with them as their partner to make sure they are prepared at the local level.

Senator COLEMAN. I am not sure I am going to have time to get to some questions about the incorporation of the private sector into the response, but I want to turn to you, Mr. Dunne. In your testimony, you talked about existing radiological laboratory capacity gaps. You talked about competency gaps, capability gaps. You indicated at the very end if there were multiple large-scale attacks, the system we currently have in place would be strained. Today's technology and trained personnel are simply not sufficient to meet the needs of such response, etc.

What is it that we in Congress have to do to fill the capacity gap, the capability gap, the competency gap, and to lessen the strain put on technology and trained personnel to meet the needs that would arise should we be subject to multiple dirty bomb attacks?

Mr. DUNNE. It is always interesting for me to tell the Congress what to do. [Laughter.]

Senator COLEMAN. I would like to know what the advice is. [Laughter.]

The question ultimately is can we get it done? That is a separate issue. But I certainly welcome your advice——

Mr. DUNNE. I think that I want to backtrack for a second, Senator, and say that I think the emphasis in this country since September 11, 2001 appropriately has been on detection and prevention and the initial response. I don't think that we have had much focus at the Congressional level in our appropriations process or in the budget process internally about restoration and recovery, and that is where the greatest number of samples will be taken.

There is a declining market for radiochemists. The biggest user is probably the Defense Department in cleaning up the old sites that they have had, and as they have made progress, there is less demand for the samples. So laboratories are not going to stay in business with people and equipment unless there is some revenue flowing in. Similarly, DOE and EPA have very limited capacity and States have even less than that. When we looked at the commercial market, and we have done a fairly decent analysis, I believe, that gap is going to grow. So if we ran the scenario, which I only mentioned one, you could triple that time.

So as a matter of fact, it takes resources to do this thing. You could lay out a scale in terms of what you would need in terms of certain periods and whether or not the country will make the investment to get there, and that is an open question and we can't answer that. We can only tell you what we perceive the problem is.

Senator COLEMAN. Thank you, Mr. Dunne. Thank you, Mr. Chairman.

Senator AKAKA. Thank you. Senator Pryor.

OPENING STATEMENT OF SENATOR PRYOR

Senator PRYOR. Thank you, Mr. Chairman.

I know we have another panel, so I am going to try not to keep this panel too long, but let me start with a question for you, Mr. Cannon, if I may. It is really one question, but I am going to ask it in a series; but it has to do with communication and coordina-

tion. We have several agencies here today and they all have independent statutory authority, so when I see all these agencies lined up, the questions I have are after an initial explosion or an initial incident: Who is in charge initially? Are there criteria for when States can and should ask for Federal help? Once the Federal Government gets involved, how does DHS determine which agency should be the lead agency and the lead coordinating agency? Who has the final decisionmaking authority? Do the roles of the agency change over time and do certain things get handed off?

We don't have time to go into all of that in the limited time we have today, but the question I have for you is: Are you confident in the system that we have in the event, heaven forbid, that there is an incident in this country? Are you confident that we will be prepared with the right authority and the right agencies to work through it?

Mr. CANNON. Yes, sir, I am, and I can say that because there have been significant changes in that system in the last 2 years. We have all learned many lessons from the past and all these members today are signatories to the National Response Plan. All agreed that the coordination will occur through the National Response Coordination Center, where they all have a seat. They all come down to sit and be engaged with subject matter experts to coordinate.

It is the Department of Homeland Security's responsibility to protect the homeland and to coordinate a response to those. Now in terms of our involvement, local governments have the initial response authority and the system used for a radiation incident in terms of the Federal Government access and involvement is the same as if it is a hurricane or a tornado. If the locals are overwhelmed, then they request through the series.

Our role is to make sure that when it gets to the Federal Government, that our response is in a coordinated, effective manner, and you are exactly right. People with independent authorities do have the ability to respond, but we need to make sure that is a unified effort of response so that we provide the best thing in the shortest time possible, and we exercise that and we do that in day-to-day activity.

Senator PRYOR. So you have confidence in the system we have in place, then?

Mr. CANNON. I do, sir.

Senator PRYOR. Let me ask Dr. Aoki a question about something that the GAO found not too long ago. The GAO says that the DOE has the capability to survey American cities to create a baseline map when it comes to radiation and that there is some funding out there available for this. It sounds like that has not been done. If we have both the capability to do it and the money to do it, why aren't we doing it?

Dr. AOKI. Senator Pryor, I think we discussed this a little bit before you came in, but we are actually now moving in cooperation with DHS to first start out with a pilot program in Chicago and then possibly move on to other major metropolitan areas. The funding will be DHS grant funding to cities, and at least with the Chicago experience, what they are proposing to do is to purchase equipment that would be flown on their aircraft, their helicopters

that are operated by the police department, and then we would assist them in planning and conducting the survey portion of that activity. I think we want to assimilate the lessons from doing this in one additional city and then see if that can be translated into many more.

Senator PRYOR. And so do you have a timetable to move through the cities to try to get the site maps that you need?

Dr. AOKI. We don't have a firm timetable. We expect to get the work in Chicago done this year, or I guess 2008, but we will then see from that what is appropriate to do and how many more cities might be interested. They have an expression of some interest from a number of other cities.

Senator PRYOR. OK. Mr. Cannon, let me ask you one further question, and that is that one of the lessons learned from Chernobyl was that the radioactive contamination can't just be washed away. It gets into the dirt or concrete, and you can't just wash it away. It gets in the groundwater and it stays around for a long time.

Are there any Federal guidelines about what to do with contaminated dirt or concrete or other materials that would be identified during the clean-up effort? What are we going to do with all that material?

Mr. CANNON. Senator, I believe that would be an EPA issue.

Senator PRYOR. OK. Sure.

Mr. DUNNE. Senator, there is limited capacity in this country to take radiation debris. There are only a handful of places we could put it. If you took the scenario that is presented, depending upon what we found, we would have to improvise, working with State and local governments and other Federal agencies in terms of finding adequate storage because it just plain doesn't exist on any massive basis and we just haven't had that many radiological disposal issues to deal with.

Senator PRYOR. Is the EPA taking steps and doing——

Mr. DUNNE. We have done an analysis of where it is. As you know, permitting for those types of facilities involve not just Federal Government issues, they involve State and local issues, and it takes a concentrated effort, a long-term effort to be able to get those capacities developed.

But as is somewhat similar to the lab capacity problem nobody is going to build these things unless they are used, and you just don't go and create a hole in the ground so you can go dispose of this type of material. So it is a very complicated issue. But that is a significant gap if we ever do have an attack.

Senator PRYOR. Is the EPA trying to fill that significant gap?

Mr. DUNNE. Yes. We are dealing through our Office of Solid Waste and Emergency Response with this issue now, but it is a long-term problem and we have analyzed the problem, I think, adequately well. It is what is going to be your planning premise in terms of what you are going to do about disposal.

Senator PRYOR. Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much, Senator Pryor.

Senator PRYOR. I am going to go into a second round here of questions. I want to first follow up with Dr. Aoki. You stated that the Radiation Emergency Assistance Center and lab is set up to

deal with people who receive large radiation doses. What about those who receive low doses, which is more likely as a result of a dirty bomb attack?

Dr. AOKI. Well, clearly, the large numbers of people affected are most likely going to receive relatively low doses of radiation, and again, I think Dr. Yeskey talked about the need to strengthen the clinical laboratory capacity around the country to create a network of laboratories that can do things like urinalysis or other clinical procedures to assess people who may have received relatively low doses of radiation. There constantly will be a few individuals who, depending on the exact details of a scenario, there may be a few individuals who receive a relatively high dose and that really is the background of the capacity that we have put in place.

Senator AKAKA. Mr. Cannon, DHS has established a National Technical Nuclear Forensic Center within the Domestic Nuclear Detection Office which is supposed to provide an enduring national technical nuclear forensics capability. However, Dr. Carol Burns from Los Alamos National Laboratory testified in front of a House Homeland Security Subcommittee that this capability is aging rapidly. What is DHS doing to correct this problem?

Mr. CANNON. Sir, I will have to get back to you on that.

Dr. AOKI. Senator, if I may——

Senator AKAKA. Dr. Aoki.

Dr. AOKI [continuing]. With your permission—they always say, don't volunteer for anything, but if you don't mind, Los Alamos National Laboratory is a DOE laboratory and let me just comment quickly on some of the things that we see we need to do.

We are in the process of resizing and recalibrating the size and scope of our National Laboratory System, and one of the things that is very much in our minds is the need to make sure that the National Laboratories are responsive to the national security challenges of the future as we move away from the sort of legacy issues of nuclear weapons and the Cold War. So this is a planning process that really is going on as we speak, but I think we are very much seized with the idea that we need to make sure that our National Laboratories actually have the ability to fulfill these new sorts of missions and are planning appropriately to do work for things like nuclear forensics. It is both facilities, aging facilities, and ensuring that we have the right people, but we really do have to think about that and are doing so.

Senator AKAKA. Dr. Yeskey, during TOPOFF 4, Prussian Blue, one of the few medical countermeasures available for radiation exposure, was distributed to victims of the theoretical dirty bomb attack. It is part of the National Stockpile. However, according to the Food and Drug Administration, Prussian Blue is available only by prescription and should be given only under the supervision of a physician after assessing a victim's medical condition. In addition, its effectiveness is limited. Can you describe the work you are doing to develop medical radiation countermeasures for exposure to other radioactive sources that could be used in a dirty bomb attack?

Dr. YESKEY. That is an area of Dr. Hatchett's expertise and I will turn it over to him.

Senator AKAKA. Dr. Hatchett.

Dr. HATCHETT. Mr. Chairman, I represent the Radiation Countermeasures Program at the National Institutes of Health. We have a broad-based program that focuses on the development of radiation countermeasures for high-dose exposures that might produce bone marrow suppression, gastrointestinal injury, other types of organ injury. We also have programs within the NIH program that focus on the development of countermeasures like Prussian Blue, which are primarily designed to remove radionuclides from patients' bodies. We have a number of grants and contracts to develop improved countermeasures with greater efficacy that would be nontoxic. Those countermeasures are in early stages of development and face quite a long road before they would be licensed and ready for use in the field.

Senator AKAKA. Mr. Dunne, TOPOFF 4 only exercised the immediate and near-term response to a dirty bomb attack. I am pleased that DHS is planning a long-term recovery tabletop exercise to be conducted next month. Will this exercise, Mr. Dunne, focus more attention on consequence management in the aftermath of such an attack?

Mr. DUNNE. Mr. Chairman, that is the purpose of it. As I understand it, it will be a 2-day tabletop session. We will bring together a variety of Federal and State agencies that deal with this. I understand DHS will issue a total report on TOPOFF 4 and that would include the part that deals with restoration and recovery.

Senator AKAKA. You mentioned DHS. Can you describe the role of EPA in that exercise?

Mr. DUNNE. The EPA will take over as the lead Federal agency and coordinator for the restoration and repair of the affected sites. That would mean we would deploy numbers of people and contractors in EPA, to work with the State and locals to clean up the facilities. We have 350 emergency response personnel. They are highly skilled. They are scientists and engineers. We have contractor capability to reach back. When you take a look at the magnitude of three, you would be talking about having to augment this with additional personnel because of the amount of time that people can stay in a zone where they are exposed to radiological doses.

Senator AKAKA. Thank you very much. Senator Coleman.

Senator COLEMAN. Thank you, Mr. Chairman.

Dr. Yeskey, you discussed the web-based cycle at Radiation Event Medical Management, the physicians, medical personnel, using just-in-time information on the medical management of radiation injuries. I think your testimony was if there were an incident, that folks could go on the web and they could get the information. My concern is similar to what happened in September 11, 2001. You have an incident, the web slows down or becomes inaccessible. What is the plan B?

Dr. YESKEY. One of the ways to pass that information out—and the REMM is not the only site that is available for this type of information—CDC also has on its website information that can be used. There are other mechanisms, such as the Health Alert Network System, that can pass along information. There is what CDC has developed called EpiAccess. It is for passing epidemiologic information to State health officers through fax machines, through other methodologies, telecommunications methodologies to do that.

So there are redundant systems for getting that communications out.

Again, what we would do is we would have our CDC personnel contact State and local health officials. Our Regional Emergency Coordinators would also help determine what kind of information is needed and how to best pass that if one of those methodologies would go down.

Senator COLEMAN. And are there specific contingency plans in place so that plan A is directing people to web sites, and there are specific contingency plans? One of the important parts of this hearing is you have multiple agencies and they all have capacities. I am not worried, but focused on the pre-incident planning and coordination so that when it happens, people just respond because they have been trained to respond. Do we have that in place?

Dr. YESKEY. I think we have redundant systems that can be used to get that passed, so if one fails, then we would go to the next one and go to the next one.

Senator COLEMAN. And again, I mentioned the planning. We had the terrible incident of the bridge being destroyed in Minnesota and one positive thing was that we were prepared. I was a mayor on Sepember 11, 2001, when we didn't know how many hospital beds we had available in the case of a major incident, when we didn't have systems of communication between sheriffs' offices and police departments, but now all that training that we did is paying off. People just knew exactly what they had to do. I know we have the systems, but do we have in place the preplanned, coordinated response? For example, if plan A doesn't work, do we go to plan B?

Dr. YESKEY. Yes, sir. That is included, as I mentioned, in the RDD ESF–8 Playbook that we have developed and tested during TOPOFF 4, so those kinds of plans for contingencies are included in the playbooks for how we would respond to those events.

Senator COLEMAN. Dr. Hatchett, you actually mentioned the response to the question regarding treatment. There is a Minnesota company called Humanetics. They work with the Defense Department on food-based responses to radiological attacks. Again, the coordination issue. How well coordinated, how well tied in are you at Health and Human Services to that kind of research?

Dr. HATCHETT. Historically, Senator Coleman, as you probably know, a lot of this research has been performed by the Department of Defense over the last several decades. Our program was initiated in 2005. We have worked very closely with the Department of Defense, with our colleagues at the Armed Forces Radiobiology Research Institute, and at the Joint Program Executive Office to coordinate research programs. We actually have an interagency agreement with the Armed Forces Radiobiology Research Institute and fund research of mutual interest there. In the last fiscal year, we had coordinated releases of initiatives focusing on gastrointestinal acute radiation syndrome with the Joint Program Executive Office and we funded 10 grants for early-stage research. They are still evaluating their RFP in that area. So we work very closely.

Senator COLEMAN. How close are we to having in place, and understanding—and again I use Humanetics as an example. They are a recipient of a number of grants moving forward in this. How close are we to having a system in place that, should there be an attack,

we would be able to distribute beyond the pharmaceutical approach, food stuffs and other things. How close are we to saying, "OK, we have something now that if it hit, we can use it?"

Dr. HATCHETT. Sir, is your question what is the status of the medical countermeasures that we are developing, or is it more a question related to the response mechanisms, because I——

Senator COLEMAN. I am looking at the status.

Dr. HATCHETT. OK.

Senator COLEMAN. And if something happened, I want to know, would we be prepared to take something that is in experimental phase or do we have a level of confidence in some of these food-based substances or others that we could readily then distribute them through the systems that are in place?

Dr. HATCHETT. Sir, if I could answer part of the question and defer to Dr. Yeskey for part of the question, our goal at the Radiation Countermeasures Program is to bring countermeasures forward to licensure for the radiation treatment indications so that we have great confidence that the drugs will actually work. We have a number of products that we are evaluating currently. They are in various stages of development, various stages of testing. Some of them are closer than others, certainly, and could potentially be ready within the mid-term, which I would define as 3 to 5 years, because of the testing that would be required to achieve licensure and the FDA review time.

In terms of other mechanisms for bringing experimental countermeasures to individuals who might need them, let me defer to Dr. Yeskey.

Dr. YESKEY. I think one of the mechanisms we have for that is what is called the Emergency Use Authorization, and that is for medications that are either not approved or are not approved for the specific indication. They have been otherwise approved for other indications. So we have that mechanism that HHS can employ to bring those countermeasures to use by the public.

Senator COLEMAN. That is very helpful, Dr. Yeskey. Thank you, Dr. Hatchett. Senator Pryor.

Senator PRYOR [presiding]. Thank you, Senator Coleman.

We are going to move on to the second panel now, so I would like to ask the staff to make the arrangements there and I want to thank the first panel for all that you have done, the time to prepare, to be here. I know you put a lot of effort into this, so I appreciate it.

While the first panel is leaving and the second panel is coming up, let me just say a few words. I would like to reiterate Senator Akaka's thanks to the first panel and some of the things he said in his opening statement.

Our second panel today will focus attention on our response plans at a local and a community level. I would especially like to welcome Wayne Tripp from my home State of Arkansas, who will be testifying about the importance of radiation detection and decontamination training for first responders.

But before we get into all the introductions and what everybody is going to say, I would like to say this, that we know that the dirty bomb threat is real and it is a legitimate danger. There are two

factors that make this particular kind of terrorist attack possible. First, you have motivation. Second, you have capability.

Since Osama bin Laden has announced that it is his religious duty to inflict terror on the United States through weapons of mass destruction, we know that the motivation exists. We also know that it is easier for a terrorist group to develop a dirty bomb capability than a nuclear bomb capability. Unlike a true nuclear weapon, a dirty bomb doesn't require a nuclear reaction. It only requires some means of dispersing radioactive materials.

The most likely scenarios involve a conventional bomb laced with stolen radioactive material. Exploding a dirty bomb in an American city would widely disperse radioactive materials and create a public panic, but the actual casualty rates would likely be low, probably in the tens or maybe hundreds of fatalities. However, the combination of panic, the reaction of the panic after the bomb, and the resulting economic devastation could cause an affected area to be abandoned for years.

Luckily, we have emergency managers and community leaders across the country who are taking steps to prepare for a dirty bomb event now. They have been participating in national exercises so that State and local leaders know how to coordinate with FEMA and DHS. They are learning to use detection equipment and to work while wearing HAZMAT suits. They are also thinking ahead about the psychological and economic needs of our communities in the aftermath of a radioactive weapon.

In Washington and across the country, we appreciate and encourage these efforts and I am eager to learn today how Congress can best help first responders.

So I want to thank the second panel for being here. We are going to have Senators coming and going today. We have a busy floor schedule. There is a lot going on in committees around here, as well. I'd like to notify the panel that you may get some questions in writing after this because not all Senators can attend the hearing today.

Let me go ahead and introduce the first witness. Ken Murphy, Director of the Oregon Department of Emergency Management. Mr. Murphy joined the agency in 1999 and served as Administrative Operations Manager and Deputy Director prior to becoming Director. He has extensive experience in the Army, the National Guard, and on various Homeland Security advisory councils.

Then I would like to hear from Thomas Tenforde. He will be our second witness. He is the President of the National Council on Radiation Protection and Measurements. Mr. Tenforde specializes in developing plans to protect communities from the psychological and economic consequences of a dirty bomb. He has a B.A. in physics from Harvard and a Ph.D. in biophysics from UC–Berkeley and has written over 150 scientific articles and reports, and he is with a fellow named Dave Shower today, and he played college baseball with a very good friend of mine who now lives in Little Rock. So anyway, I want to get acquainted with you after the hearing.

Last would be Wayne Tripp. He is the Program Manager of the Domestic Preparedness Equipment Technical Assistance Program and he oversees a variety of training programs to help first responders use nuclear and radiological detection equipment. He also

supports the development, analysis, and testing of emergency management, disaster and interoperability communication plans for the government and for private sector clients.

So again, I want to thank you all for being here today, and Mr. Murphy, if we can start with you.

TESTIMONY OF KENNETH D. MURPHY,[1] DIRECTOR, OREGON DEPARTMENT OF EMERGENCY MANAGEMENT

Mr. MURPHY. Thank you, Chairman Pryor and Members of the Subcommittee, for the opportunity to provide you with this statement for the record on Oregon's Top Official 4 exercise. In my statement, I am representing the State of Oregon and the Office of Emergency Management which is a division of the Oregon Military Department.

One of the great benefits of participating in this exercise was the almost 2 years of planning by all levels of government, the private sector, and some of the most valuable learning and training took place during the planning phase. There are four key areas I want to highlight: Learn and work with your mutual aid partners as much as you can; learn and practice with your State and Federal partners; good coordination with policy makers is essential; and cooperation with the private sector is critical to success.

The Radiological Dispersion (RDD) was somewhat new to portions of the first responder community. In preparations for this exercise, it was very important to understand what a RDD was, its characteristics, its intended purposes. It became very important to learn as a group of first responders, to include those jurisdictions that would or could provide mutual aid. This allowed for a common understanding of procedures, equipment, and actions to take place during this type of an event.

Working with State and Federal partners is where I believe some of the best relationships and learning experiences took place. The practice with State and Federal partners provided local responders with another set of tools that help them determine how far they could go or should go in dealing with a RDD. This also taught the State and Federal entities what the local first responders were capable of and how the State and Federal partners could be more effective during the initial stages of a RDD.

The local first responders and the State of Oregon's National Guard Civil Support Team worked very well together in the initial stages of the event. The Civil Support Team was able to provide more technical assistance immediately and long-term support to the incident commander. Additionally, as the exercise continued and Federal assets arrived from the Department of Energy and the Environmental Protection Agency, this provided the first responders with more tools and allowed them to deal with other residual events from the RDD, such as the plume moving and requiring first responders to block off more streets or specific areas of the city.

Information from the incident scene must flow quickly and accurately in which to support policy makers. The information must be accurate and disseminated from the incident command post to policy makers to support their decisionmaking and their communica-

[1] The prepared statement of Mr. Murphy appears in the Appendix on page 108.

tions strategy. It is also important this information be flowing to more of the technical experts, allowing them to provide the science and the advice to policy makers.

Working with the private sector was a rewarding experience. We had approximately 70 private sector partners participate during the planning process and exercise. We had utilities, banking, transportation, commercial retail, and manufacturing, just to name a few, that participated. There is no question or doubt that the private sector must be part of every phase of a city, county, and State's planning effort for any event, to include a RDD.

I have four areas I want to highlight with the private sector: Being part of the entire process, being part of government communications; being part of government or emergency operations centers; and being part of the decisionmaking process for recovery.

The private sector has very qualified and trained personnel to deal with emergencies. In the government sector, we must take advantage of this expertise and integrate these professionals into each level of government as we plan, train, and exercise. The private sector was involved in the planning, which made a difference in how we responded and how we started to deal with short-term and long-term recovery.

As an example, when a first responder had to deal with a private sector entity that was in the plume, the responder did not have to deal with that entity as they might with a neighborhood. The private sector was better prepared and put in place a business continuity plan, thus allowing the first responder to attend to the needs of others.

When something bad happens, it is imperative that the private sector is notified just as soon as possible. In Oregon, we created an e-mail and phone system to notify the private sector. This system was for larger organizations. We need to improve upon this in trying to reach private sector groups of different sizes. We are looking at using professional organizations or business alliances to act as focal points during the initial alert phase of an incident and have them relay the message. The private sector organizations in the greater Portland area are creating a regional communications network for emergencies to begin to address communications. I think this will work well, but we need to expand it State-wide.

One of the challenges is to have the private sector representatives in Emergency Operations Centers (EOC). The real issue here is how to organize the private sector so as to have one representative or a small group in the EOC that can coordinate with multiple private sector organizations. The representatives must be integrated into the State and local government EOCs and able to provide relevant information to multiple private sector organizations.

This will require some training in the National Incident Management System and participating with the government in training exercises. But, I would also submit that government personnel should receive training to participate in private sector exercise. During the exercise, it may be very helpful to have the private sector become part of or know what decisions are being made. In the response phase, this has allowed the private sector to know what decisions would affect their business functions. Additionally, they can in

some cases offer resources or personnel that we in government may not realize.

Also during the response phase, the private sector can also help in advising or recommending courses of action which may affect initial recovery plans. The private sector is key to how the government entities begin to address short-term and long-term recovery in the decisionmaking process.

TOPOFF 4 was very intense and a rewarding event for Oregon and the City of Portland. We learned a great deal and are still learning. We conducted a short-term recovery tabletop the Monday after the exercise finished, and as was mentioned earlier, we are now preparing to do a long-term tabletop recovery with our Federal partners on December 4 and 5 here in Washington, DC. As with any exercise, we must now clearly identify all the lessons learned, correct them quickly, and retest the plans and actions to ensure that we have the best procedures and plans in place.

I appreciate Congress's attention and focus on RDDs, the first responders, and the private sector. I thank you for this opportunity to testify on behalf of the State of Oregon.

Senator PRYOR. Thank you. Dr. Tenforde.

TESTIMONY OF THOMAS S. TENFORDE,[1] PRESIDENT, NATIONAL COUNCIL ON RADIATION PROTECTION AND MEASUREMENTS

Mr. TENFORDE. Senator Pryor, thank you very much for providing an opportunity for the National Council on Radiation Protection and Measurements to present its views on the important issues that are faced by the United States in preparing for potential acts of radiological terrorism and also to briefly describe the role of NCRP in providing guidance to the government and the public on this very important subject.

NCRP is a nonprofit organization that was founded in 1929 and was chartered by Congress in 1964 under Public Law 88–376 to serve as a national resource for recommendations on radiation health protection and radiation measurements.

In October of 2001, 1 month after the tragic September 11, 2001 event, NCRP issued its Landmark Report No. 138 on management of terrorist events involving radioactive material. This report has subsequently been supplemented by a series of NCRP publications on the important subjects of, first, preparing emergency responders for nuclear and radiological terrorism; second, ensuring operational safety of security screening systems for use at ports of entry into the United States and in public areas, such as airports; and third, providing medical care for responders and members of the public who might be contaminated with radionuclides as a result of an act of radiological terrorism.

Another new activity of NCRP supported by the Department of Homeland Security is the preparation of a report on key decision points and information needed by decisionmakers in the aftermath of a nuclear or radiological terrorism incident. This report will address many of the issues of interest to the Senate Committee on Homeland Security and Governmental Affairs related to effective

[1] The prepared statement of Mr. Tenforde appears in the Appendix on page 114.

command and control actions by local, regional, Tribal, State, and Federal responders to an act of radiological terrorism. It will in many ways be complementary to the National Response Plan and will be a document that can be used as a basis for responder training and for carefully coordinating the actions that must be taken during response to a radiological terrorism incident.

NCRP and the members of its expert scientific committees have remained current in evaluating the preparedness of the United States at the Federal, State, and local levels for responding to potentially catastrophic acts of radiological terrorism. On this graphic, I have depicted our view of the three primary components of readiness for such acts.

The basic elements of this triangle are at the base detection and deterrence, and that involves, of course, developing methods for detection and deterrence of entry and use of radiological materials for terrorist actions. Second, should there be a RDD or Improvised Nuclear Device incident, it is essential to mount a rapid and effective response to a nuclear or radiological terrorism incident. And then the last phase is performing optimized recovery and restoration activities in sites that are radioactively contaminated by acts of terrorism. So this is our somewhat high-level and rather simple view of the key elements of U.S. preparedness for radiological terrorism.

We have submitted a 5-year proposal to the Department of Homeland Security for the preparation of new reports that will address specific issues in each of these areas that have not previously been addressed in a comprehensive manner. The writing of these reports will involve the efforts of both scientists and stakeholders at the local, State, and Federal levels involved in preparing for effective responses to radiological terrorism.

A more detailed discussion of the key issues that must be addressed to improve the preparedness of the United States for potential acts of nuclear radiological terrorism is contained in my written testimony.

I wish to again thank Senator Pryor and the Subcommittee Members for giving me this opportunity to present NCRP's views on actions that must be taken to improve the readiness of the United States for acts of radiological terrorism. I will conclude by stressing again that NCRP is uniquely qualified to assist in strategic planning as the United States prepares for potential acts of radiological terrorism. Thank you very much.

Senator PRYOR. Thank you. Mr. Tripp.

TESTIMONY OF WAYNE J. TRIPP,[1] PROGRAM MANAGER, DOMESTIC PREPAREDNESS EQUIPMENT TECHNICAL ASSISTANCE PROGRAM

Mr. TRIPP. Chairman Pryor and Members of the Subcommittee, I greatly appreciate the opportunity to talk with you today about something that is very important to me and my program, which is the preparedness of our Nation's first responders and first receivers.

[1] The prepared statement of Mr. Tripp with an attachment appears in the Appendix on page 119.

The Domestic Preparedness Equipment Technical Assistance Program, or as we refer to it since we get tongue-tied easily, DPETAP, is a partnership between the Pine Bluff Arsenal, the Department of Homeland Security, and is operated by General Physics. DPETAP is a nationwide technical assistance equipment training program on capabilities and limitations of chemical, biological, radiological, and nuclear detection, protection, decontamination, and response equipment for our Nation's first responders and first receivers.

I am going to focus my discussion on what we have observed during our more than 7 years of providing DPETAP technical assistance to more than 82,000 responders from 45 States, two Territories, and the District of Columbia. More than 15,000 of these participants have received radiological detection training.

In the field, the majority of detectors that we have observed tend to be of two types, portable survey meters and personal radiation detectors. A personal radiation detector is essentially a small item that a responder would carry on their belt, such as this pager model, to alert them that there is an increase in the level of radiation. It is a first alert system, doesn't tell them a significant amount about what the threat they are facing is, just that there is something potentially there.

Portable survey meters are things such as these two models here. These are used to both identify the type of radiation that might be present in an area as well as the intensity and distribution of that radiation. It is useful for both surfaces as well as for personnel, to identify whether casualties have radiological contamination on them.

In terms of the participants in our training, we found that more than 74 percent of those who have attended the DPETAP training have come from the fire service. About 6 percent are from law enforcement, and the remainder are from a number of different disciplines. The types and distribution of equipment vary widely across agencies and across the Nation, as well as the age of the equipment they are using and their familiarity with it.

The rapid identification of the risk of radiation, as was mentioned on the earlier panel, is critical activity. The sooner it is identified, the sooner appropriate protective measures are taken. One of the key actions that should occur is decontamination, the removal of radiation the victims and from evacuees from an affected area. Ideally, this happens very close to the incident site.

DPETAP has provided decontamination training to more than 6,500 responders and first receivers in 443 agencies. The training provides them with the skills and abilities to implement their plans and their procedures to rapidly process a large number of potentially contaminated individuals. We found that this is a very important type of training, particularly for hospitals that would be on the receiving end of any self-evacuated casualties.

The training we provide on decontamination and detection is only one component of achieving proficiency. The personnel need to also be working under appropriate plans and procedures that identify when to deploy their technologies, when to use them, and what to do if radiation is detected. These plans, procedures, and the training are validated using exercises such as TOPOFF 4. A well-

designed exercise and well-evaluated exercise develops an after-action report and improvement plan that identifies very specific recommendations for additional training, planning, or procedures that is based on solid guidance or standards.

Fortunately, the vast majority of explosions in this Nation are not radiological. The response to one that does contain radiation, however, will likely begin the same as every other response to an explosion. Early use of detection to identify the presence of radiation is critical to stopping the spread by evacuation of contaminated individuals and casualties to the hospitals and ensuring that those affected are appropriately protected and decontaminated.

The continuous cycle of planning, training, and exercises with effective after-action review and improvement planning is key to the long-term enhancement of the front-line personnel across the Nation that would be called upon to respond to a terrorist incident.

Thank you for the opportunity to talk with you today and I am available to answer any questions you may have.

Senator PRYOR. Thank you. I thank all of you for your comments.

Let me start with you, if I might, Mr. Tripp. And again, welcome to Washington. It is good to have you up here from Arkansas. Just so everybody will know, we have been fighting in the full Committee and my office to keep the funding for DPETAP, because it is a very economical way to do training and to help first responders and first receivers out there around the country do what they are supposed to do. It has been a very strong program for a long time, so we are going to continue to fight for that fight up here.

Let me ask about the existing State guidance that the Federal Government is giving about national agencies being involved. At DPETAP, do you all get into some of that, sort of the chain of command issues when there is an incident like this, where does the Federal Government fit in, where do the State people fit in, where do the local people fit in? Do you all get into that?

Mr. TRIPP. To a certain degree. All of our technical assistance training, particularly our practical exercises, incorporates the National Incident Management System (NIMS), into our framework. As part of the training around the deployment and the operational survey techniques and advance survey techniques, we also provide information about reach-back, what agencies are appropriate, might be available to support the responders, and the appropriate methods for activating that support, working through the chain of command from the incident command or the unified command post through the local or county Emergency Operations Center, then through the request up to the State Operations Center, to have them request appropriate Federal support.

Senator PRYOR. In your testimony, you talked about human exposure to radiological materials and the contamination of people, and as I understand it, and you tell me if I am wrong, if you respond quickly, it is fairly easy to get the radiation off a person. You take your clothes and have to dispose of them in some way and then you can basically wash off a lot of the radiation. Is that right?

Mr. TRIPP. That is correct.

Senator PRYOR. One of the problems is that if you inhale materials and somehow they get into your system, then that is a dif-

ferent matter. But just the more general exposure, if you act quickly, a lot of people will be perfectly fine. Is that your understanding?

Mr. TRIPP. That is a fairly accurate statement, yes, sir. The prompt removal of the radiation contamination from the exterior, from the hair, clothing, skin, removes the vast majority of risk for the individual if it is done quickly. The danger arises, as you noted, if the contamination gets inside the body through drinking water, inhaling it, through an open wound, and also from the contaminated individual leaving the incident site and bringing that contamination with them, whether it is to the hospital or to their home.

Senator PRYOR. Let me ask this. I know that you cited some statistics about DPETAP and how many you have trained, etc., but what is your impression of the percentage of first responders and first receivers out there around the country? What percentage of them have the appropriate level of training for something like this?

Mr. TRIPP. I believe, what we have seen through the DPETAP training, that the areas that have an awareness of the risk and an awareness of the threat, whether it is through a nuclear power plant or through a terrorist threat, there is a fairly high level of attention, training, and equipping that has occurred. In areas that aren't as aware of the threat or don't perceive it to be a threat to their area, there is a much lower level of preparedness and equipping.

Senator PRYOR. So you are talking about a geographical difference there, really. Is there also a difference or an unevenness in the training that people receive, say, for example, fire fighters versus policemen versus hospital workers versus whatever it may be, paramedics? Is that inconsistent from place to place, as well?

Mr. TRIPP. That tends to be much more consistent in the way the distribution breaks out. The vast majority tend to be fire fighters that have received detection-related training because of their generally dominant role or preeminent role in hazardous materials response. Law enforcement has received less. Most of what we have seen in terms of law enforcement have been things such as the radiation pagers, the personal alerting devices to warn them that there is a risk. Hospitals are increasing their level of awareness and their level of training, but there is still a significant gap between where they are and where they want to be.

Senator PRYOR. OK. Let me also ask, this is really for you, Mr. Tripp, and also for you, Mr. Murphy. In the event of a dirty bomb, heaven forbid that would happen, but in the event of a dirty bomb, the first consideration would be to identify and help those who have been directly affected by the blast or the radiation, but then there is a second priority which is also present and that is that basically this area is a crime scene. Does the response to the incident trample over the crime scene in such a way that we are destroying evidence or that we are not mindful of the investigation that is going to start very quickly after an incident? Do you all cover that in DPETAP, and I would like to get your thoughts on it, too.

Mr. TRIPP. In DPETAP, what we do is we stress the importance of awareness of their surroundings as they are going in to assist the victims, to be aware to try not to move things, watch what you are stepping on. If you observe something that looks like it might

be important, mark it somehow so that it can be flagged as evidence. If you need to move it, make a note that you had to move it to access victims. But we stress the importance of maintaining the integrity of the criminal incident as much as you can while you are attempting to save lives.

Senator PRYOR. Mr. Murphy, did you all cover that in Oregon?

Mr. MURPHY. Yes, Senator, and I would just add to that something we did coordinate, and one of the benefits that has been around since the Department of Homeland Security started. A lot of the DHS training programs and their basic awareness courses and operation courses, incorporate addressing a crime scene in an event response. This is one of the common themes that we teach, or that we receive teachings on, is how to deal with the response versus a crime scene. But I suspect in reality, there is always a great chance that some of that potential forensics evidence could be destroyed, but that is something that is taught commonly and something that we prepared for TOPOFF.

Senator PRYOR. Mr. Murphy, let me ask you while I have you, I am curious about TOPOFF and your other experience there in the State of Oregon. I am curious about the intelligence and whether various intelligence agencies make threat assessments when they gather information. Is there a protocol or process that intelligence agencies go through that is a standard protocol or process where you are notified, you are alerted under certain conditions? What is your experience there?

Mr. MURPHY. Senator Pryor, my experience so far with this has been that you must have a well-established relationship with law-enforcement and intelligence in advance of the event. I think, with the law enforcement community, no matter who they represent—city, county, State, Federal, or the Joint Terrorism Task Force, building a relationship is critical. In Oregon, we have a relationship where they will alert me, maybe not be able to tell me all of the details because it does involve a crime or a potential crime, but very simple to let me know that within a certain time frame, this could happen or may happen, and they have also agreed to tell if it is imminent. This has been a fairly coordinated effort through the Fusion Center in the State and it has been just a good custom to let people know. They won't give you a lot of the details, but I know as far as I am concerned in my State, as long as I know the potential is there, I can start taking action. So I don't need to know a lot of the specific details.

Senator PRYOR. So just to clarify, are you talking about just the information being shared within the State or are you talking about when it comes down from the Federal level? In other words, are you involved at all when the intelligence or the threat assessments are made at the Federal level and when that is shared and how that is shared with the State?

Mr. MURPHY. Yes. I was speaking at the State level, but the Federal intelligence, we do receive that both through our fusion centers, the Homeland Security Information Network, and we are notified of that also, and that can either be by computer or actual telephone calls, because we are on a call-down list for any type of intelligence that may be breaking or critical.

Senator PRYOR. As far as you can tell, that process is working well right now?

Mr. MURPHY. So far, yes, sir.

Senator PRYOR. Senator Akaka.

Senator AKAKA. Thank you very much, Chairman Pryor.

Mr. Murphy. Welcome to this hearing. In your testimony, you stated that the dirty bomb was new to portions of the first responder community in Oregon. What kinds of training and equipment does the Oregon first responder community have to deal with a radiological incident, and do you believe what you have is adequate?

Mr. MURPHY. Thank you, Chairman Akaka. I would start by answering that in our larger metropolitan areas, such as Portland and some of the other cities, that they do have the capabilities, the equipment, and the training. As we prepared for TOPOFF, one of the points is you work with smaller jurisdictions that may become your mutual aid partners in some of the areas of the State that are not part of a metropolitan area.

It became evident that we need to take into account maybe the smallest fire department or police department that you may not even think would ever be involved in something like that and, really, as I told my Governor as we went through TOPOFF, we were making decisions for one city and a few counties. What if this was 20 counties and 100 cities? So, you really need to take a look at making sure that the capabilities are everywhere in the State as best you can based on money and resources.

And I think most of our major metropolitan areas are in good shape. We still have some areas, such as the personal protection detectors for radiological dispersion that were shown earlier in the hearing that I think would be good for law enforcement or some of the first receivers to have. But, most of the training and decontamination type of equipment is there. I am sure that we can have some more of it in more of our rural areas, but I think we are well prepared thanks to the TOPOFF effort.

Senator AKAKA. Thank you. Dr. Tenforde, in your testimony, you note that recovery and restoration plans for contaminated areas need to be developed. You then stated that you have proposed a report to EPA that would focus on aspects of the late-phase recovery and site restoration following a nuclear or radiological terrorist incident. My question to you is, has EPA accepted your proposal?

Mr. TENFORDE. I have talked with several members of the Office of Radiation and Indoor Air, which will take the lead at EPA on finalizing the Protective Action Guides that were originally developed by Homeland Security and issued in the *Federal Register* for comments. They recognize, I believe it is fair to state, that there is a need for a very well developed optimization plan, and that is not really described in depth in the Protective Action Guides as they exist now and may not be developed further before the Protective Action Guides are released.

However, I know that EPA is determined to follow up on the need to develop formal procedures for optimizing the clean-up and restoration. One person in that office discussed with me the need to have some exercises, if you will, to look at coordinating and optimizing resources and cleaning up in a way that restores infrastruc-

ture, such as medical facilities, as quickly as possible, and then perhaps going on from there to a very detailed report, such as the one proposed by NCRP. So I believe that there is strong interest, but we don't have the funding yet to carry through on that plan.

Senator AKAKA. I see. Mr. Tripp, in your testimony, you point out that you have come across jurisdictions where radiation detectors had not been properly maintained or calibrated to be of any use to first responders following a radiological incident. Do you believe that State and local first responders need additional support so that the equipment is properly maintained over time, or is there a program for such?

Mr. TRIPP. Chairman Akaka, I am not aware of any specific program for the maintenance of equipment, although I believe it is authorized under certain of the Homeland Security grant programs. The key issue we identified was that some of this equipment was from the Civil Defense days. They had it for 10 or 15 years, and had not really received any appropriate training on it in some time, which included the operation and the maintenance aspects of the equipment.

To keep these types of detectors in operating mode, they need to periodically be calibrated to ensure that what they are reading on their display and what they are telling you for the radiation readings is accurate and dependable, and without those calibrations and the periodic maintenance, even things as simple as changing out the batteries so they don't corrode in it, the detectors become just another piece of equipment on a truck.

Senator AKAKA. How would that kind of assistance be provided and how frequently can it be done?

Mr. TRIPP. The frequency of the calibration depends on the specific type of equipment and also how it is done depends on the equipment. In some cases, it needs to go back to the manufacturer for calibration. In other cases, there needs to be a licensed or certified calibration facility that does the work.

A program that the Department of Homeland Security teamed with the Department of Energy and Health Physics Society on, the Homeland Defense Equipment Reuse Program, which DPETAP was one of the training entities for, provided a lot of surplus detection technologies from the Federal Stockpile. They essentially went through the equipment, renovated it, made sure it was working, calibrated it before distributing it to the jurisdictions. That type of process makes a big difference in what is out there and the reliability of it. That was, again, in partnership with the Health Physics Society, providing certified health physicists to aid in that process.

Senator AKAKA. Mr. Murphy, do you have such equipment in your jurisdictions?

Mr. MURPHY. Mr. Chairman, most of it. But I want to get back to you with more specifics because it is relatively new. I am sure hidden on a shelf somewhere, there is a very old piece of equipment that has not been maintained, but I agree with Mr. Tripp. In a lot of the first responder organizations, especially in the more rural entities, you have volunteer fire departments that are not fully staffed or very small staffs and it is not only when you talk about this actual equipment that needs to be calibrated or as simple as

battery changes, but these different types of personal protective suits have to be maintained and made sure they fit properly when there is a rotation of people and training. So, it is a pretty good challenge. For a lot of local first responders, especially when you get into the rural area. But again, we do have some of the more modern equipment, but I am sure we don't have enough of it spread out throughout our entire State.

Senator AKAKA. Thank you very much. Senator Pryor.

Senator PRYOR. Thank you. Let me pick up there if I may with you, Mr. Murphy. You went through the TOPOFF exercise, which sounds like it was a very good experience, but my experience with some of these exercises, I know the Stimson Center's Domestic Preparedness Project made the same comment, is that oftentimes a State will participate and that is great, but then after it is over, you are left with the dilemma of not having enough money to follow through on some of the needs the exercises made you aware of. Is that the situation that Oregon and other States are in, that you need more resources?

Mr. MURPHY. Senator, I think right now, it might be a little bit early in our process of our after-actions to determine all the things that we do need. The things that we have determined initially as far as updates to our plans and our procedures and things like that, I think we could take care of. If we do come across certain items that are equipment or require fairly large sums of money, I am hoping that as we continue through the Homeland Security Grant process or our State legislative process that we can build that into our State strategies and hopefully have them fund it. I don't have any specifics, but I would be happy to provide those at a later time, because I am sure some of them will cost money that we may not have.

Senator PRYOR. All right. Mr. Murphy, let me ask you and Mr. Tenforde a follow-up from the first panel. I asked a question about disposal, and I talked a little bit about Chernobyl. One of the outcomes of that situation is material that they didn't know what to do with. You heard one of the witnesses earlier say that basically the EPA doesn't really have a plan. They have thought about it, but it is a huge undertaking, long-term problem. Is that true on the State level, as well? Are the States looking at what to do with radiologically-tainted material?

Mr. MURPHY. Yes, Senator. I would tell you that the same problems or issues you may have heard in the first panel this morning are very similar to the State. One of my passions of this exercise that I feel is very important is what we are going to do about long-term recovery and whether it is debris or psychological issues or economic issues. We even learned from a few years back, Washington State had some potential "mad cow" issues and we even had discussions about what to do with that type of debris, let alone something that is radiological.

So it is something that we are clearly trying to figure out and I think as—it was mentioned earlier—we are having a tabletop exercise here in a couple of weeks in Washington, DC to just talk about those type of specific issues and identify the problems and what we might be able to do short-term and long-term to fix them.

Senator PRYOR. And Mr. Tenforde, did you have any comments on what to do with the nuclear or the radiologically-tainted material?

Mr. TENFORDE. I believe that is a very critical issue. Actually, it is part of the optimization process as we see it at NCRP, and which I believe others see it, as well, that one needs to carefully classify the contaminated materials that are generated through a RDD or other nuclear incident and treat them appropriately. There may be a possibility of using rather common landfill procedures that EPA uses to dispose of material that is not very contaminated.

We do not expect for a RDD to have high levels of material contamination except perhaps in the immediate location of the event, and there may be many hundreds of thousands or even millions of cubic meters of very slightly contaminated material that needs to be appropriately either decontaminated or disposed of, and I believe that the representative, Mr. Dunne from EPA, stated, as well, that there is a national need for more landfills and other disposal mechanisms for low-level radioactively-contaminated materials.

So I would agree, it is a serious need, but I believe that one has to approach this in a very systematic way that really looks optimally at the disposal options and doesn't discard low-level material treating it as high-level waste.

Senator PRYOR. Mr. Murphy, I had a couple more questions for you. Apparently Oregon has created a system to notify the private sector in emergencies. Is that working well, and could you just briefly describe what you do there?

Mr. MURPHY. Well, it is nothing fancy, Senator. It is really just using telephones and e-mails and trying to be able to focus on how you could call just one or two people in the private sector that could represent a larger group. We have been kind of experimenting, really, as you well know, and when you look at the entire breadth and width of the private sector, there are so many different parts and pieces, depending on if they are manufacturing or commercial or critical infrastructure.

Between what we have used, and the private sector responsibility after TOPOFF to try and refine this system, we are looking at how to represent identify groups and then sub-notify in maybe a cascading telephone tree or an e-mail tree and then other types of redundant communications and how they could be notified. For example, I would be notified that an event is pending or something has happened and we need them to participate.

I will provide you the results as we work. We are going to start on a regional level in the greater Portland area and then, depending on what we learn, try and expand that State-wide, and especially how do you account for the very smaller private sector organizations instead of the large ones.

Senator PRYOR. The last question I had for you, Mr. Murphy, is about the TOPOFF exercise. It seems to me it would be hard to duplicate the panic effect that you might have with a radiological incident. Do you feel like TOPOFF did a good job of trying to capture the sense of panic and the ramifications of mass panic?

Mr. MURPHY. Senator, I think they did a good job, but my staff would probably not agree. I think we would have protracted that aspect for a couple more days to try and create some more panic

and make the people think about that, because I don't think we experienced enough during the exercise. The people that directly participated did have the experience and the virtual news network added to the experience, but to really experience the depth and width of what might happen to the panic that would come from the public, I don't think we got to experience as much as we should have, and especially for our policy makers and top officials and how would they deal with that. What is the communication strategy, because you have those that surely know they might be affected, you have the worried well, you have the people that may depend economically on a portion of Portland's economy and they are questioning and they are panicking. So I think we started into it, but we did not get to deal with it or practice the issues as much as I would have liked.

Senator PRYOR. Just as a personal note, we had a taste of that here in the Senate a few years ago. It was right before I came to the Senate, where they had the anthrax incident here. People didn't know what to do. When people don't know what to do, they always fear the worst, and the fear is real. That is a real factor in how we respond to this.

Those are all the questions I have. Senator Akaka, do you have any more?

Senator AKAKA. Thank you, Senator Pryor. I have a few questions here.

Mr. Tripp, you note that the Domestic Preparedness Equipment Technical Assistance Program has provided radiation-related training to more than 15,000 first responders and first receivers since the year 2000, and I want to commend you for such efforts. What is the cost of an average training effort and who bears that cost?

Mr. TRIPP. Chairman Akaka, thank you for those kind words. There is no standard cost for one of our technical assistance trainings. It depends on a lot of variables, including the specific technologies we are training, how many different technologies—there are 36 different ones in our catalog right now, how many responders will be going through, how many different shifts we are going to cover.

A rule of kind of a very broad assessment might be a 9-day technical assistance visit where each of the three shifts receives 3 days of training, and again, we will keep it fairly simple, it is three or four instructors for the schedule somewhere within a reasonable distance of Pine Bluff, where we are based, might be around $35,000.

The cost of DPETAP is borne from a Department of Homeland Security, it is a contract funded by DHS through the Pine Bluff Arsenal. We also do make it available to jurisdictions to utilize their grant funds. If the funding for the contract is not adequate to cover the training, the jurisdiction is able to utilize grant funds to obtain that technical assistance.

Senator AKAKA. So there is grant funding that is available under Homeland Security?

Mr. TRIPP. To a certain degree, sir. Generally, it is the larger jurisdictions or urban areas, security initiative cities, areas like that that have those funds available.

Senator AKAKA. Mr. Tripp, in your testimony, you described a range of assistance and training you have provided to first responders and first receivers, including hospitals, in methods such as decontamination. Does your program provide training and use and distribution of medications, such as Prussian Blue, that are used if someone is exposed to radiation?

Mr. TRIPP. No, sir, we do not cover the medical treatment as part of our curriculum.

Senator AKAKA. I see. Mr. Murphy, in your testimony, you emphasized the importance of involving the private sector in response and recovery efforts in the aftermath of a dirty bomb attack. State and local governments receive Homeland Security grants to fund some of these functions. How would the private sector fund its role in emergency response and recovery, particularly since it is commercial property that is likely to be contaminated?

Mr. MURPHY. Chairman Akaka, I am not sure exactly how the private sector might deal with the funding of that, but I think as we go through this process, as I stated in my testimony, I do truly believe the private sector plays a key role in the response, or in the recovery effort, especially, because as we rebuild a city or a portion of a city, it is very important that it is a coordinated effort to restart that economic engine. If we do have commercial property that is damaged or destroyed or unusable, I think it is very important to initially try and figure out, could you move that business somewhere else in the city? How would you address that issue?

Because as we have discussed throughout the testimony in the first panel and this panel, you may have an area that is not usable for a while until the truth and science and everything is determined. Initially, there may be a cost to bear, but I think that is something that we would have to discuss further down the road and how that would be taken care of financially if they had to pay for it.

Senator AKAKA. Well, I want to thank you all for your valuable testimony at this hearing. Dr. Graham Allison, Director of Harvard University's Belfer Center for Science and International Affairs and a well-known expert in nuclear terrorism and arms control recently said, "The security community agrees that there will be a dirty bomb attack on an American city at some point. The puzzle is why it hasn't happened yet, especially since the means and motives are readily available."

Dr. Allison's comment puts a fine point on why Senator Pryor and I have convened this hearing. It is, as the hearing title indicates, not a question of if, but when a terrorist will succeed in launching a dirty bomb attack on U.S. soil. We must be prepared for such an eventuality. We must also be proactive in our preparedness and our efforts. We cannot afford to wait for another Hurricane Katrina-scale disaster to force changes and make fixes in our ability to respond to a catastrophe.

Federal Government agencies such as DHS, DOE, EPA, and HHS must work together on a routine basis to hammer out the practical considerations involved in deploying a coordinated response to a dirty bomb attack. DHS must, in its lead role, work to ensure that the agencies listed in the Nuclear Radiological Incident Annex of the National Response Plan have clear guidance and are

able to conduct the requisite medical and environmental analysis. If these capabilities are found to be lacking, they should be bolstered. If the expertise falls short, it must be supplemented. Anything less cannot be acceptable.

The first panel of this hearing has shed some light on issues confronting the Federal response. The second panel aimed to shed light on issues involving responding to such an attack at the State and local levels.

We are looking for information, data, and advice in what needs to be done in case of such attacks. I thank you so much for your valuable responses and your testimony to this Subcommittee.

Are there any further remarks, Mr. Chairman?

Senator PRYOR. No.

Senator AKAKA. Well, with that, I thank all of you again. This hearing is adjourned.

[Whereupon, at 12:21 p.m., the Subcommittees were adjourned.]

APPENDIX

GAO

United States Government Accountability Office

Testimony

Before the Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia, Committee on Homeland Security and Governmental Affairs, U.S. Senate

For Release on Delivery
Expected at 10:00 a.m. EST
Thursday, November 15, 2007

COMBATING NUCLEAR TERRORISM

Federal Efforts to Respond to Nuclear and Radiological Threats and to Protect Key Emergency Response Facilities Could Be Strengthened

Statement of Gene Aloise, Director
Natural Resources and Environment

GAO-08-285T

November 2007

GAO
Accountability · Integrity · Reliability

Highlights

Highlights of GAO-08-285T, a testimony before the Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia, Committee on Homeland Security and Governmental Affairs, U.S. Senate

COMBATING NUCLEAR TERRORISM

Federal Efforts to Respond to Nuclear and Radiological Threats and to Protect Key Emergency Response Facilities Could Be Strengthened

Why GAO Did This Study

The Department of Energy (DOE) maintains emergency response capabilities and assets to quickly respond to potential nuclear and radiological threats in the United States. These capabilities are primarily found at DOE's two key emergency response facilities—the Remote Sensing Laboratories at Nellis Air Force Base, Nevada, and Andrews Air Force Base, Maryland. These capabilities took on increased significance after the attacks of September 11, 2001, because of heightened concern that terrorists may try to detonate a nuclear or radiological device in a major U.S. city. DOE is not the only federal agency responsible for addressing nuclear and radiological threats. The Department of Homeland Security (DHS) is responsible for preparing the country to prevent and respond to a potential nuclear or radiological attack.

This testimony discusses (1) the benefits of using DOE's aerial background radiation surveys to enhance emergency response capabilities and (2) the physical security measures in place at DOE's two key emergency response facilities and whether they are consistent with DOE guidance. It is based on GAO's report on DOE's nuclear and radiological emergency response capabilities, issued in September 2006 (*Combating Nuclear Terrorism: Federal Efforts to Respond to Nuclear and Radiological Threats and to Protect Emergency Response Capabilities Could be Strengthened* [Washington, D.C.: Sept. 21, 2006]).

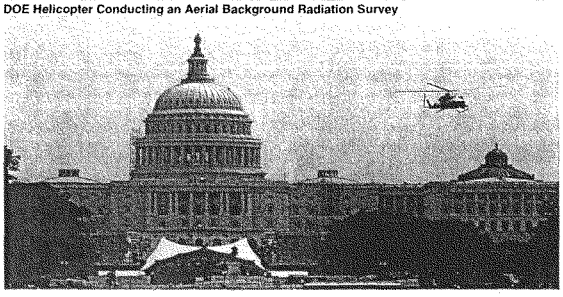
To view the full product, including the scope and methodology, click on GAO-08-285T. For more information, contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov.

What GAO Found

DOE has unique capabilities and assets to prevent and respond to a nuclear or radiological attack in the United States. One of these unique capabilities is the ability to conduct aerial background radiation surveys. These surveys can be used to compare changes in radiation levels to (1) help detect radiological threats in U.S. cities more quickly and (2) measure contamination levels after a radiological attack to assist in and reduce the costs of cleanup efforts. Despite the benefits, only one major city has been surveyed. Neither DOE nor DHS has mission responsibility for conducting these surveys. DOE and DHS disagree about which department is responsible for informing cities about the surveys, and funding and conducting surveys if cities request them. In the absence of clear mission responsibility, DOE and DHS have not informed cities about the surveys and have not conducted any additional surveys.

DOE's two Remote Sensing Laboratories are protected at the lowest level of physical security allowed by DOE guidance because, according to DOE, capabilities and assets to prevent and respond to nuclear and radiological emergencies have been dispersed across the country and are not concentrated at the laboratories. However, we found a number of critical capabilities and assets that exist only at the Remote Sensing Laboratories and whose loss would significantly hamper DOE's ability to quickly prevent and respond to a nuclear or radiological emergency. These capabilities include the most highly trained teams for minimizing the consequences of a nuclear or radiological attack and the only helicopters and planes than can readily help locate nuclear or radiological devices or measure contamination levels after a radiological attack. Because these capabilities and assets have not been fully dispersed, current physical security measures may not be sufficient for protecting the facilities against a terrorist attack.

DOE Helicopter Conducting an Aerial Background Radiation Survey



Source: DOE.

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the Department of Energy's (DOE) use of aerial background radiation surveys, and physical security measures at DOE's two key emergency response facilities. DOE has long maintained an emergency response capability to quickly respond to potential nuclear and radiological threats in the United States. This capability took on increased significance after the attacks of September 11, 2001, because of heightened concern that terrorists may try to smuggle nuclear or radiological materials into the United States and detonate a nuclear or a radiological dispersal device, otherwise known as a dirty bomb, in a major U.S. city. Detonating either type of device would have serious consequences for our national and economic interests, including potentially causing numerous deaths and undermining citizens' confidence in the government's ability to protect the homeland.

To respond to such threats, DOE has developed the technical expertise to search for and locate potential nuclear and radiological threats in U.S. cities and also to help minimize the consequences of a radiological incident by, among other things, measuring the extent of contamination. One of DOE's unique capabilities is the ability to conduct aerial background radiation surveys. Helicopters or planes equipped with radiation detectors fly over an area and collect information on existing background radiation sources, such as granite statues in a city or medical isotopes located at hospitals. This exercise can help DOE establish baseline radiation levels against which future radiation levels can be compared in order to more easily detect new radiation sources that may pose a security or public health threat.

After September 11, 2001, DOE began dispersing its emergency response capabilities across the country. However, a number of critical capabilities and assets are primarily concentrated at two key facilities, known as Remote Sensing Laboratories, located at Nellis Air Force Base, Nevada, and Andrews Air Force Base, Maryland. These two facilities house, among other things, specialized search teams that locate and identify nuclear and radiological devices; planes and helicopters used to measure contamination; and research and development laboratories that design specialized equipment. DOE requires that these facilities be adequately

protected with security measures to defend against potential terrorist attacks.[1]

DOE is not the only federal agency responsible for detecting nuclear and radiological materials. The Department of Homeland Security (DHS) has a Domestic Nuclear Detection Office (DNDO) that is responsible for developing, testing, and deploying radiation detection equipment to detect and prevent the smuggling of nuclear and radiological materials at U.S. points of entry, such as seaports and border crossings. DNDO is also responsible for helping state and local governments improve their capability to detect and identify illicit nuclear and radiological materials. DHS also provides grants to state and local governments to help them better prepare and respond to a potential terrorist attack. DHS has provided $11.6 billion in grants to state and local governments in the last 6 fiscal years—from fiscal years 2002 to 2007. If DHS cannot prevent the smuggling of nuclear or radiological materials into the United States, it relies on DOE's emergency response capabilities to search for and locate the materials.

For this testimony, you asked us to discuss (1) the benefits of using DOE's two key emergency response facilities and whether they are consistent with DOE guidance and (2) the physical security measures in place at DOE's two key emergency response facilities and whether they are consistent with DOE guidance. My remarks will focus on our September 2006 report on DOE's nuclear and radiological emergency response efforts.[2] To update this information, we also collected documentation and interviewed officials from DOE's Office of Emergency Response, DHS's Domestic Nuclear Detection Office, DOE's Remote Sensing Laboratory at Nellis Air Force Base, and the Counter Terrorism Bureau of the New York City Police Department. We conducted our work in November 2007 in accordance with generally accepted government auditing standards.

[1]DOE uses different levels of physical protection to secure its facilities. The levels of protection are specific to the type of security interests and the significance of the targets. They are provided in a graded fashion in accordance with potential risks.

[2]GAO, *Combating Nuclear Terrorism: Federal Efforts to Respond to Nuclear and Radiological Threats and to Protect Emergency Response Capabilities Could be Strengthened*, GAO-06-1015 (Washington, D.C.: Sept. 21, 2006).

Summary

There are significant benefits to conducting aerial background radiation surveys of U.S. cities. Specifically, the surveys can be used to compare changes in radiation levels to (1) help detect radiological threats in U.S. cities more quickly and (2) measure contamination levels after a radiological attack to assist in and reduce the costs of cleanup efforts. Despite the benefits, there has been only one survey of a major U.S. city because neither DOE nor DHS has mission responsibility for conducting the surveys. In the event of a dirty-bomb threat, if a city had a completed survey, DOE could then conduct a new survey and compare baseline radiation data from the previous survey to identify locations with new sources of radiation. Focusing their attention on these new locations, law enforcement officials may be able to locate a nuclear or radiological device more quickly. In addition, using baseline information from a prior survey, DOE could assess contamination levels after a radiological attack to assist cleanup efforts. DOE officials estimated that information from the surveys could save millions of dollars in cleanup costs because cleanup efforts could be targeted to decontaminating buildings and other areas up to pre-existing levels of radiation rather than fully removing all traces of radiation. Without baseline information from the surveys, law enforcement officials may lose valuable time investigating pre-existing sources of radiation that do not pose a threat, and the time and cost of cleanup after an attack may increase significantly. DOE officials explained that surveys do have some limitations, noting that it is difficult to detect certain nuclear or well-shielded radiological materials. Weather conditions and the type of building being surveyed may also limit the ability to detect nuclear and radiological devices.

Nevertheless, in 2005, the New York City Police Department (NYPD) asked DOE to conduct a survey of the New York City metro area. The cost of the survey—about $800,000—was funded through DHS grants. NYPD officials indicated that the survey was tremendously valuable because it identified more than 80 locations with radiological sources that required further investigation to determine their risk. In addition to identifying potential terrorist threats, NYPD officials told us a secondary benefit of the survey was identifying threats to public health. While investigating the 80 locations, they found an old industrial site contaminated with radium—a radiological material linked to diseases such as bone cancer—and used this information to close the area and protect the public. Despite these benefits, neither DOE nor DHS has embraced mission responsibility for funding and conducting surveys or notifying city officials that such a capability exists. DOE officials told us they are reluctant to conduct additional surveys because they have a limited number of helicopters, and these are needed for emergency response functions, and because it is

DHS's mission to protect cities from potential terrorist attacks. DHS officials disagreed with DOE, stating they do not have the expertise or capability to conduct surveys. However, DHS does have a program to help state and local governments detect illicit nuclear and radiological materials, and in fiscal year 2007, made available approximately $1.7 billion in grant funding to state and local governments for terrorism preparedness. In the absence of clear mission responsibility, DOE and DHS have not conducted additional surveys, in part, because DOE and DHS are not informing cities about the benefits of these surveys.

DOE's two Remote Sensing Laboratories, which house a number of unique emergency response capabilities and assets, are protected at the lowest level of physical security allowed by DOE guidance because, according to DOE, emergency response capabilities and assets have been dispersed across the country and are not concentrated at the laboratories. Under DOE policy guidance for safeguarding and securing facilities issued in November 2005, DOE facilities can be protected at the lowest level of physical security if their capabilities and assets exist at other locations and can be easily and quickly reconstituted. However, we found that there are a number of critical capabilities and assets that are available only at the Remote Sensing Laboratories and their loss would significantly hamper DOE's ability to quickly prevent or respond to a nuclear or radiological emergency. These capabilities and assets include the most highly trained teams to help manage and minimize the consequences of a nuclear or radiological attack and the only helicopters and planes that can readily help locate nuclear or radiological devices and measure contamination levels after a radiological attack. Since these capabilities and assets have not been fully dispersed, current physical security measures may not be sufficient to protect the facilities against a terrorist attack. Under DOE's physical security guidance, a facility in the lowest level of physical security can meet the requirements by having walls and doors but no other physical security measures. For example, the Remote Sensing Laboratory at Andrews Air Force Base does not have a fence, vehicle barriers, or any other protective measures around the building, but DOE has determined that it meets physical security requirements. Furthermore, while the laboratories' location on Air Force bases may appear to provide an additional level of security, access onto Nellis and Andrews Air Force Bases is not strictly limited, and anyone with federal government identification may gain entry. In fact, GAO staff gained access to the bases multiple times with little or no scrutiny of their identification. Security officials told us that the laboratories are not designed to withstand certain types of terrorist attacks. However, officials have not taken any steps to strengthen security because of DOE's assumption that their capabilities

and assets are fully dispersed. Furthermore, DOE has not developed contingency plans that would identify capabilities and assets that would be used in the event that one or both Remote Sensing Laboratories were attacked.

Background

DOE's predecessor, the Atomic Energy Commission (AEC), established a program to prevent and respond to nuclear or radiological emergencies in 1974 after an extortionist threatened to detonate a nuclear device in Boston unless he received $200,000.[3] Even though the threat turned out to be a hoax, AEC recognized that it lacked the capability to quickly respond to a nuclear or radiological incident. To address this deficiency, AEC established the Nuclear Emergency Search Team (NEST) to provide technical assistance to the Federal Bureau of Investigation (FBI) and the Department of State, which is the lead federal agency for terrorism response outside the United States. Under the Atomic Energy Act, the FBI is responsible for investigating illegal activities involving the use of nuclear materials within the United States, including terrorist threats. The NEST program was designed to assist the FBI in searching for, identifying, and deactivating nuclear and radiological devices. However, the deployments of search teams were large scale and often slow because they were designed to respond to threats, such as extortion, when there was time to find the device.

With the threat of nuclear terrorism and the events of September 11, 2001, DOE's capabilities have evolved to more rapidly respond to nuclear and radiological threats. While NEST activities to prevent terrorists from detonating a nuclear or radiological device remain the core mission, DOE's emergency response activities have expanded to include actions to minimize the consequences of a nuclear or radiological incident. For example, DOE maintains an aerial capability to detect, measure, and track radioactive material to determine contamination levels at the site of an emergency. DOE has used this capability to conduct background radiation surveys of most nuclear power plants in the country for the Environmental Protection Agency and the Nuclear Regulatory Commission. In the event of an accident at a nuclear power plant, a new radiation survey could be performed to help determine the location and amount of contamination.

[3]DOE was established in 1977.

Currently, about 950 scientists, engineers, and technicians from the national laboratories and the Remote Sensing Laboratories are dedicated to preventing and responding to a nuclear or radiological threat. In fiscal year 2006, DOE had a budget of about $100 million for emergency response activities. Under the National Nuclear Security Administration (NNSA), the Office of Emergency Response manages DOE's efforts to prevent and respond to nuclear or radiological emergencies.

In the aftermath of September 11, 2001, there is heightened concern that terrorists may try to smuggle nuclear or radiological materials into the United States. These materials could be used to produce either an improvised nuclear device or a radiological dispersal device, known as a dirty bomb. An improvised nuclear device is a crude nuclear bomb made with highly enriched uranium or plutonium. Nonproliferation experts estimate that a successful improvised nuclear device could have yields in the 10 to 20 kiloton range (the equivalent to 10,000 to 20,000 tons of TNT). A 20-kiloton yield would be the equivalent of the yield of the bomb that destroyed Nagasaki and could devastate the heart of a medium-size U.S. city and result in thousands of casualties and radiation contamination over a wider area.

A dirty bomb combines conventional explosives, such as dynamite, with radioactive material,[4] using explosive force to disperse the radioactive material over a large area, such as multiple city blocks. The extent of contamination would depend on a number of factors, including the size of the explosive, the amount and type of radioactive material used, and weather conditions. While much less destructive than an improvised nuclear device, the dispersed radioactive material could cause radiation sickness for people nearby and produce serious economic costs and psychological and social disruption associated with the evacuation and subsequent cleanup of the contaminated areas. While no terrorists have detonated a dirty bomb in a city, Chechen separatists placed a canister containing cesium-137 in a Moscow park in the mid-1990s. Although the device was not detonated and no radioactive material was dispersed, the incident demonstrated that terrorists have the capability and willingness to use radiological materials as weapons of terrorism.

[4]Different types of radioactive material that could be used by terrorists for a dirty bomb include cesium-137, cobalt-60, plutonium-238, plutonium-239, and strontium-90.

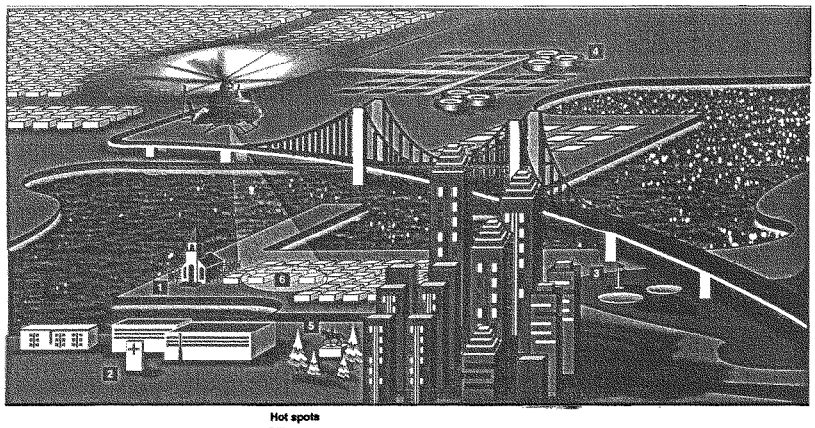
Despite the Benefits of Conducting Aerial Background Radiation Surveys, They Remain Underutilized Because Neither DOE nor DHS Has Mission Responsibility for Funding and Conducting Them

There are significant benefits to conducting aerial background radiation surveys of U.S. cities. Once surveys are complete, they can later be used to compare changes in radiation levels to (1) help detect radiological threats in U.S. cities more quickly and (2) measure radiation levels after a radiological attack to assist in and reduce the costs of cleanup efforts. Despite the benefits, only one major U.S. city has been surveyed. Since neither DOE nor DHS has mission responsibility for funding and conducting surveys, they have not conducted additional surveys nor informed cities about their benefits.

Completing Baseline Aerial Surveys Can Later Help to Detect Radiological Threats in U.S. Cities and Measure Radiation Levels in the Event of a Radiological Attack

DOE can conduct aerial background radiation surveys to record the location of radiation sources and produce maps showing existing radiation levels within U.S. cities. Background radiation can come from a variety of sources, such as rock quarries, granite found in buildings, statues, or cemeteries; medical isotopes used at hospitals; and areas treated with high amounts of fertilizer, such as golf courses. DOE uses helicopters mounted with external radiation detectors and equipped with a global position system to fly over an area and gather data in a systematic grid pattern. Figure 1 illustrates a helicopter conducting an aerial survey and collecting information on radiation sources in a city.

Figure 1: Illustration of a Helicopter Conducting an Aerial Background Radiation Survey



Hot spots

1. Cemetery
2. Hospital
3. Golf course
4. Industrial sites
5. Granite statue
6. Unknown radiation source

Source: GAO.

Onboard computers record radiation levels and the position of the helicopter. This initial, or baseline, survey allows DOE technicians and scientists to produce maps of a city showing the locations of high radiation concentrations, also known as "hot spots." DOE uses helicopters rather than airplanes because their lower altitude and lower speed permit a more precise reading. While conducting the baseline survey, DOE ground teams and law enforcement officials can investigate these hot spots to determine whether the source of radiation is used for industrial, medical or other routine purposes. DOE officials told us that this baseline information would be beneficial for all major cities because law enforcement officials could immediately investigate any potentially dangerous nuclear or radiological source and DOE could later use the data

in the event of an emergency to find a device more quickly or assist in cleanup efforts. For example, in 2002, DOE conducted a survey of the National Mall in Washington, D.C., just prior to July Fourth celebrations. Law enforcement officials used the survey to investigate unusual radiation sources and ensure the Mall area was safe for the public.

Data from the baseline survey would help DOE and law enforcement detect new radiological threats more quickly. In the event of a dirty-bomb threat, DOE could conduct a new, or follow-up, survey and compare that radiation data to the baseline survey data to identify locations with new sources of radiation. Law enforcement officials looking for a nuclear or radiological device would focus their attention on these new locations and might be able to distinguish between pre-existing sources and potential threats in order to locate a dirty bomb or nuclear device more quickly. Conducting baseline surveys also provides a training opportunity for DOE personnel. DOE officials told us that regular deployments helped to keep job performance standards high for pilots, field detection specialists, and the technicians who analyze the data.

DOE can also use a baseline radiation survey to assess changes in radiation levels after a radiological attack to assist with cleanup efforts. A follow-up survey could be taken afterward to compare changes against the baseline radiation levels. This information can be used to determine which areas need to be cleaned and to what levels. In 2004, DOD funded a survey of the area around the Pentagon in Northern Virginia in order to assist with cleanup efforts in case of nuclear or radiological attack. While no study has reliably determined the cleanup costs of a dirty-bomb explosion in an urban area, DOE estimates that cleaning up after the detonation of a small to medium-size radiological device may cost tens or even hundreds of millions of dollars. DOE officials estimated that information from background radiation surveys could save several million dollars in cleanup costs because cleanup efforts could be focused on decontaminating buildings and other areas to pre-existing levels of radiation. Without a baseline radiation survey, cleanup crews would not know the extent to which they would have to decontaminate the area. Efforts to completely clean areas with levels of pre-existing radiation, such as granite buildings or hospitals, would be wasteful and expensive.

DOE officials cautioned that background radiation surveys have limitations and cannot be relied upon to detect all nuclear or radiological devices. Aerial surveys may not be able to detect certain nuclear or well-shielded radiological materials. Weather conditions and the type of building being surveyed may also reduce the effectiveness of detection

systems. Furthermore, DOE may have to rely on good intelligence to find a device. Law enforcement officials would need intelligence information to narrow the search to a specific part of a city. Lastly, according to DOE officials, baseline background radiation surveys may need to be conducted periodically because radiation sources may change over time, especially in urban areas. For example, new construction using granite, the installation of medical equipment, or the heavy use of fertilizer all could change a city's radiation background. Despite these limitations, without baseline survey information, law enforcement officials may lose valuable time when searching for nuclear or radiological threats by investigating pre-existing sources of radiation that are not harmful. In addition, if there were a nuclear or radiological attack, a lack of baseline radiological data would likely make the cleanup more costly and time consuming.

DOE Has Conducted a Survey of Only One Major City

In 2005, the New York City Police Department (NYPD) asked DOE to survey the New York City metro area. NYPD officials were aware that DOE had the capability to measure background radiation and locate hot spots by helicopter because DOE had used this capability at the World Trade Center site in the days following September 11, 2001. DHS provided the city with about $30 million in grant money to develop a regional radiological detection and monitoring system. NYPD decided to spend part of this money on a complete aerial survey of all five boroughs. DOE conducted the survey in about 4 weeks in the summer of 2005, requiring over 100 flight hours to complete at a cost of about $800,000.

According to NYPD officials, the aerial background radiation survey exceeded their expectations, and they cited a number of significant benefits that may help them better respond to a radiological incident. First, NYPD officials said that in the course of conducting the survey, they identified over 80 locations with unexplained radiological sources. Teams of NYPD officers accompanied by DOE scientists and technicians investigated each of these hot spots and determined whether they posed a danger to the public. While most of these hot spots were medical isotopes located at medical facilities and hospitals, according to NYPD officials, awareness of these locations will allow them to distinguish false alarms from real radiological threats and locate a radiological device more quickly. Second, NYPD officers are now trained in investigating hot spots and they have real-life experience in locating radiological sources. Third, NYPD officials now have a baseline radiological survey of the city to assist with cleanup efforts in the event of a radiological release.

In addition to identifying potential terrorist threats, a secondary benefit of the survey was identifying threats to public health. One of the over 80 locations with a radiological signature was a local park that was once the site of an industrial plant. According to NYPD officials, the survey disclosed that the soil there was contaminated by large quantities of radium.[5] Brush fires in the area posed an imminent threat to public health because traditional fire mitigation tactics of pushing flammable debris into the middle of the park could release radiological contamination into the air. Investigating locations with unexplained radiological sources identified by the aerial background radiation survey alerted NYPD officials to this threat, and they were able to prevent public exposure to the material.

Because the extent to which the background radiation of a city changes over time is not clear, NYPD officials have requested that DHS provide money to fund a survey every year. With periodic surveys, NYPD hopes to get a better understanding of how and to what extent background radiation changes over time. NYPD officials also want to continue identifying radiological sources in the city and to provide relevant training to their officers.

Despite the Benefits, Neither DOE nor DHS Has Mission Responsibility for Aerial Background Radiation Surveys, Which Has Discouraged Both Agencies from Developing a Strategy to Inform Cities about the Surveys

Despite the benefits of aerial background radiation surveys, neither DOE nor DHS has embraced mission responsibility for funding and conducting surveys. While DOE and DHS have taken some steps toward making greater use of aerial surveys, they still have not developed a strategy to notify city officials that such a capability exists, explained the benefits and limitations of aerial surveys, and determined how to pay for the surveys. According to DOE and DHS officials, New York City is the only city where a background radiation survey has been completed.

As we reported in September 2006, we found that neither DOE nor DHS was notifying city officials of the potential benefits of aerial surveys or of the availability of such a capability. In addition, neither department had evaluated the costs, benefits, or limitations of the aerial surveys to help cities decide whether to request a survey. As a result, we recommended that DOE and DHS conduct such an evaluation. After completing this evaluation, we then recommended that DOE and DHS develop a strategy

[5]According to the Environmental Protection Agency, long-term exposure to radium increases the risk of developing diseases such as lymphoma, bone cancer, and leukemia.

to notify state and local government officials about the benefits and limitations of the surveys so government officials could decide whether they would benefit from the surveys. According to DOE officials, in April 2007, DOE began meeting with DHS to conduct the evaluation and the departments are drafting a document that would describe the benefits and limitations. They plan to distribute this document to state and local governments to inform them about the surveys. However, the departments have no specific timeframe for completing this document. In addition, DOE and DHS notified one city—Chicago—about the benefits of the surveys since we issued our report. DOE and DHS are working with the Chicago Police Department to install radiation detection equipment on planes or helicopters owned by the Chicago Police Department to conduct aerial background radiation surveys. DOE officials told us that this approach may be less costly and state and local governments may be able respond more quickly to an emergency by using their own aircraft. If this approach is successful, DOE officials told us they would recommend that other cities also purchase and install radiation detection equipment on their own aircraft. However, DOE officials did not provide a timeframe for completing this project.

DOE officials told us that the department is reluctant to conduct large numbers of additional surveys if cities request them because they have a limited number of helicopters, and these are needed to prevent and respond to nuclear and radiological emergencies. Furthermore, they assert that DOE does not have sufficient funding to conduct aerial background radiation surveys. In fiscal year 2006, the emergency response budget for aerial radiation detection was approximately $11 million for costs such as aircraft maintenance, personnel, fuel, and detection equipment. DOE relies on federal agencies and cities to reimburse them for the costs of surveys. However, even if DHS funded cities to pay for surveys, as it did in New York's case, DOE officials stated that payment would need to include costs associated with the wear and tear on the helicopters. Furthermore, the extra costs could not be completely recovered by increasing the charges to the city because, according to DOE officials, DOE cannot accumulate money from year to year to pay for future lump-sum repairs. In addition, DOE officials view background radiation surveys as part of the homeland security mission to prepare state and local officials against terrorist attacks, not as part of DOE's emergency response mission. However, DOE officials told us that because they possess the assets and expertise, they would be willing to conduct additional surveys if DHS funded the full cost of the surveys and covered the wear and tear on DOE's equipment.

DHS officials told us that it is not DHS's responsibility to conduct aerial background radiation surveys or to develop such a capability. According to DNDO, it does not have the expertise or capability to conduct surveys, which are DOE's responsibility. However, DNDO is responsible for assisting state and local governments' efforts to detect and identify illicit nuclear and radiological materials, develop mobile detection systems, and advise cities about different radiation detection technology to help state and local officials decide which technologies would be most beneficial. DNDO does not plan to conduct background surveys as part of this effort, but it plans to work with DOE to advise cities and states on the potential benefits of background surveys.

DHS also has a grant program to improve the capacity of state and local governments to prevent and respond to terrorist and catastrophic events, including nuclear and radiological attacks. In fiscal year 2007, about $1.7 billion was available in grant funding for state and local governments. DHS officials told us that this grant funding could be used for radiation surveys if cities requested them. However, according to DHS officials, the agency has not received any requests for funding other than the 2005 request by New York City. While it is DHS's responsibility to inform state and local governments about radiation detection technology, it has neither an outreach effort nor does it maintain a central database for informing cities and states about background radiation surveys. Instead, DHS maintains a lessons-learned information-sharing database, which is a national online network of best practices and lessons learned to help plan and prepare for a terrorist attack. State and local governments can enter information into this database, and DHS officials told us they were not aware if New York City officials had done so.

More than a year after we issued our report, the status on background radiation surveys remains largely unchanged. In short, in the absence of clear mission responsibility, neither DOE nor DHS has any plans to conduct additional surveys. In addition, no other city has requested one, in part, because DOE and DHS have informed only one city—Chicago—about the benefits of these surveys.

DOE's Current Physical Security Measures May Not Be Sufficient to Protect Its Key Emergency Response Facilities

DOE's two Remote Sensing Laboratories are protected at the lowest level of physical security allowed by DOE guidance because, according to DOE, their emergency response capabilities and assets have been dispersed across the country and are not concentrated at the laboratories. However, we found a number of critical emergency response capabilities and assets are available only at the Remote Sensing Laboratories and whose loss would significantly hamper DOE's ability to quickly respond to a nuclear or radiological threat. Because these capabilities and assets have not been fully dispersed, current physical security measures may not be sufficient for protecting the facilities against a terrorist attack.

DOE Is Protecting Its Key Emergency Response Facilities with the Lowest Level of Physical Security Measures Allowed under Its Guidance Because Some Capabilities and Assets Have Been Dispersed

DOE is protecting its two Remote Sensing Laboratories at the lowest level of physical security allowed under DOE guidance. According to DOE officials, the lowest level of security is adequate because emergency response assets and capabilities have been dispersed across the country and are no longer concentrated at these facilities. DOE's November 2005 policy guidance for safeguarding and securing facilities required a review of facilities protected at the lowest level of physical security to determine whether they were "mission critical." Mission-critical facilities have capabilities and assets that are not available at any other location and cannot be easily and quickly reconstituted. Under DOE guidance, facilities designated as mission critical must be protected at a higher level of physical security. For example, DOE headquarters was designated as mission critical because the loss of decision makers during an emergency would impair the deployment and coordination of DOE resources. As a result, DOE strengthened the physical security measures around DOE headquarters by, among other things, adding vehicle barriers around the facility.

In April 2006, the Office of Emergency Response reviewed the capabilities and assets at the Remote Sensing Laboratories and determined that they were not mission critical because if either one or both laboratories were attacked and destroyed, DOE would be able to easily reconstitute their capabilities and assets to meet mission requirements. Since September 11, 2001, DOE has dispersed some of the assets and capabilities once found exclusively at the Remote Sensing Laboratories. Specifically, DOE has expanded its search mission to include Radiological Assistance Program (RAP) teams that are located at eight sites across the country. These teams receive training and equipment similar to the search teams at the Remote Sensing Laboratories, such as radiation detectors mounted in backpacks and vehicles. They have also participated in a number of search missions, including addressing potential threats at sporting events and

national political conventions, or assisting customs officials with investigating cargo entering ports and border crossings.

DOE Has Not Fully Dispersed the Capabilities and Assets at The Two Facilities, and Their Loss Would Significantly Hamper DOE's Ability to Respond to Nuclear and Radiological Threats

Contrary to DOE's assessment that the Remote Sensing Laboratories' capabilities and assets have been fully dispersed to other parts of the country, we found that the laboratories housed a number of unique emergency response capabilities and assets whose loss would significantly undermine DOE's ability to respond to a nuclear or radiological threat. The critical capabilities and assets that exist only at the laboratories include (1) teams that help minimize the consequences of a nuclear or radiological attack, (2) planes and helicopters designed to measure contamination levels and assist search teams in locating nuclear or radiological devices, and (3) a sophisticated mapping system that tracks contamination and the location of radiological sources in U.S. cities. Furthermore, while the RAP teams have assumed a greater role in searching for nuclear or radiological devices, the teams at the Remote Sensing Laboratories remain the most highly trained and experienced search teams.

The consequence management teams that would respond within the first 24 hours of a nuclear or radiological attack are located at the Remote Sensing Laboratory at Nellis Air Force Base. These teams have specialized equipment for monitoring and assessing the type, amount, and extent of contamination. These teams are responsible for establishing an operations center near the site of contamination to coordinate all of DOE's radiological monitoring and assessment activities and to analyze information coming from the field, including aerial survey data provided by helicopters, planes, and ground teams monitoring radiation levels.

At these two laboratories, the teams also have specialized equipment—emergency response planes and helicopters—that are designed to detect, measure, and track radioactive material at the site of a nuclear or radiological release to determine contamination levels. DOE has a limited number of planes and helicopters designed for this mission at the Remote Sensing Laboratories. The planes and helicopters use a sophisticated radiation detection system to gather radiological information and produce maps of radiation exposure and concentrations. It is anticipated that the planes would arrive at an emergency scene first and be used to determine the location and extent of ground contamination. The helicopters would then be used to perform more detailed surveys of any contamination. According to DOE officials, the planes and helicopters can gather information on a wide area, in a shorter amount of time, without placing

ground teams at risk. Without this capability, DOE could not quickly obtain comprehensive information about the extent of contamination. The helicopters can also be used by search teams to locate nuclear or radiological devices in U.S. cities. The helicopters can cover a larger area in a shorter amount of time than teams on foot or in vehicles. The ground search teams can conduct secondary inspections of locations with unusual radiation levels identified by the helicopters.

The Remote Sensing Laboratory at Nellis Air Force Base also maintains a sophisticated mapping system that can be used by consequence management teams to track contamination in U.S. cities after a nuclear or radiological attack. DOE collects information from its planes and helicopters, ground monitoring teams, and computer modeling and uses this system to provide detailed maps of the extent and level of contamination in a city. Without this system, DOE would not be able to quickly analyze the information collected by various emergency response capabilities and determine how to respond most effectively to a nuclear or radiological attack. This mapping system can also be used to help find nuclear or radiological devices more quickly before they are detonated.

DOE officials told us the loss of these capabilities and assets that are unique to the Remote Sensing Laboratories would devastate DOE's ability to respond to a nuclear or radiological attack. State and local governments would not receive information—such as the location and extent of contamination—that they need in a timely manner in order to manage the consequences of an attack and reduce the harm to public health and property. Despite the importance of these capabilities and assets, DOE has not developed contingency plans identifying capabilities and assets at other locations that could be used in the event that one or both Remote Sensing Laboratories were attacked. Specifically, DOE has not identified which RAP team would assume responsibility for coordinating contamination monitoring and assessment activities in the place of the consequence management teams from Nellis. During an emergency, the lack of clearly defined roles may hamper emergency response efforts.

DOE officials told us that in the event that the capabilities and assets of both Remote Sensing Laboratories were destroyed, they could mobilize and deploy personnel and equipment from the RAP teams or national laboratories. The RAP teams and some national laboratories, such as Sandia, have similar equipment that could be used to measure contamination in a limited area. However, if both Remote Sensing Laboratories were destroyed, the RAP teams and the national laboratories would not have planes and helicopters to conduct large-scale

contamination monitoring and assessment. The RAP teams also do not have the equipment or expertise to set up an operations center and analyze data that field teams would collect on contamination levels. In April 2006, DOE's Office of Independent Oversight, which is responsible for independently evaluating, among other things, the effectiveness of DOE's programs, reported that during performance tests, the RAP teams could not quickly provide state and local governments with recommendations on what actions to take to avoid or reduce the public's exposure to radiation and whether to evacuate contaminated areas.[6] In addition, DOE officials told us, based on training exercises, the demands of responding to two simultaneous nuclear or radiological events strained all of DOE's capabilities to manage the consequences. According to DOE officials, if the consequence management teams at Nellis could not respond and there were multiple, simultaneous attacks, DOE's capabilities to minimize the impact of a nuclear or radiological attack would be significantly hampered.

DOE officials also told us that if Nellis Air Force Base were attacked, their aerial contamination measuring assets would not be lost unless the aircraft at Andrews Air Force Base were also destroyed. However, DOE policy generally requires that some of its aerial assets stationed at Andrews remain in the Washington, D.C., area to protect top government decision makers and other key government assets. During a nuclear or radiological emergency, DOE would need to rely on a limited airborne capability to measure contamination levels. In addition, if there were multiple simultaneous events, there would be considerable delay in providing information to state and local governments about the extent of contamination because DOE could assist only one city at a time.

Some DOE officials suggested that if DOE helicopters were not available to provide assistance, DOE could request another helicopter and fit it with radiation detectors. However, during an emergency, we found that DOE would face a number of challenges in equipping a helicopter not designed for measuring contamination. DOE officials told us that DOE has a memorandum of understanding with the Department of Defense and other federal and state agencies to use their helicopters and planes for transport and other mission requirements, but that it is unlikely that DOD or any

[6]Department of Energy, Office of Security and Safety Performance Assurance, *Independent Oversight Inspection of the Radiological Assistance Program* (Washington, D.C., April 2006).

other agency would provide them with aircraft during an emergency because those agencies' priority would be to carry out their own missions, not to assist DOE. Even if DOE were provided with helicopters, it does not have spare radiation detectors like those found on its own helicopters, and even if it did have spares, it would not have time to mount radiation detectors on the exterior of the aircraft. DOE officials told us that radiation detectors, like those found on their vehicles, could be placed inside an airplane or helicopter, but the ability to measure contamination would be significantly reduced compared with an exterior-mounted detector.

Furthermore, DOE does not conduct training exercises to simulate the actions necessary to reconstitute the capabilities and assets unique to the Remote Sensing Laboratories, such as placing radiation detectors on helicopters or testing the ability of RAP teams to conduct large-scale contamination monitoring and assessment without the assistance of the consequence management teams from Nellis. DOE officials told us that all of their training scenarios and exercises involve the use of consequence management teams and the planes and helicopters from the Remote Sensing Laboratories. As a result, DOE does not know whether it would be able to accomplish mission objectives without the capabilities and assets of the Remote Sensing Laboratories.

Lastly, while the RAP teams have assumed a greater role in searching for nuclear or radiological devices, Remote Sensing Laboratories have the most highly trained and experienced search teams. For example, the search teams at the Remote Sensing Laboratories are the only teams trained to conduct physically demanding maritime searches to locate potential nuclear or radiological devices at sea before they arrive at a U.S. port. The search teams can also repair radiation equipment for search missions in the field. Furthermore, these search teams are more prepared than the RAP teams to enter environments where there is a threat of hazards other than those associated with radiological materials, such as explosives. If there is a threat of explosives in an area where a search mission would be conducted, these teams have specialized equipment to detect explosives and can more quickly request FBI ordnance disposal assistance in order to complete their search mission. In April 2006, the Office of Independent Oversight reported that the RAP teams did not always complete their search missions when there was a high level of risk to the lives of the RAP team members from explosives. The Office also reported that some RAP teams refused to perform the mission unless all risk from explosives around a device was removed and others completed the mission only after certain safety criteria were met. According to this

study, leaders of the RAP teams had to make on-the-spot judgments weighing the safety of RAP team members against their ability to complete the search mission because there was a lack of guidance on how to respond.

Because of these concerns, we recommended in September 2006 that DOE review the physical security measures at the Remote Sensing Laboratories and determine whether additional measures should be taken to protect the facilities against a loss of critical emergency response capabilities or whether it was more cost-effective to fully disperse its capabilities and assets to multiple areas of the country. Since we issued our report, DOE has not made any upgrades or other changes to security at the Remote Sensing Laboratories. In written comments responding to our recommendations, DOE concluded that it was not cost-effective to further disperse emergency response capabilities. In addition, DOE noted that it would not be making any changes to the security of the Remote Sensing Laboratories because the security measures were reviewed separately by the Associate Administrator for Emergency Response and the Associate Administrator for Defense Nuclear Security and they agreed that security measures were adequate. While DOE may have reviewed the physical security measures at the Remote Sensing Laboratories, it did not specifically address the security issues we raised. We continue to believe that these measures may not be sufficient to protect unique and critical emergency response capabilities at these facilities.

Mr. Chairman, this concludes my prepared statement. I would be pleased to respond to any questions you or other Members of the Subcommittee may have at this time.

Contacts and Staff Acknowledgments

For future contacts regarding this testimony, please contact Gene Aloise at (202) 512-3841. Leland Cogliani, Omari Norman, Carol Herrnstadt Shulman, and Ned Woodward made key contributions to this testimony.

Statement for the Record

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Before the

United States Senate

Committee on Homeland Security and Governmental Affairs
Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia and the Subcommittee on State, Local, and Private Sector Preparedness and Integration

"Not A Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack"

November 15, 2007

INTRODUCTION

Chairmen Akaka and Pryor, Ranking Members Voinovich and Sununu, and Members of the Subcommittees, I am Glenn M. Cannon, Assistant Administrator for the Disaster Operations Directorate at FEMA. I look forward to working with your Subcommittees to continue improvements to enhance the disaster response capabilities of the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA). Based on our experiences and lessons learned, we are building a new FEMA to take our Nation's all-hazards preparedness, protection, response, recovery and mitigation systems and capabilities to a new level. We are taking the first steps in a multi-year effort to significantly increase FEMA's core disaster response capabilities to better serve and protect our Nation and citizens.

Our goal is to build a new FEMA that is the Nation's preeminent emergency management and preparedness agency. FEMA has adopted a more forward leaning and collaborative disaster response approach, and we are strengthening our capabilities across the full spectrum of operational and support missions. Central to this effort is developing more robust National and Regional disaster response teams and resources that will provide the critical support needed to help State, local, and tribal governments respond to disasters of all types, including responding to attacks involving Radiological Dispersal Devices (RDD), the subject of today's hearing. It is my pleasure to discuss with you today in more detail our current Federal disaster response teams, resources, and capabilities to respond to an RDD attack to protect the health and safety of the public.

BACKGROUND

In today's threat environment, it is more important than ever to be prepared to respond to all types of disasters and terrorist attacks, including an RDD attack. The RDD is a device or mechanism that spreads radioactive material over an area with intent to cause harm, from the detonation of conventional explosives or other means. It is very difficult to construct an RDD that would deliver radiation doses high enough to cause immediate health effects or fatalities in a large number of people. However, if these materials are stolen or otherwise acquired, whether in the US or abroad, they could be used in an RDD to contaminate facilities, urban areas, or places where people live, disrupting lives and livelihood causing fear and anxiety, and leading to significant social and economic damage. The cost to clean up and recover following a moderately large RDD has been estimated to be billions of dollars. An RDD could effectively cause an area to be inaccessible for a long period of time. The Homeland Security Act of 2002 called upon DHS to develop and implement countermeasures to prepare for and respond to chemical, biological, radiological and nuclear threats. Within DHS, FEMA plays a pivotal role in this area because of its mission to respond to, reduce the loss of life and property from, and protect the Nation from all types of hazards, including acts of terrorism. The recent TOPOFF 4 Exercise specifically focused on responding to RDD attacks in three different geographic areas.

FEMA carries out its disaster response, recovery, and other programs under the legal authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). The Stafford Act describes the programs and processes by which the Federal Government provides disaster and emergency assistance to State and local governments, tribal nations, eligible private

nonprofit organizations, and individuals affected by a declared major disaster or emergency. The Stafford Act covers all hazards, including response to an RDD attack, and sets forth a process for a Governor to request assistance from the President in the form of a major disaster or emergency declaration if:

- an event is beyond the combined response capabilities of the State and affected local governments; and
- if, based on joint Federal-State-local assessments, the damages are of sufficient severity and magnitude to warrant assistance under the Stafford Act. In a particularly rapidly developing or clearly devastating disaster, there may be an expedited declaration.

Furthermore, the President may direct emergency assistance without a Governor's request if an incident involves a subject matter that is exclusively or preeminently the responsibility of the United States Government. In such a case, the President will consult the Governor of the affected State, if practicable. Also, after a declaration has occurred, FEMA may provide accelerated Federal assistance and support where necessary to save lives, prevent human suffering, or mitigate severe damage, even in the absence of a specific request for particular resources or assistance from the Governor. In such cases, the Governor of the affected State will be consulted if practicable, but this consultation will not delay or impede the provision of such accelerated Federal assistance. Before a major disaster or emergency declaration, the Stafford Act authorizes FEMA to improve the timeliness of its response by pre-deploying personnel, who may be from any number of Federal agencies, and equipment to reduce immediate threats to life, property, and public health and safety.

PLANNING FOR AN RDD INCIDENT RESPONSE: The NRP Nuclear/Radiological Incident Annex (NRIA) and the Federal Radiological Policy Coordinating Committee (FRPCC)

As you know, response to a major RDD incident is governed by the current National Response Plan (NRP) and the NRP Nuclear/Radiological Incident Annex, and potentially, the NRP Catastrophic Incident Annex (CIA) and the Catastrophic Incident Supplement (CIS). The NRP is an all-discipline, all-hazards plan that establishes a single, comprehensive framework for the management of domestic incidents, including a response to an RDD attack. Although the NRP is under revision, it is the operational document until the National Response Framework is adopted. Incidents of lesser severity may not require overall Federal coordination by DHS. In such cases, State and local governments could lead the response with the assistance of authorized Federal agencies' assistance.

Within the NRP, the Radiological Incident Annex outlines the variables that determine the approach and coordination structure for a RDD incident response. The first variable is the magnitude of the incident, the second variable is the identification of the "...Federal agency that owns, has custody of, authorizes, regulates, or is otherwise designated responsibility for the nuclear/radioactive material, facility, or activity involved in the incident", and the third variable is the detection of any criminal or terrorist activity.

In the event of a major RDD incident, the Secretary of Homeland Security has overall responsibility for domestic incident management and will select a coordinating agency, most

likely the Department of Energy (DOE), during the immediate first response to a dirty bomb attack, pursuant to Homeland Security Presidential Directive 5. The coordinating agency provides technical support to DHS and the FBI, which has the lead responsibility for criminal investigations of terrorist acts or terrorist threats. The Radiological Incident Annex also designates additional Federal agencies as cooperating agencies for RDD response.

The Federal Radiological Preparedness Coordinating Committee (FRPCC) is an interagency body consisting of the coordinating and cooperating agencies discussed in the Radiological Incident Annex; it is chaired by DHS/FEMA. The FRPCC provides a national-level forum for the development and coordination for radiological prevention and preparedness policies and procedures. It also provides policy guidance for Federal radiological incident management activities in support of State, local and Tribal government radiological emergency planning and preparedness activities. At the Federal regional level, Regional Assistance Committees (RACs) in the DHS/FEMA Regions serve as the primary coordinating structure. RAC membership mirrors that of the FRPCC and RACS are chaired by a DHS/FEMA regional representative. Additionally, state emergency management agencies send representatives to RAC meetings and participate in regional exercise and training activities. The RACs provide a forum for information sharing, consultation, and coordination of Federal regional awareness, prevention, response, and recovery activities. The RACs provide technical assistance to State and local governments and evaluating radiological plans and exercises.

FEMA DISASTER RESPONSE COORDINATION

Disaster response support to an RDD incident would be coordinated and provided through one or more of the NRP's 15 Emergency Support Functions (ESFs). The ESFs serve as the primary operational-level mechanism that supports the Federal government in providing disaster assistance to State and local jurisdictions overwhelmed in a disaster. Support can be provided by ESFs in functional areas such as decontamination, monitoring, transportation, communications, public works and engineering, firefighting, mass care, housing, human services, public health and medical services, search and rescue, food, and energy. Beyond the Stafford Act, many of the ESF partner agencies have their own authorities they can use in disaster response.

The Mission Assignment (MA) is the vehicle used by FEMA in a Stafford Act major disaster or emergency declaration to order immediate, short-term disaster response assistance from Departments and Agencies to help overwhelmed State, local, and tribal governments that are unable to perform the necessary work. To streamline and facilitate rapid disaster response, FEMA has approved in advance a number of Pre-Scripted Mission Assignments (PSMAs). The Department and Agency partners can provide substantial technical disaster response assistance in their areas of expertise in responding to an RDD attack. Also, FEMA can surge its own teams and resources into an area in anticipation of an event that is expected to cause a significant impact and result in a declared emergency or major disaster, thus ensuring a more rapid response.

While not a technical expert in RDDs, FEMA will still activate and deploy its multiple disaster response operations nodes, teams, and resources to coordinate and provide assistance in an RDD

attack. In responding to such an attack, we would lean forward aggressively to push resources out and sustain this flow of these resources as long as needed to ensure immediate and continued support to the impacted governments. Command and control would be exercised through our network of operations centers, in coordination with the National Operations Center.

Operations Centers: Command and Control

FEMA manages a network of FEMA operations centers to coordinate and sustain response operations, maintain situational awareness and a common operating picture for DHS and FEMA leadership, facilitate information sharing between FEMA and non-FEMA entities, and provide internal and external stakeholders a consolidated, consistent, and accurate status of on-going incidents, responses, or potential events. The key components of this network are the National Response Coordination Center (NRCC) in FEMA Headquarters; the Regional Response Coordination Centers (RRCC) located in each of the ten FEMA Regions; the FEMA Operations Center (FOC) located at the Mt. Weather Emergency Operations Center; the five Mobile Emergency Response Support (MERS) Operations Centers (MOC) located in the States of Massachusetts, Georgia, Texas, Colorado, and Washington; and the Logistics Response Center at FEMA Headquarters.

FEMA's NRCC is the multi-agency center that functions as the disaster response operational component of the DHS National Operations Center (NOC). The NRCC provides overall Federal disaster response direction and coordination. It maintains situational awareness linkages with the RRCCs, State Emergency Operations Centers (EOC), selected local EOCs in the ten FEMA Regions, DHS Regional components, Regional ESF EOCs, State Fusion Centers, Joint Terrorism Task Forces, Regional Department of Defense (DoD) Operations Centers (primarily NORTHERN COMMAND and its Army component, ARNORTH), Joint Field Offices (JFO), and other key operational nodes. The NRCC would carry out the crucial role of coordinating and maintaining situational awareness and a common operating picture of the activities of all of the responding and operational entities in an RDD attack. It would also coordinate incident management operations; monitor potential or developing incidents; support regional and field components; and provide overall response and resource coordination and prioritization for DHS and FEMA. The NRCC maintains a 24/7 Watch Team and is augmented by the ESFs during disaster operations.

The recent TOPOFF 4 Exercise clearly illustrates the need to develop a list of RDD capabilities. An initial list has been developed by the DHS Office of Operations Coordination and provided to the Disaster Operations Directorate. As part of the ongoing NRCC capabilities upgrade, a new Emergency Management Information Management System (EMIMS) is being installed. EMIMS is a web-based software system that will provide greater support to the NRCC, RRCCs, and JFOs in managing disaster response operations and information flow, maintaining situational awareness, and coordinating information sharing. Our intent is to incorporate the initial RDD list already developed by the Office of Operations Coordination, expand it, and incorporate it into EMIMS as a secure resource module. Ultimately, with the capability provided by EMIMS, vital statistics on the location and content of RDD teams and resources can be loaded into the system by location and continuously updated by the responsible Federal department or agency and used on a real time basis by the interagency community to support responses. Our longer term goal is

to use EMIMS to create a larger national asset database containing all Federal response teams and resources for all-hazards responses. This expanded database would also be protected and available to the interagency community for use to support disaster response.

The RRCCs are regionally-based multi-agency coordination centers that perform a complementary role to the NRCC. Operating in the ten FEMA Regions, the RRCCs provide situational awareness information, identify and coordinate response requirements, perform capabilities analysis, and report on the status of Federal disaster response operations. The RRCCs deploy liaison officers and Emergency Response Teams-Advanced (ERT-A) to initiate Federal support, facilitate initial delivery of goods and services to save lives and property and to stabilize local infrastructures. They facilitate prioritizing "in theater" interagency resource allocation and coordination. NRCC and RRCC activations and operations are scalable and adjustable to most effectively address the nature, scope, magnitude, and potential impacts of an incident.

The FEMA Operations Center (FOC) supports the NRCC with a 24-hour watch. The FOC implements notifications to the Departments and Agencies that support the NRCC as well as activating emergency management staff. The FOC receives, analyzes, and disseminates all-hazards information within FEMA and DHS and to Departments, Agencies, and disaster response team members. The FOC, in coordination with the NOC, facilitates distribution of warnings, alerts, and bulletins to the emergency management community using a variety of communications systems such the National Alert and Warning System, the Washington Area Warning System, and the National-level Emergency Alert System.

Disaster Response Teams and Assets

To assist State, local and tribal governments in their response to an RDD attack, FEMA's Disaster Operations Directorate can immediately deploy its own disaster response teams and resources.

Emergency Response Teams-National (ERT-N)

FEMA's ERT-Ns are deployed by FEMA Headquarters in response to significant disaster events such as an RDD attack. Their purpose is to coordinate disaster response activities, coordinate and deploy key national response assets and resources, provide situational awareness, and maintain connectivity with key DHS operations centers and components. ERT-Ns are made up of approximately 32 individuals and are organized according to National Incident Management System/Incident Command System (NIMS/ICS) standards to provide a systematic, proactive, and coordinated response approach. ERT-N members can provide the initial staffing for a JFO.

Emergency Response Teams-Advanced (ERT-A)

ERT-As are located in each of FEMA's Regions and are deployed in the early phases of an incident to work directly with the States to assess the disaster impact, gain situational awareness, help coordinate the disaster response, and supports specific State requests for assistance. ERT-As are made up of approximately 25 individuals who establish an initial presence in a State EOC.

They can later staff the JFO to support the disaster response. The ERT-As deploy with basic communications capabilities including cell phones, wireless laptop computers, and a limited number of satellite cell phones. A small component of an ERT-A, the Rapid Needs Assessment Team, also provides the capability to collect disaster information in the field needed to determine more specific disaster response requirements.

Federal Incident Response Support Teams (FIRST)

FIRSTs are emergency response teams consisting of approximately five individuals who can be immediately deployed to a significant incident or disaster. FEMA's two FIRSTs are located in Region IV in Atlanta, Georgia, and in Region V in Chicago, Illinois. They serve as the forward component of the ERT-A and provide the core preliminary on-scene Federal management in support of the local incident commander to ensure an integrated, inter-jurisdictional response. Federal incident response support provided by these teams includes a command vehicle and multiple communications capabilities.

Urban Search and Rescue (US&R) Task Forces

The National US&R Response System is another FEMA response asset that could play a critical role in an RDD response. The US&R System provides a framework for structuring local emergency services personnel into integrated disaster response task forces. The 28 National US&R Task Forces (TF), complete with the necessary tools, equipment, skills and techniques, can be deployed by FEMA to assist State and local governments in rescuing victims of structural collapse incidents or to assist in other search and rescue missions. The 28 TFs are located throughout the continental United States. Any TF can be activated and deployed by FEMA to a disaster area to provide assistance in structural collapse rescue, or may be pre-positioned when a major disaster threatens a community.

TFs can respond within six hours of activation and consist of cross-trained personnel divided into six functional elements: search, rescue, medical, hazmat, logistics, and planning, supported by canines and capable of conducting physical search and heavy rescue operations in damaged or collapsed reinforced concrete buildings. TFs can conduct physical search and rescue operations in damaged or collapsed structures; operate in a known or suspected weapons-of-mass-destruction environment; provide medical care for trapped victims, TF personnel and search canines; provide reconnaissance to assess damage and needs, and provide feedback to other officials; and provide hazardous materials survey and evaluations.

Mobile Emergency Response Support (MERS)

Another key FEMA disaster response asset that would be critical in an RDD attack is the MERS System. The primary function of MERS is to provide mobile telecommunications, logistics, and operational capabilities for the on-site management of disaster response activities. MERS support falls into three broad areas:

- Operations - Mobile Emergency Operations Centers, quick reaction support, disaster preparedness (HAZMAT) officers, and MERS security officers.
- Communications - satellite, multiple radio vans, High Frequency line of sight microwave, land mobile radios, voice, video, and data capabilities, and wide area interoperability.
- Logistics - fuel, water, HVAC, life support, transportation, and power.

MERS provides support required by Federal, State and local responders and can provide prompt and rapid multi-media communications, information processing, logistics, administrative, and operational support. Staged in six strategic locations, one with offshore capabilities, the MERS detachments can concurrently support a large JFO and multiple field operating sites within a disaster area. The telecommunications function is accomplished using a variety of communications transmission systems including satellite, high frequency, and microwave line-of-sight interconnected by fiber optic cables to voice and data switches, local area networks, and desktop devices such as personal computers and telephones. MERS telecommunications assets can be provided for one or multiple locations within a disaster area and can be used to establish or reestablish communications connectivity with the public telecommunications system or Government telecommunications networks. Facilities within a disaster region can be interconnected by MERS assets to enhance emergency communications interoperability and austere facilities can be wired for computer, telephone, and video networks.

Nuclear Incident Response Team (NIRT)

NIRT assets would play a significant role in an RDD response. The NIRT teams consist of specialized teams managed day-to-day by the Department of Energy (DOE)/National Nuclear Security Administration (NNSA) and the Environmental Protection Agency (EPA). When activated by the DHS Secretary, they are operationally controlled by DHS/FEMA to provide expert technical advice and support in disaster response operations and other needs involving:

- Nuclear weapons accidents and incidents of national significance;
- Radiological accidents;
- Lost or stolen radioactive material incidents; and
- Acts of nuclear terrorism.

The NIRT is configured for rapid response to nuclear/radiological accidents or incidents. The NIRT interagency specialized teams have specialized equipment and trained personnel that can assess situations and advise local, State and Federal officials on the scope and magnitude of response needs. NIRT teams have the capability to conduct specialized search and detection operations for nuclear weapons, improvised nuclear devices, or RDDs in urban or other areas on the ground or by special air support. They support the full spectrum of all nuclear/radiological incidents or accidents considered to be significant including: terrorist use of RDDs or improvised nuclear devices as well as reactor accidents (commercial or weapons production facilities). NIRT consists of one or all of the following DOE/NNSA and EPA response assets:

- Aerial Measuring System: airborne radiological sensing and surveying;
- Accident Response Group: scientific technical expertise and equipment;
- Federal Radiological Monitoring and Assessment Center: operational and logistic management focused on radiological consequence management;

- National Atmospheric Release Advisory Capability: computer modeling of transport, diffusion, and disposition of radioactive and hazardous materials;
- Nuclear Emergency Support Team: umbrella team encompassing Nuclear/Radiological Advisory Team, Joint Technical Operations Team, and the Search Response Team;
- Radiological Assistance Program: regional first response capability;
- Radiation Emergency Assistance Center/Training Site (REAC/TS): cadre of physicians, nurses, and other specialists who provide advanced health physics and medical assistance and advice needed to treat victims of acute radiation exposure accidents.

Radiological Emergency Response Team: provided by the EPA, works with other Federal agencies, State and local governments, and international organizations to monitor, contain, and clean up the release while protecting people and the environment from harmful exposure to radiation.

A U.S. Secret Service liaison is detailed to FEMA Headquarters to coordinate NIRT activities and is working closely with DOE, EPA, and DHS to further redefine the roles and responsibilities of the multiple agencies involved with the NIRT.

Domestic Emergency Support Team (DEST)

The DEST is another specialized interagency U.S. Government team designed to expeditiously provide expert advice, guidance and support to the FBI On-Scene Commander (OSC) during a WMD incident or credible threat. The DEST is comprised of crisis and consequence management components and augments the FBI's Joint Operations Center with tailored expertise, assessment and analysis capabilities, providing the FBI OSC with expert advice and guidance in the following:

- interagency crisis management;
- information management;
- enhanced communications;
- contingency planning for consequence management;
- explosive devices and their components;
- chemical, biological, and nuclear weapons/devices and their components and RDDs; and
- operating in a contaminated environment to conduct threat sampling, take measurements, and collect tactical intelligence and evidence.

Pre-positioned Equipment Program

The PEP consists of caches of standardized equipment pods, deployable to support State and local governments facing a major chemical, biological, radiological, nuclear, or explosives (CBRNE) event. PEP pods are supported by specialized teams of emergency responders and contain personal protective, decontamination, detection, technical search and rescue, law enforcement, interoperable communications and other emergency response equipment. The pods are available to State and local governments through formal requests and deployment procedures that are initiated by the Governors. In addition to State and local government support, PEP is used on the Federal level to supplement response operations including the National Disaster Medical System and Urban Search & Rescue.

DHS ASSETS AND SUPPORT

As a part of DHS, FEMA can leverage important capabilities available in the Department that can support the response to an RDD attack such as Customs and Border Patrol security personnel, aerial imagery, and streaming video support; U.S. Coast Guard Strike Teams, personnel, and Deployable Operations Group support; Immigrations and Customs Enforcement and Transportation Security Administration personnel and security teams; and we can coordinate with the National Infrastructure Coordination Center regarding the critical infrastructure sectors.

The Interagency Modeling and Atmospheric Assessment Center (IMAAC), can produce, coordinate and disseminate consequence predictions for airborne hazardous materials releases. IMAAC generates the single Federal prediction of atmospheric dispersions and their consequences during incidents of national significance, using the best available resources from the Federal government. Also, the Advisory Team for Environment, Food, and Health develops coordinated advice and recommendations for DHS, the JFO Coordination Group, the coordinating agency, and State, local, and tribal governments concerning environmental, food health, and animal health matters. The Advisory Team includes representatives from DHS, EPA, the Department of Agriculture (USDA), the Food and Drug Administration, the Centers for Disease Control and Prevention, and other Federal agencies.

An important part of preparing for and preventing an RDD attack involves nuclear forensics. DHS established the National Technical Nuclear Forensics Center (NTNFC) in October 2006 as part of the Domestic Nuclear Detection Office (DNDO) to coordinate and advance national nuclear forensics efforts. While the FBI serves as the lead federal agency for conducting and directing the nuclear forensics activities after a nuclear or radiological attack, the NTNFC serves as an overall system integrator for capabilities which support the FBI and are developed within DHS (for nuclear and radiological materials forensic capabilities), Department of Defense (for post-detonation debris forensics), and Department of Energy (for interdicted nuclear weapon and device forensics). The NTNFC efforts ensure we have the tools, the processes, and the expertise to potentially determine the nature and origin of the materials and devices used in acts of terrorism and smuggling. This includes the collection, analysis, and evaluation of pre- and post-detonation nuclear/radiological samples and devices, as well as prompt output signals from a nuclear detonation. In addition to contributing to attribution assessments, TNF serves as a critical deterrence capability to demonstrate we can hold perpetrators and suppliers accountable additionally; TNF may help to prevent follow on attacks.

FEDERAL DEPARTMENT AND AGENCY SUPPORT

As mentioned above, the ESF teams and resources enhance and greatly expand FEMA's capabilities and the Federal government's response. The extensive ESF expertise provided would be particularly important in an RDD response. Some of the more important capabilities include the following:

Department of Defense (DoD)

DoD and its combatant commands along with the National Guard Bureau (NGB) play a key role in Defense Support to Civil Authorities (DSCA) and supporting FEMA in disaster response. DSCA is DoD's support, provided by its Federal military forces, DoD civilians, contract personnel, and DoD components, in response to requests for assistance. The DoD focus in domestic disaster response is on providing homeland defense, supporting civil operations, and cooperating in theater security activities designed to protect the American people and their way of life. The DoD has critical resources that could be employed in an RDD incident, ranging from commodity distribution to assisting with:

- search and rescue
- communications, command and control
- transportation and evacuation
- security
- housing and mass care
- fuel distribution
- debris clearance
- medical care and medical evacuation
- power generation
- air support
- decontamination and protective measures

Other key specialized DoD resources include the following:

- **CBRNE Consequence Management Response Force (CCMRF):** personnel organized in force packages to perform missions across the CBRNE spectrum. CCMRF capabilities include medical, decontamination, command and control, communications, logistics, transportation and public affairs assets.

- **Chemical Biological Incident Response Force (CBIRF):** supports agent detection and identification; casualty search, rescue, and personnel decontamination; and emergency medical care and stabilization of contaminated personnel.

- **NORTHCOM Command Assessment Element (CAE):** rapidly deployable, tailored package that gives the NORTHCOM Commander operational and tactical level awareness of the operating environment and assessments of needs. The CAE gathers information, develops situational awareness, and conducts assessments with State and local officials.

- **Medical Radiobiology Advisory Team (MRAT):** provides advice and consultation to command and control regarding health physics, medical, and radiobiological issues during nuclear/radiological incidents.

The National Guard is the organized militia reserved to the States by the Constitution. The National Guard primarily provides support to the States. In peacetime, the National Guard is commanded by the Governor of each respective State or territory. When ordered to Federal active duty for mobilization or for emergencies, units of the National Guard are under the control of the appropriate service secretary. The FY04 National Defense Authorization Act amended

Title 32 to make it possible for a National Guard officer to be in command of Federal (Active Duty) and State (National Guard Title 32 and State Active Duty) forces simultaneously.

Generally, there are two levels of coordination between FEMA and the National Guard. Coordination at the State level routinely takes place between FEMA Regional staff and State officials. Fourteen of The Adjutant Generals (TAG), the leadership of the National Guard, are State Emergency Management Officials (SEMOs). At the national level, FEMA coordinates with the NGB and the NGB routinely interacts with all States and Territories on DSCA and Homeland Security matters to coordinate providing national level support. State requirements for National Guard support are normally filled under the Emergency Management Assistance Compact (EMAC) processes. The NGB can assist States in identifying National Guard capabilities available to meet their EMAC requirements.

In an RDD attack, FEMA would engage closely with both the State National Guards and the NGB to ensure close coordination and synchronization of disaster response activities and to leverage assets. The National Guard has valuable assets that can be applied to the response to an RDD attack:

- **National Guard Reaction Force (NGRF):** units that are pre-designated for quick response and available to the Governors to support State and local response.

- **WMD Civil Support Teams (CST):** 55 highly skilled, full-time teams, established to provide specialized WMD expertise and technical assistance to an incident commander to assess, assist, advise, and facilitate follow-on forces. Governors have operational command and control of the teams and NGB provides logistical support, standardized operational procedures, and operational coordination to facilitate the employment of the teams.

- **CBRNE Enhanced Response Force Package (CERFP):** regional capability to locate and extract victims from a contaminated environment, perform medical triage and treatment, and conduct personnel decontamination in a WMD event. Each CERFP task force works in coordination with other military forces and commands as part of the overall national response of local, State and Federal assets and has a regional responsibility as well as the capability to respond to major CBRNE incidents anywhere within the US or worldwide. This capability augments the WMD CST and provides a task force-oriented structure that can respond on short notice.

Additional specialized support in responding to an RDD attack would also come from our ESF partners as follows:

Department of Justice (DOJ)/Federal Bureau of Investigation (FBI)

- **FBI Hazardous Materials Response Unit:** provides technical response capabilities including management of WMD crime scene activities and collection of evidence in hazardous environments.

- **FBI Hazardous Materials Response Teams:** teams trained and equipped to process WMD crime scenes, including the collection and packaging of evidence from hazardous environments.

Environmental Protection Agency (EPA)

EPA serves in several roles under the National Response Plan, Emergency Support Function #10, and the Nuclear Radiological Incident Annex. Their primary activities under ESF #10 include: efforts to detect, identify, contain, clean-up or dispose of oil or hazardous materials (including radiological materials); removal of drums and other bulk containers; collection of household hazardous waste; monitoring of debris disposal; air and water quality monitoring and sampling; and protection of natural resources. EPA is also a support agency for a number of other Emergency Support Functions and works with other Federal agencies under the Nuclear/Radiological Incident Annex to the NRP. EPA's assets support the interagency Federal Radiological Monitoring and Assessment Center, and the lead of the FRMAC transitions from DOE to EPA once the emergency phase is over and the criteria established under the Nuclear/Radiological Incident Annex are met. In addition, the technical lead for the clean up and recovery from a "dirty bomb" would transition from DOE to EPA.

In addition to EPA's Radiological Emergency Response Team, discussed previously as a potential Nuclear Incident Response Team asset, EPA maintains the following personnel and assets:

- **Airborne Spectral Photometric Environmental Collection Technology (ASPECT):** aerial tools to collect chemical, visible, and radiological information for the incident command structure. Integrates data products into the existing response structure. Sensors are mounted on aircraft, have infrared capabilities, and collect quantitative information (e.g., vapors, plumes, mapping). Supporting data include aerial digital photography and chemical agent information.

- **Federal On-Scene Coordinators:** Response managers pre-designated under the National Oil and Hazardous Substances Pollution Contingency Plan who lead the EPA response to incidents. OSCs have access to immediate contractor support and can provide assessments, containment and cleanup support. OSCs provide experienced technical and logistical assistance in responding to environmental emergencies, through activities such as emergency response, site characterization and assessment, verification, cleanup, and disposal of radiologically contaminated wastes or release events.

- **Environmental Response Team:** The ERT supports EPA's OSCs by providing multi-disciplined technical expertise and logistical support in responding to hazardous substance emergencies, oil spills, potential and actual releases of biological and chemical agents as well as long-term remedial activities. The ERT characterizes and assesses the site, verifies the nature and severity of the event, and participates in development of a strategy for the cleanup, decontamination or disposal, and remedy selection. Its response capabilities include, but are not limited to, air surveillance, geophysical surveying, underwater diving, radiation health and safety, modeling, risk assessment, rapid turnaround analytical support and the capacity for contaminant-specific method development for sampling and analysis.

- **National Decontamination Team:** team of EPA subject matter experts with contractor support who support EPA Federal On Scene Coordinators. The NDT is dedicated to providing decontamination expertise, especially related to chemical, biological, and radiological contaminants that can be used as Weapons of Mass Destruction.

- **National Counter Terrorism Evidence Response Team:** team of Special Agents who provide law enforcement response personnel and support for incidents or sites that contain chemical, biological, or radiological hazards and have a link to terrorism or environmental crimes. NCERT supports Special Agents, OSCs, and the other EPA Special Teams. Additionally, NCERT provides extensive law enforcement liaison contacts and law enforcement coordination capabilities to any incident.

Department of Health and Human Services (DHHS)

In addition to the specific resources and teams listed below that could be provided by DHHS to support an RDD response, FEMA would reach out to DHHS to provide guidance and expertise to address medical intervention issues, victim dose impacts and treatments, and other medically-related issues.

- **National Disaster Medical System Disaster Medical Assistance Teams (DMAT)**: teams of medical personnel who provide primary and acute care, triage of mass casualties, initial resuscitation, stabilization, advanced life support and preparation for transportation

- **Strategic National Stockpile (SNS)**: national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, IV administration, airway maintenance supplies, and medical/surgical items. The SNS is designed to supplement and re-supply state and local public health agencies in the event of national emergencies.

- **CDC Technical Advisory Response Unit:** team that ensures effective distribution of SNS.

- **Food and Drug Administration (FDA) Rapid Response Team:** team that collects samples of known and unknown hazardous products.

- **National Medical Response Team:** team trained to perform the functions of a DMAT, but possess additional capability to respond to a CBRNE event.

- **Federal Medical Station**: a deployable healthcare platform that can deliver large-scale primary healthcare services in the form of non-acute hospital bed surge capacity, special needs sheltering capacity, or quarantine support.

Veterans Affairs

- **Medical Emergency Radiological Response Team**: team that provides direct patient treatment and trains local health care providers in how to manage, handle, and treat radiation

exposed and contaminated casualties; assesses the impact on human health; and provides consultation and technical advice to local, state, and Federal authorities.

Department of Justice /Bureau of Alcohol, Tobacco, and Firearms (ATF)

- **ATF National Response Team:** team that assists Federal, State, and local investigators meet the challenges faced at the scenes of significant arson and explosives incidents.

ATF Explosive Canine Team: canine teams used to detect explosives, explosives residue, and post blast evidence.

TOPOFF 4 EXERCISE: October 2007

DHS maintains the National Exercise Program (NEP) as one of the mechanisms to evaluate the preparation of the U.S. government to execute the full range of capabilities and responsibilities. The NEP is a national, interagency-wide program that prioritizes, focuses, and coordinates national security and homeland security preparedness-related exercise activities. Results from these exercises provide information that informs the policy process and ultimately improves the government's preparedness posture. Exercises are the primary tool available for evaluating the capability to perform in a crisis or emergency. The principal focus of the NEP is a program of capabilities-based exercises designed for the participation of heads of Federal Departments and Agencies and other key officials to examine and evaluate emerging national-level policy issues. The NEP, using a system of tiered National Level Exercises and its 5-year schedule, allows the USG to exercise and evaluate the required preparedness capabilities required in preparing for all-hazards, natural disasters, and terrorist events.

TOPOFF (referring to "Top Officials") is a national, biennial Domestic Counterterrorism Exercise Series consisting of a two-year planning endeavor, involving experts at all levels of government and the private sector. TOPOFF 4 was conducted this October as a Full Scale Exercise in three locations: Arizona, Guam and Oregon. In accordance with the NEP, the TOPOFF 4 Full Scale Exercise was designated as a Tier I National Level Exercise for Fiscal Year 2008. This exercise centered on White House directed, government-wide strategy and policy-related issues. It was conducted with the participation of all appropriate Secretaries (or their Deputies), other senior officials, and all necessary operations centers. While the TOPOFF 4 scenario was focused on RDDs, this exercise reflected USG-wide priorities, not single department or agency programs.

Building on knowledge derived from earlier Federal-level exercises and recent real world events, TOPOFF 4 contained several new elements including: increased coordination with the Department of Defense, expanded emphasis on prevention – the opportunity to piece together an intelligence "puzzle" and stop an attack before it occurs, as well as the focus on mass decontamination and long-term recovery and remediation issues. The inclusion of Guam as one of the three venues also focused efforts on coordinating procedures and communications with a U.S. territory. TOPOFF 4 was the first exercise in the series to focus on one specific event - RDDs. The selection of this event in all three venues allowed the Federal Government, in

coordination with State, Territorial, County and City partners to evaluate capabilities required in a response to near simultaneous events of a similar type.

Conclusion

FEMA continues to engage in operational planning to improve the capabilities of our disaster response teams, work proactively and collaboratively with our Federal, State, local, tribal, and private sector partners, and always maintain focus on our core mission to protect the American people.

I thank you for the opportunity to be here today, and I am pleased to answer your questions.

Statement of Dr. Steven Aoki
Deputy Undersecretary of Energy for Counterterrorism

Before the

United States Senate
Committee on Homeland Security and Governmental Affairs
Subcommittee on Oversight of Government Management, the Federal Workforce and the District of Columbia
And the
Subcommittee on State, Local, and Private Sector Preparedness and Integration

"Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack"

November 15, 2007

Chairman Akaka, Chairman Pryor, Senator Voinovich, Senator Sununu, members of the Subcommittees, thank you for the opportunity to appear before you today to discuss the U.S. response to a terrorist attack involving a radiological dispersal device (RDD) and, in particular, the Department of Energy/National Nuclear Security Administration's (DOE/NNSA) capabilities to mitigate the effects of such an attack. DOE/NNSA is an important part of an interagency effort that would work in close collaboration with DHS, EPA, and other Federal, state, local, and tribal government agencies to protect the public and help the country recover if an attack ever takes place. Our particular strength is the scientific and technical expertise we draw from our national laboratory system, including the nuclear knowledge developed over 50 years of managing the nation's nuclear weapons program. Many of our best scientists, engineers, and technicians volunteer to staff the teams that form the core of our contribution to a coordinated interagency RDD or other emergency response.

Before describing those teams and their capabilities in greater detail, I would note that DOE/NNSA is continuing to make major efforts to *prevent* an RDD attack against the United States. Through our Global Threat Reduction Initiative (GTRI), we have secured radioactive materials at over 600 sites around the world. Within the U.S., GTRI is collaborating with the USDA and other federal agencies to enhance the security of sources used in industrial, blood and research irradiators and other medical devices. This security enhancement is achieved through training seminars conducted by DOE/NNSA specialists and the installation of security systems. Moreover, GTRI has recovered over 15,000 unneeded or abandoned radioactive sources and arranged for their safe and secure disposal. As part of the DOE/NNSA Second Line of Defense and MegaPorts Programs, DOE/NNSA installs radiation detection equipment at land border crossings, sea ports, and airports around the world, and supports DHS programs that scan people and cargo entering the U.S. to detect illicitly-transported radioactive materials. We also maintain a capability to search for such materials, should we receive an intelligence or law enforcement tip-off to their general location.

When the need arises, DOE/NNSA is prepared to respond immediately to any type of radiological accident or incident anywhere in the world with specialized equipment and trained people. Our emergency response teams work within the framework defined by the National Response Plan and generally support another Federal agency responsible for overall incident management or investigation of a terrorist attack. In the event of a radiological dispersal device detonation, the following five DOE/NNSA assets would provide consequence management support.

The mission of the Radiological Assistance Program (RAP) is to provide a flexible, around the clock response capability to Federal agencies, state, tribal, and local governments, and to private businesses or individuals for incidents involving radiological materials. RAP teams are capable of providing assistance in all types of radiological incidents with support capabilities ranging from giving technical information or advice over the telephone to sending highly trained people and state-of-the-art equipment to the accident site to help identify and minimize radiological hazards. In addition to providing radiological emergency assistance, RAP can provide emergency response training to state and local first responders, upon request. There are 28 regionally based RAP teams across the U.S., so a RAP team would typically be the first specialized team on the scene of a radiological emergency. RAP team members normally arrive at the scene within four to six hours after notification and conduct the initial radiological assessment of the area. They would assess the situation and advise decision-makers on what actions to take to minimize the hazards. RAP team members are trained in the hazards of radiation and radioactive materials to provide initial assistance to minimize immediate radiation risks to people, including assisting in decontamination efforts. RAP would remain on scene and provide continuing radiation monitoring support, of both people and the environment.

The Aerial Measuring System (AMS) mission is to provide rapid response to radiological emergencies with helicopters and fixed-wing aircraft equipped to detect and measure radioactive material deposited on the ground. AMS is based and operated out of Nellis Air Force Base in Las Vegas, with additional operating capability at Andrews Air Force Base near Washington, DC. AMS aircraft carry radiation detection systems which provide real-time measurements of extremely low levels of ground and airborne contamination. AMS can also provide detailed aerial photographs and multi-spectral imagery and analysis of an accident site. In the event of an accident or incident involving radiological materials, DOE/NNSA in consultation with state and/or other Federal partners will deploy AMS immediately to the accident site. The fixed-wing aircraft will normally arrive first. It is used to determine the path of the radioactive plume and the location of any ground contamination. AMS helicopters are slower and able to travel at lower altitudes, typically 150 feet, thus allowing more detailed surveys of any ground contamination.

The Interagency Modeling and Atmospheric Assessment Center (IMAAC) develops predictive plots generated by sophisticated computer models. IMAAC, based at Lawrence Livermore National Laboratory, provides near real-time modeling of hazardous

materials released into the atmosphere thereby helping emergency response officials determine the appropriate measures to protect people. IMAAC's computer-based system provides realistic plots, or maps, of potential radiation dose and exposure assessments, and estimates of the path of nuclear contaminants released into the atmosphere. IMAAC builds the initial plots based on current regional and site weather data and information from emergency officials near the scene, such as the exact time and location of the incident. This information is combined with computer codes simulating the release from the explosion with dispersion models which show the anticipated spread of the material. These dispersion models take into consideration the effects on plume distribution due to the local terrain or topography and complex meteorology. The IMAAC plots would continue to be refined over the next several hours and days as additional information becomes available, such as the type of radiological material and actual AMS and RAP ground measurements, would be included in the calculations.

The Federal Radiological Monitoring and Assessment Center's (FRMAC) mission is to coordinate and manage all Federal radiological monitoring and assessment activities during major radiological emergencies within the US in support of state, tribal and local governments. The DOE/NNSA Consequence Management response is in two phases. Phase I consists of technical and management personnel who would review the seriousness of the situation and identify the best location to locate the FRMAC. The Phase I team initiates all technical components of a FRMAC response and is soon reinforced by Phase II and our interagency partners. The full interagency FRMAC can be operational in 24-36 hours after the initial request from the state government or DHS. A FRMAC's size is tailored to the event and may consist of as few as 60 or as many as 500 people, depending on the needs of the situation. Initial environmental monitoring is focused on the protection of the public and the investigation of the type, amount, and extent of the radiological release. Monitoring continues until all of the area where radioactivity was released is fully evaluated. FRMAC activities include: coordinating federal radiological environmental monitoring and assessment activities; maintaining technical liaison with state, tribal and local governments; maintaining a common set of all radiological monitoring data; and providing monitoring data and interpretations. NNSA will transfer responsibility of managing the FRMAC to the Environmental Protection Agency (EPA) at a mutually agreeable time following the emergency phase. NNSA and other Federal agencies will continue to provide resources for as long as is necessary to complete the Federal response.

Lastly, the Radiation Emergency Assistance Center/Training Site (REAC/TS) located in Oak Ridge, Tennessee, is focused on providing rapid medical attention to people involved in radiation accidents. REAC/TS is on call 24 hours a day to provide direct or consultative help with medical and health physics problems due to local, national, or international incidents. REAC/TS provides direct support, including deployable equipment and personnel trained and experienced in the treatment of radiation exposure, to assist Federal, state, tribal and local organizations. The REAC/TS staff also provides training in the treatment of radiation exposure to national and foreign medical, nursing, paramedical, and health physics professionals. In 1980, REAC/TS was named a World Health Organization (WHO) Collaboration Center for Radiation Emergency Assistance.

As a WHO Collaborating Center, REAC/TS is prepared to: serve as a central point for advice and possible medical care in cases of radiation injuries; set up a network of available equipment and staff specializing in radiopathology; develop medical emergency plans in the event of a large-scale radiation accident; prepare radiation document and guidelines; and, provide consultation or direct medical assistance.

All of these DOE/NNSA assets are designed for rapid response. RAP is usually the first NNSA responder for assessing the emergency situation and deciding what further steps should be taken to minimize the hazards of a radiological emergency. AMS detects, measures and tracks radioactive material at an emergency to determine contamination levels. NARAC develops predictive plots generated by sophisticated computer models. FRMAC coordinates the Federal radiological monitoring and assessment activities with those of state and local agencies. REAC/TS provides treatment and medical consultation for injuries resulting from radiation exposure and contamination. Each of these assets handles certain aspects of the radiological emergency and together provides a comprehensive, integrated response.

Another area in which the DOE/NNSA provides specialized assistance is technical nuclear forensics and attribution. In the case of an RDD, technical nuclear forensics is the thorough forensic analysis and characterization of radiological samples taken from the device or the debris field. Following the detonation or interdiction of an RDD, the process of forensics and attribution would begin. After dispersal, upon request of the FBI, the NNSA would deploy a DOE/NNSA Forensics Operations (DFO) team capable of supporting technical nuclear forensics debris collection and providing subject matter expertise. Following collection, the FBI utilizes the DOE/NNSA national laboratory complex for laboratory analysis of samples.

The objective of nuclear attribution is to identify the nature and source of nuclear and radiological materials used, determine the origin and, and ultimately to identify those responsible for an attempted or actual attack. Nuclear attribution, a very lengthy process, utilizes many inputs, including results from nuclear forensic sample analyses, an understanding of radiochemical signatures, an understanding of environmental signatures, knowledge of the methods for production of radiological sources, intelligence sources and information from law enforcement.

The United States, Canada and Russia are the three main producers of commercial radioactive sources. There are many industries that use radioactive sources, including construction, food processing, medical diagnostics and treatment, and printing. Therefore, unlike Special Nuclear Materials which could have only a few origins and are typically kept under very tight security, radiological sources are very common and relatively easy to obtain, legally or illegally. The attribution process following an RDD using one or more commercial sources would primarily provide clues or leads to law enforcement to inform the forensics investigation rather than providing definitive answers.

Commercial sources are widely available and vary significantly in both the level and type (i.e., alpha, beta, gamma) of radiation that they emit and, therefore, vary in the potential radiological hazard that they pose to people and to the environment. Sources with low levels of radioactivity, such as the Americium sources used in smoke detectors, tend to be more widely available and less tightly controlled than sources with high levels of radioactivity, such as Cobalt sources used in nuclear medicine. Correspondingly, the threat posed by the low-level sources is much less than that posed by the high-level sources.

High-level commercial radioactive sources present technical difficulties for an individual interested in building an RDD. The same high level of radioactivity that makes them attractive material for use in an RDD also makes them dangerous to the terrorist who transports the material or fashions it into an RDD. The most intense radiation sources might kill or disable even a suicide bomber before he could complete his work.

It should be noted that the scale of the consequences resulting from the detonation of an RDD would be far less than a detonation involving fissionable nuclear materials (an Improvised Nuclear Device). Whereas a nuclear detonation would cause catastrophic casualties and environmental and property damage, detonation of an RDD would primarily cause panic and economic consequences. In general terms, individuals who survive the explosion are unlikely to suffer radiation sickness or die from radiation exposure in the immediate future. Depending on the radioisotope type and quantity, their proximity to the device and amount of internal radiation uptake, some individuals in the area may have a significantly increased risk of developing certain types of cancers while others will be at only a slightly increased risk. Furthermore, the economic consequences, depending on the incident site and extent of remediation required, could have devastating effects on the local economy, with impacts on a national scale.

Thank you for your attention; I would be happy to take questions.

STATEMENT OF THOMAS P. DUNNE
ASSOCIATE ADMINISTRATOR HOMELAND SECURITY
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON OVERSIGHT OF GOVERNMENT MANAGEMENT, THE FEDERAL WORKFORCE, AND THE DISTRICT OF COLUMBIA AND THE SUBCOMMITTEE ON STATE, LOCAL, AND PRIVATE SECTOR PREPAREDNESS AND INTEGRATION
COMMITTEE ON HOMELAND SECURITY AND GOVERNMENT AFFAIRS
UNITED STATES SENATE

NOVEMBER 15, 2007

Good morning. Mr. Chairman and Members of the committee, I am Thomas P. Dunne, Associate Administrator of Homeland Security at the U.S. Environmental Protection Agency (EPA). Thank you for inviting me here today to discuss EPA's efforts to prepare for a response to an attack with a radiological dispersion device (RDD).

Since the September 11, 2001 attacks on the World Trade Center, EPA has made a significant effort to improve its emergency response and homeland security functions, including the creation of my office of Homeland Security. Additionally, EPA reorganized emergency response coordination under a single office -- the Office of Emergency Management, which focuses on emergency planning, preparedness and response.

We increased the specialized, dedicated emergency response staff to improve preparedness and response capabilities. The Agency hired 50 additional On-Scene Coordinators specifically trained to deal with incidents of national significance and issues relating to Weapons of Mass Destruction. EPA expanded and extended the capabilities of our existing Environmental Response Team (ERT) responsible for technological support and training through the

establishment of an additional ERT office in Las Vegas, NV. We established a National Decontamination Team dedicated to providing decontamination expertise related to biological, chemical, and radiological agents used as Weapons of Mass Destruction (WMD).

In addition to strengthening our organizational structure, EPA strengthened its policy as well. EPA's National Approach to Response (NAR) was established in June 2003 to complement the government-wide National Response Plan and National Incident Management System (NIMS). This policy ensures efficient use of emergency response assets within the Agency, creates the necessary consistency across the regions, and highlights priorities for further policy development and coordination.

We recognize that more needs to be done. Preparedness and response challenges remain. Much of the expertise and many of the assets within the Agency regarding nuclear and radiological decontamination were developed for a different purpose— the decontamination of legacy sites and small, accidental releases or spills. We have been refocusing our efforts to meet the present-day challenge of a potential large scale terrorist attack in an urban setting.

The following sections of my testimony address EPA's role and capabilities to respond to an RDD attack as part of a coordinated federal response in support of state and local agencies under the NRP. I will also discuss EPA's efforts to effectively adapt our techniques and technologies, which were developed for traditional cleanups, to meet the challenge presented by an RDD terrorist attack in populated settings. We recognize that the American people expect a speedy response to such incidents, and I will address both the actions EPA has taken to help

improve our ability to meet their expectations, as well as the gaps in the Federal government's current capabilities to respond in the aftermath of a dirty bomb.

NATIONAL REPONSE PLAN: EPA'S RADIOLOGICAL EMERGENCY RESPONSE RESPONSIBILITY

As with other federal agencies, EPA's response pursuant to a disaster declared by the President is facilitated through the NRP. EPA's responsibilities begin even before a terrorist attack, as we work with our Federal, state, and local responders to ensure readiness. If a RDD (also known as dirty bomb) attack were to occur, EPA would respond immediately, working in support of the State and local responders to assess the impacts and take action to protect the public. These efforts are coordinated under the NRP, through EPA's role as the Coordinator and Primary Agency for Oil and Hazardous Materials Response, under Emergency Support Function (ESF) #10. Our primary activities under ESF #10 include: efforts to detect, identify, contain, clean-up or dispose of oil or hazardous materials (including radiological materials); removal of drums and other bulk containers; collection of household hazardous waste; monitoring of debris disposal; air and water quality monitoring and sampling; and protection of natural resources. EPA is also a support agency for a number of other Emergency Support Functions and we work with other Federal agencies under the Nuclear/Radiological Incident Annex to the NRP.

As I stated earlier, EPA's response under the NRP begins from the moment a terrorist attack occurs. Under the Homeland Security Act of 2002, the Secretary of the Department of Homeland Security (DHS) may choose to undertake operational control of Department of Energy (DOE) and EPA assets that respond to incidents such as dirty bombs. DHS would coordinate the

overall Federal response, while DOE would be the technical Coordinating Agency during the early phase of the dirty bomb response. EPA, as well as other agencies, such as the Department of Defense's Army Corps of Engineers, the Department of Health and Human Services, and the U.S. Department of Agriculture, would bring their technical expertise and assets to bear in support of the response.

During the early phases of the response, EPA's primary roles under the NRP's Nuclear/Radiological Incident Annex would include assisting DHS and DOE in characterizing the environmental impacts of the attack and providing recommendations to state and local decision-makers about the actions that may be needed to protect the public. EPA's role is focused on protecting the public; as such, most of our assets are designed to detect and characterize radiation towards the perimeter of a contaminated area, where the public will need health and safety guidance. Other Federal departments and agencies have responsibilities for attributing the incident to the attackers and assessing the strength of the initial device. EPA has two roles during the long-term recovery phase of incidents involving dirty bombs or Improvised Nuclear Devices (INDs): the Agency will take over leadership of the radiological environmental characterization and it will assume responsibility for managing the federal technical radiological clean-up activities. Since the Federal Radiological Monitoring and Assessment Center (FRMAC) conducts only radiation monitoring, it will be just one part of the concerted effort led by EPA during the recovery phase.

Under NRP's Nuclear/Radiological Incident Annex, DOE coordinates federal radiological monitoring and assessment activities for the initial phases of a response to a

radiological incident. Coordination occurs through FRMAC, a DOE led interagency organization. The FRMAC has representatives from various federal, state, and local radiological response organizations, including EPA. The FRMAC provides an operational framework for coordinating all federal radiological monitoring and assessment activities during a response to support DOE, state(s), local, and/or tribal governments. The FRMAC works with the Interagency Modeling and Atmospheric Assessment Center, or IMAAC, to produce predictive plots of plume dispersion and dose rates and collects radiological monitoring data. It develops radiation contours showing where contamination is located and the associated radiation levels, which are used to recommend appropriate protective actions. In the event of a Presidentially-declared major disaster or emergency, the FRMAC also provides its information to the Federal Emergency Management Agency's (FEMA's) Federal Coordinating Officer to assure appropriate and adequate additional resources are available to the state and local authorities.

FRMAC leadership responsibility is transferred to EPA, per the Nuclear/Radiological Incident Annex to the NRP, at a mutually agreeable time, and after consultation with DHS and its coordination entities, as well as state, local, and tribal governments. When the FRMAC is transferred to EPA, EPA assumes responsibility for coordination of radiological monitoring and assessment activities. The FRMAC will provide long-term environmental monitoring, as well as verification of site clean-up procedures and may continue perimeter monitoring of the affected site. The FRMAC may also provide personnel and work site monitoring to assure that health and safety standards are met during clean-up activities.

Because our earlier EPA guidance primarily addressed nuclear power plant accidents, DHS, EPA, and the interagency community, developed the 2006 Guides to ensure all phases of the response and long-term recovery from RDDs and INDs are addressed. Specifically, EPA worked with the DHS and other federal partners to develop a framework for helping decision-makers and stakeholders jointly determine site-specific clean up goals for the long-term recovery phase. DHS published interim guidance on the application of Protective Action Guides (PAGs) for RDD and IND incidents in January 2006 which is available for use by federal agencies, state and local governments, emergency responders, and the general public. This guidance incorporates earlier guidance issued by EPA (1992), which covers the early or emergency phase i.e.., first four days, and intermediate phase, i.e., source is controlled and field data become available.

The interim guidance proposes a site-specific optimization process in which potential actions to reduce radiation dose are evaluated within the context of a broad range of societal goals. The interagency working group that developed this guidance determined that the nature and range of potential impacts that may occur from RDDs and INDs was extremely broad, and that a site-specific process that incorporates local needs, health risks, costs, technical feasibility, and other factors is critical for establishing clean-up levels.

Site-specific clean-up planning is a flexible process. As soon as practicable after an incident, site-specific decision makers should begin the selection of key stakeholders and subject matter experts, planning, analyses, contractual processes, and clean-up activities. The process is designed to ensure that the basis for clean-up decisions is transparent. The process should make

information readily available to stakeholders and the public, and would include representative stakeholders in decision-making activities, assess various technologies in order to identify the most effective solution, and ensure shared accountability for the final decision to proceed which will be made jointly by federal, state and local officials.

EPA CAPABILITIES: PERSONNEL, EQUIPMENT AND LAB CAPACITY

EPA provides resources for defining and delineating the environmental impact of the radiological incident throughout the entire response effort, whether under DOE or EPA leadership. With our Federal, state and local partners, EPA would apply existing policies, procedures, human resources, equipment, intelligence and a readiness status to carry out our mission and NRP responsibilities.

EPA maintains personnel and other assets ready to respond to radiological emergency response situations and provides technical expertise and support when needed. We have approximately 350 emergency response personnel including 250 On-Scene Coordinators and Special Teams under the National Oil and Hazardous Substances National Contingency Plan, such as the National Decontamination Team (NDT), the Radiological Emergency Response Team (RERT), the Environmental Response Team (ERT), and the National Counterterrorism Evidence Response Team (NCERT). We are also building a Response Support Corps to expand our response capacity. EPA currently has 3,773 field ready contractors ready to respond to an emergency event or INS. According to an EPA survey recently conducted with the contracting

community, EPA contractors could provide an additional 4,549 field ready emergency response contractors if needed, bringing that total up to approximately 8,300.

Each of these resources brings specialized personnel, equipment, and expertise in protecting human health and the environment, including everyday emergency response experience. For example, the RERT can deploy scientists and engineers, health physicists, laboratory staff, and other emergency response specialists to the field or to support roles during a radiological emergency. The NDT can provide technical expertise to Federal, state and local authorities in order to identify technologies and methods for decontamination of outside areas, buildings, building contents, public infrastructure (including waste/drinking water plants, chemical plants, power plants, food processing facilities and subways), agriculture, and associated environmental media (e.g., air, soil and water). Throughout the year as part of its emergency planning and preparation activities, the NDT provides decontamination training to EPA responders and is developing a Decontamination Portfolio which will include comprehensive analytical, sampling, and decontamination methods, as well as health and safety information for chemical, biological and radiochemical agents.

The Agency's radiation health and safety and detection equipment assets include personnel dosimeters to measure dose to protect response personnel, and emergency response/assessment equipment to detect alpha, beta, or gamma radiation. EPA has developed guidance for Agency personnel on radiation turnback levels which help incident responders know how far they can go into a radiation area. Turnback levels provide exposure rates and dose limits which, when met, require responders to turn back and seek further guidance. The levels

we developed are specific to EPA's mission and capabilities, but can be adapted to meet the needs of other organizations.

Equipment also includes mobile laboratories, a scanner van, and field based equipment that can identify specific gamma sources. In addition to personnel and equipment, EPA's NRP responsibilities include maintaining and enhancing RadNet, the nation's most comprehensive ambient radiation monitoring network. RadNet currently consists of 50 stationary and 40 portable near-real time air monitors, 40 additional non-real time air monitors, milk collection at 37 locations, drinking water collection at 77 locations and precipitation collection at 44 locations. The stationary near real-time monitors collect a beta and gamma spectrum of the particulates on an air filter hourly, and transmit data to the National Air and Radiation Environmental Laboratory (NAREL), where a determination of contaminants can be quickly made. The portable monitors collect ambient gamma radiation readings through the use of air filters which can be sent to a laboratory for radionuclide specific analyses.

In the area of environmental laboratory capabilities and capacity, EPA has begun a demonstration study aimed at improving national radiological laboratory capacity through enhancing state laboratories and is developing tools, such as rapid radiochemistry methods, lab incident response analysis guidance documents for environmental media (water, air filters, and swipes and related solids), and radiochemistry training for laboratory personnel, to enhance capacity of commercial laboratories throughout the United States. To help determine the national environmental radiological laboratory capacity needs associated with an incident of national significance involving radiochemical or nuclear agents, EPA conducted an assessment

of the environmental sample demand for the National Homeland Security Planning Scenario #11 which involves the detonation of RDDs in three major urban business districts.

EPA's analysis of the Nation's existing radiological laboratory capacity revealed a significant capacity gap. This capacity gap will result in a lack of timely, reliable, and interpretable data and will delay national and local response and consequence management activities. In addition to the capacity gap, EPA's national environmental radiological gap assessment also revealed capability and competency gaps, specifically a lack of "tools" specifically designed for response to radiological or nuclear incidents, and an overall national declining infrastructure for radiological laboratories. Although these gaps may affect remediation and clean up activities, they will not hinder protective action decision-making such as evacuation and sheltering-in-place.

Recognizing the real need to increase national lab capacity in response to large scale emergency events, EPA is establishing an all media, e.g., soil, air, and water, environmental Laboratory Response Network (eLRN) to address environmental laboratory analytical gaps for chemical warfare, biological and radiological agents. The eLRN will leverage existing laboratory networks and capabilities, and upgrade and expand additional capabilities to ensure that EPA has sufficient capacity and capability to meet its responsibilities for an incident of national significance, such as a terrorist attack involving radiological or nuclear materials.

EPA'S CURRENT RADIOLOGICAL CLEAN-UP TECHNOLOGIES

A successful long-term decontamination effort following a large scale RDD incident, such as the TOPOFF 4 exercise, is achieved through a coordinated process that accounts for environmental risks to the public; health and safety; public information; social, economic, political issues; and infrastructure impacts. EPA, with our Federal, state and local partners would draw upon a cache of specialized tools, equipment, and technologies that exists to conduct radiological decontamination. During the decontamination effort, the choices will be considered by EPA in coordination with our Federal, state and local partners. Factors that would affect the selection of a particular technology include the actual radionuclides used in the RDD, the media and surface characteristics, waste streams and waste management issues, operating characteristics, performance, capital and operating costs, and commercial availability.

The radiological decontamination methods EPA could employ today in response to an RDD event are generally classified as natural, physical or chemical removal processes. Decisions on the methods employed would be determined by the coordinated response effort in consultation with the local authorities and would take into account the specific factors of the event and the impacted area.

A natural removal process would entail storing the contaminated materials in a safe storage facility until the radiation contamination decays and is stable and no longer hazardous. This option is being used by the United Kingdom following the Polonium-210 incident to save

precious materials or items of historical significance that cannot be physically or chemically decontaminated without potential damage to the items.

Physical decontamination employs a range of simple, such as dry vacuuming; high pressure water cleaning; steam vacuum cleaning; to more complex technologies such as blasting. As always, the type of technology used would be determined by the specific needs of the situation, such as amount of contamination, types of surfaces, and cost.

Chemical decontamination technologies manipulate the chemical properties of the contaminants. Some of these methods include using organic acids, strong mineral acids, chemical foams and gels.

RESEARCH TO IMPROVE EPA'S RDD CAPABILITIES

EPA's National Homeland Security Research Center is currently focusing its RDD decontamination and disposal research on materials commonly found in urban areas, such as concrete, asphalt and glass, which are contaminated with cesium chloride. EPA chose cesium chloride for this research because it represents one of the highest threats and is the most difficult radioisotope to decontaminate due to its physical and chemical properties. Because the physical and chemical interactions of cesium chloride with building materials varies strongly with weather conditions, EPA is studying this interaction closely and its implications on choosing a decontamination approach. EPA is also determining the performance of several commercially-available decontamination technologies to aid remediation decision-making, while adding

radiological information to the Agency's disposal information tool, a software tool that rapidly feeds information to risk managers on transportation, packaging, and disposal facilities capable of accepting the waste.

The Agency is also aware of emerging decontamination technologies such as bio-decontamination that uses bacteria, microwave energy, and laser lights to selectively remove contamination.

ROLE IN TOPOFF IV

EPA participation in the DHS-led TOPOFF IV was extensive. EPA's focus remains on the Long Term Recovery table top exercise, which will occur in December 2007. During this exercise, we expect to discuss the role of EPA in support of the recovery phase of the attack. In the response phase, EPA deployed more than 250 participants to the three exercise venues—Portland, Oregon; Mesa, Arizona; and Guam. Participants included EPA's On-Scene Coordinators, members of our four special teams (the RERT, ERT, NDT, and NCERT), as well as personnel from headquarters and EPA's regional offices. We also deployed monitoring and analytical equipment such as our mobile radiation laboratory. Additionally, the EPA Emergency Operations Center was staffed and EPA participated in various interagency coordination and support entities, such as the Domestic Emergency Support Team (DEST), the Incident Management Planning Team (IMPT), and the National Response Coordination Center (NRCC). EPA personnel filled critical positions within FRMAC, working in support of DOE, DHS, and

the affected State and local governments to assess potential contamination. EPA staff also served as controllers and evaluators at the various exercise venues.

Once the table top exercise has been completed and assessed, DHS will publish a final report that will provide a summary of conclusions and lessons learned. We will be happy to provide you with additional information in the future once we've had the opportunity to review the feedback from the exercise.

CONCLUSION

Under the NRP, EPA has responsibility to lead the cleanup and recovery phase of a radiological incident for which no other department or agency has responsibility, including terrorist incidents such as a dirty bomb. EPA and others have gained important experience and capabilities in cleaning up the legacy sites that remained from the U.S. effort to develop and maintain nuclear weapons. However, the challenge today is to transform that capability in the face of a new threat: radiological terrorism against urban areas.

To minimize the impacts of a radiological terrorist attack, we must be prepared to quickly respond and cleanup affected areas. If there were multiple, large scale attacks, the system we currently have in place would be strained. Today's technology and trained personnel are simply not sufficient to meet the needs of such a response. In the case of an RDD event, this is magnified by the dose limits we enforce in order to protect our responders from radiation. In addition, while field detection capabilities can quickly be used to take action to evacuate or

relocate the public following an incident, more extensive and time-consuming fixed-lab analyses will be needed to allow EPA and others to assess whether the public can return to their homes. Therefore it is likely that the public expectations for quick reoccupation of the impacted areas would not be met.

EPA will continue to increase its preparedness for radiological incidents that threaten homeland security through training, equipment purchases, increased laboratory capacity and expedited response procedures.

Testimony
Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia and
Subcommittee on State, Local, and Private Sector Preparedness and Integration
Committee on Homeland Security and Governmental Affairs
United States Senate

Preparing the Nation for Radiation and Nuclear Terrorist Events

Statement of
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Good morning Chairmen Akaka and Pryor, and Ranking members Voinovich and Sununu. I am Kevin Yeskey, MD, Deputy Assistant Secretary and Director of the Office of Preparedness and Emergency Operations in the Office of the Assistant Secretary for Preparedness and Response, Department of Health and Human Services (HHS). Thank you for the opportunity to discuss the domestic preparations HHS has made for radiation and nuclear terrorist incidents. The Office of the Assistant Secretary for Preparedness and Response (ASPR) was created by the Pandemic and All-Hazards Preparedness Act (PAHPA) of 2006. Our office is less than one year old, but in conjunction with the Operating and Staff Divisions of HHS, we have made considerable progress in preparing the Nation for public health emergencies, including a radiation or nuclear incident. ASPR has adopted an "all-hazards" approach to our preparedness and response activities. We have collaborated and coordinated closely with our federal interagency partners and have provided States and municipalities with funding to enhance their public health and medical preparedness.

My comments today will cover an overview of our all-hazards preparedness; the preparations specific to radiation and nuclear events; and the lessons learned by HHS through its participation in the Top Officials 4 exercise which involved several simulated attacks involving radiological dispersal devices.

HHS Preparedness

The Pandemic and All Hazards Preparedness Act created the ASPR and focused the leadership for all federal public health and medical preparedness and response functions in that office. As directed in the statute, the National Disaster Medical System

and National Bioterrorism Hospital Preparedness Program were transferred to ASPR. NDMS has over 6000 medical and public health responders to provide early support of an overwhelmed or damaged medical system. It also has over 1500 participating hospitals that offer definitive care services to those affected by a disaster. Over the past five years, the hospital preparedness program has provided over $2.0 billion in funding for development of surge capacity at the State and local level. ASPR also coordinates closely with the Medical Reserve Corps which includes over 700 local teams and over 160,000 citizen volunteers who support community resilience at the local level and who can be asked to help support the Federal response to large scale events.

HHS has implemented an incident command system that is complementary to and consistent with the National Response Plan and the National Incident Management System. We have trained and equipped response personnel who include not only the NDMS teams, but also Public Health Service Commissioned Corps Officers. ASPR has written and exercised playbooks based on the 15 National exercise scenarios. The process of developing these playbooks provides opportunities for input from our Emergency Support Function (ESF) #8 federal partners. The operational command of personnel deployed under our auspices is fully consistent with and supportive of the Department of Homeland Security's role as overall incident manager, including liaisons in the National Operations Center, National Response Coordination Center, and the Joint Field Office. HHS recognizes and supports the overall lead of DHS in coordinating the federal response and we take seriously our role as the lead federal agency for

Public Health and Medical Services through Emergency Support Function #8, of the National Response Plan.

In the area of medical countermeasure development and acquisitions, ASPR has stood up the Biomedical Advanced Research and Development Authority (BARDA) and established the Enterprise Governance Board (EGB), which oversees the strategic and operational aspects of medical countermeasures from development to delivery platforms. The EGB oversees development and acquisition of medical countermeasures based on known vulnerabilities and threats. Membership on the EGB consists of senior HHS officials, including the ASPR, Food and Drug Administration (FDA) Commissioner, National Institutes of Health (NIH) Director, and the Centers for Disease Control and Prevention (CDC) Director with advisory status for other federal partners.

ASPR has worked diligently to partner with State, Tribal, Territorial, and local officials to enhance their level of preparedness and to ensure they can see how HHS will respond to disasters. We have accomplished this in several ways. For example, our Regional Emergency Coordination (REC) program has been enhanced. In the past year, we have increased the number of RECs from 10 to over 30. The REC's role is to work with the States and local jurisdictions to coordinate and enhance preparedness within the region. The ASPR has been to each of the 10 HHS regions to participate in local exercises and meet with State and local health leadership to discuss the level of preparedness and how HHS can support them. Additionally, HHS playbooks, starting with the hurricane playbook, will be placed on the HHS web site to facilitate their

examination and use by State, Tribal, Territorial, and local officials. We will make additional playbooks, including the Radiological Dispersal Device playbook, available as they become ready for release.

HHS Preparations for a Radiation/Nuclear Incident

Planning

I would now like to address the preparations HHS is making for the public health and medical consequences resulting from a radiation dispersal device (RDD). HHS has worked with its operating and staff divisions as well as its federal partners to develop our plans, based on the national planning scenarios. As noted above, we have developed a comprehensive framework to respond to any type of radiological event. There is one playbook focused on RDDs. This playbook was successfully used during the recent TopOff 4 exercise. We will take the lessons observed from this exercise and through a corrective action process, revise the playbook. There is also another separate playbook for Improvised Nuclear Devices. Improvised nuclear devices pose challenges of a different order of magnitude than RDDs. The framework includes a response system that considers radiation exposure to the victims and the time limitation that responders may stay within the locations to avoid exceedance of the Environmental Protection Agency (EPA) Protective Action Guidelines. The response framework includes the potential locations for medical triage, transportation, on-site treatment and collection points for displaced people. We are in the process of mapping medical resources and infrastructure around the country so that we can produce Geographic Information Systems (GIS) maps highlighting such resources on a moment's notice (we are calling this the MEDMAP project).

Few medical providers have experience treating patients with radiation injury. To remedy these gaps in most practitioners' knowledge base, ASPR, in collaboration with the National Library of Medicine, has developed a web-based site for physicians and nurses with just-in-time information on the medical management of radiation injuries. The site, called Radiation Event Medical Management or REMM is now live and can be accessed at www.remm.nlm.gov. The site has been widely acclaimed as an effective way to provide clinical information for education and training as well as concise medical management algorithms for use in any radiation event. In the event of an incident, clinicians at all levels could refer to this web site or to a downloadable file on their own computer for the most current treatment protocols for patients exposed to radiation or contaminated with radioactive materials.

We are also defining the requirements for medical countermeasures for radiation incidents. Two Public Health Emergency Medical Countermeasure Enterprise (PHEMCE) working groups have estimated the medical requirements that would emerge after a radiological or nuclear incident. The Radiological/Nuclear Medical Countermeasures Working Group has provided estimates of the number and type of radiation injuries that would be expected after the detonation of an improvised nuclear device, while the Blood and Tissue Working Group has estimated the requirements for blood products and skin grafts in the immediate aftermath of such an event. Requirements have also been established for two medical countermeasures used in treatment of internal contamination with radionuclides (exposure of greatest concern after an RDD). Once a countermeasure is procured for inclusion in the Strategic National Stockpile, working groups are established to look at deployment and utilization

issues, working in close coordination with the Division of Strategic National Stockpile (DSNS).

BARDA and the National Institute of Allergy and Infectious Diseases (NIAID) at NIH, and the CDC collaboratively support research and development of new and improved medical countermeasures and diagnostics for radiation victims. The development, licensure, and procurement of such countermeasures contribute to our strategy to mitigate the medical and public health consequences of a radiological or nuclear event. Some of these countermeasures may have the potential to enhance supportive care for cancer patients receiving radiation therapy, potentially improving the long-term outcomes and quality of life for millions of cancer survivors, so we believe our investments in this area will likely have value even if radiological and nuclear attacks never occur.

Response Operations

HHS maintains an operations center 24/7/365. The Secretary's Operations Center (SOC) is directly connected to the DHS National Operations Center and the FEMA National Response Operations Center. It serves as the focal point for situational awareness, information management and response coordination for HHS. HHS has established relationships with subject matter experts from within HHS Operating and Staff Divisions such as NIH, CDC, FDA, and ASPR.

The response steps are preplanned and prescripted in the preparation of the playbooks I mentioned earlier. The treatment of radiation casualties is greatly facilitated by knowledge of radiation dose and individual has received. After an RDD, HHS will depend on the Federal Radiological Monitoring and Assessment Center (FRMAC) of the Department of Energy (DOE) and the Interagency Modeling and Atmospheric Assessment Center (IMAAC) to provide both models and on-site information regarding the radionuclide involved and the distribution pattern of radiation. This information, in conjunction with radiation biodosimetry information gathered from individual patients will guide medical treatment decisions for individuals in the early hours and days after an event.

HHS also has representatives on the Advisory Team for Environment, Food, and Health (sometimes referred to as the A-Team), a collection of experts from a variety of federal agencies that advise state, local, and territorial governments on ways to protect people and the environment following a radiological incident.

For all disasters, systems are needed to rapidly expand or surge capabilities to meet the needs of the event. The DSNS can deploy medical countermeasures rapidly after notification to deploy. In addition to medical countermeasures that can be tailored to meet the event's specific needs, the DSNS inventory contains supplies and materiel required in the medical management of burns, trauma, injuries that will likely be seen in conjunction with radiation exposure. As for personnel, NDMS response teams can deploy to provide acute care to the victims. NDMS hospitals can provide surge beds for victims who require in-patient clinical care. The NDMS counts beds bi-monthly and the last count identified approximately 34,000 hospital beds immediately available for

patient care. HHS also works with the American Burn Association to assess burn bed availability and we have developed a burn nurse program which trains nurses in the care for burn patients. To facilitate the delivery of expert care to radiation casualties, we are also participating in the Radiation Injury Treatment Network (RITN) in collaboration with the National Marrow Donor Program and the National Cancer Institute Cancer Centers. This voluntary network includes centers that have concentrations of experts in oncology and hematology who are used to caring for patients with bone marrow suppression and other types of injury that may be expected after a radiological or nuclear incident. RITN is in its early stages of development but actively participated in TopOff 4.

TOPOFF 4, Lessons learned

HHS was fully engaged in TopOff 4, from the Secretary to HHS response staff. The SOC was staffed around the clock and we had liaisons in partner operations centers at the state, regional, and federal levels. HHS deployed response teams to Portland, the site of the largest simulated activities. HHS took the opportunity to exercise a number of functions that included: exercising the ESF#8 RDD playbook; Secretarial declaration of a public health emergency; issuance of an emergency use authorization for Prussian Blue in children under the age of 2 years; and deployment of our Incident Response Coordination Team. Many successes were observed from our participation in TopOff 4. The RDD playbook provided a comprehensive guide for managing HHS operations. HHS felt well integrated into the overall federal response and had very good communications at the local, State, and Federal levels. HHS communications staff

worked with the interagency partners on getting public messages out proactively and rapidly. HHS staff participated in the regular National Incident Communications Conference Line, which facilitates the coordination of public communications across the federal interagency. HHS also produced several public service announcements that aired on the Virtual News Network.

Despite the successes, we also identified areas for improvement. Efforts are already underway to take the lessons learned in TopOff 4 and incorporate them into the RDD playbook. For example, in the area of surge capacity, HHS needs to continue to work with federal and State partners on patient movement away from the incident site. While protocols exist and we have made improvements, there is still a need to refine the protocols and standard operating procedures that guide patient movement.

Laboratory capacity to determine whether members of the public may have received internal contamination is limited. As a result, the demand for Prussian Blue was far greater than the projected need. Many people might be treated needlessly if rapid diagnosis of internal contamination is not possible. Estimating the dose of radiation that patients have received ("radiation biodosimetry") is also critical but limited. The current gold standard for radiation biodosimetry requires cytogenetic analysis of blood samples from victims.

To address this acknowledged gap in our lab capacity, subject matter experts within HHS have discussed with their interagency partners the concept of a Radiation Laboratory Network (Rad-LN) that is comparable in many ways to the Laboratory

Response Network developed by CDC for the diagnosis of biological threats. The Rad-LN would provide four major improvements in our medical response capability:

1. Radionuclide bioassay capability for all radionuclides of concern,
2. Enhanced cytogenetic biodosimetry assay throughput,
3. Hematology surge capacity, and
4. A testbed for assessment and interlaboratory comparison of novel high-throughput approaches to measuring molecular markers of radiation exposure.

NIAID is supporting research and development of high throughput approaches to biodosimetry and identification of biomarkers of radiation exposure through its Centers for Medical Countermeasures against Radiation (CMCR). The preliminary data and proof-of-concept studies for these approaches and biomarkers are very exciting but few if any of these techniques will be ready for field use in the next 3-5 years.

Other approaches to improving our national capabilities include partnering with allied nations. At the recent Global Health Security Action Group ministerial meeting, there was some consideration paid to the possibility of establishing international laboratory networks among the member nations. Links with Canada would be particularly useful given the geographic proximity. Informal discussions among the scientists and subject matter experts have been ongoing for a few years but no formal arrangements have been made. We continue to explore possibilities that serve the national interest.

HHS has made progress in developing the plans and surge capacity to deal with the public health and medical consequences resulting from the use of a radiological or nuclear device. We have used exercises like TopOff 4 to identify gaps and

vulnerabilities that need to be addressed. We continue to work closely with our local, State and Federal partners on improving our responses. While our progress is considerable, there is still much more to accomplish.

This concludes my testimony and I will be glad to answer any questions.

KENNETH D. MURPHY
DIRECTOR OF OREGON EMERGENCY MANAGEMENT

TESTIMONY
BEFORE THE

SENATE SUBCOMMITTEES ON STATE, LOCAL, AND PRIVATE SECTOR PREPAREDNESS AND INTEGRATION
AND
OVERSIGHT OF GOVERNMENT MANAGEMENT, THE FEDERAL WORKFORCE, AND THE DISTRICT OF COLUMBIA

ON

"NOT A MATTER OF 'IF', BUT WHEN': THE STATUS OF U.S. RESPONSE FOLLOWING AN RDD ATTACK."

THE UNITED STATES SENATE

NOVEMBER 15, 2007

Introduction

Thank you Chairmen Pryor and Akaka, Ranking Member Sununu and Voinovich, and distinguished members of the Committee for allowing me the opportunity to provide you with a statement for the record on Oregon's Top Officials (TOPOFF) 4 Exercise. I am Ken Murphy, the Director of Oregon Emergency Management. In my statement, I am representing the State of Oregon. Oregon Emergency Management is a division of the Oregon Military Department. I was named to my current position in 2003, after serving with the agency since July 1999. Previous experience includes over nineteen years of service with U.S. Army as an active duty Guard/Reserve Officer.

I very much appreciate the opportunity to testify before your Committees today concerning the lessons learned with a radiological dispersion devise in the TOPOFF 4 exercise. The exercise is Congressionally mandated and the State of Oregon and the City of Portland applied for and were accepted to play in the exercise. The unique characteristics of the greater metropolitan Portland area, which is also a defined Urban Area by the U.S. Department of Homeland Security, was a factor in our participation. This defined urban area is comprised of four Oregon Counties and one State of Washington County.

One of the great benefits of participating in this exercise was the almost two years of planning by all levels of government and the private sector. When we started this effort, we built the traditional incident command systems as the basis for developing the exercise. I believe that some of the most valuable training and learning for the first responders and the private sector were realized during the planning phase of TOPOFF. Just the simple interactions during the planning process open new doors, new and better understandings of organizations and systems.

There are four key areas that I want to highlight concerning preparing first responders for addressing radiological dispersion devises;

1. Learn and work with your mutual aid partners as much as you can;
2. Learn and practice with your state and federal partners;
3. Good coordination with policy makers is essential; and
4. Cooperation with the private sector is critical to success.

WORK WITH YOUR MUTUAL AID PARTNERS

The radiological dispersion device (RDD) was somewhat new to portions of the first responder community. In preparation for this exercise it was very important to understand what an RDD was, it's characteristics and its intended purpose. It became very important to learn as a group of first responders to include those jurisdictions that would or could provide mutual aid. This allowed for a common understanding of procedures, equipment, and actions to take during this type event.

WORK WITH YOUR STATE AND FEDERAL PARTNERS

Working with stat and federal partners is where I believe that some very good relationships and learning experiences took place. The practice with state and federal partners provided local responders with another set of tools that helped them determine how far they could or should go in dealing with an RDD event. This also taught the state and federal entities what the local first responder's were capable of and how state and federal partners could be more effective during the initial stages of the RDD event.

The local first responders and the State of Oregon's National Guard Civil Support Team (CST) worked very well together in the initial stages of the event. The CST was able to provide more technical assistance and long term support to the incident commander. Additionally, as the exercise continued and Federal assets arrived from Department of Energy and Environmental Protection Agency, this provided the first responders with more tools and allowed them to deal with other residual events from the RDD, such as the plume moving requiring first responders to block off more streets or specific areas of the city.

COORDINATION WITH POLICY MAKERS

The planning and the exercise truly brought out the emphasis to ensure that from the scene information must flow quickly and accurately in which to support policy makers. The information must be accurate and disseminated from the incident command post (ICP) to the policy makers to support their decision making and communications strategies.

During the exercise, it was very important for information to flow to policy makers, but also to flow to other more technical experts allowing them to provide the science and technical advice to policy makers. During such an event as a RDD the area which is affected changes based upon weather patterns. This requires a coordinated effort among groups when your disaster can and is moving.

WORKING WITH THE PRIVATE SECTOR

Working with the private sector during the planning of the exercise and the actual exercise was a rewarding experience for all entities during TOPOFF 4. We had approximately 70 private sector partners participate during the planning process and the exercise. We had utilities, banking, transportation, commercial retail and manufacturing just to name a few that participated. There is no question or doubt that the private sector must be part of every phase of a city, county, and state's planning effort for any event to include the RDD scenario. The private sector, as you know, brings an unlimited amount of knowledge and resources to an event.

I have four areas that I want to highlight in working with the private sector:

1. The private sector must be part of the entire process;
2. The private sector must be part of the government communications;
3. The private sector must be part of government emergency operations centers; and
4. The private sector must be part of the decision making process for recovery.

Private Sector Must be Part of the Entire Process
The private sector has very qualified and trained personnel to deal with emergencies. In the government sector we must take advantage of this expertise and integrate these professionals into each level of government as we plan, train, and exercise. It is of course a two way street, we as government must respect the private sector needs, but take full advantage of the planning and resources that the private sector can provide.

For TOPOFF 4, the private sector was involved in the planning, which made a difference in how we responded and how we started to deal with short-term and long-term recovery. As an example, when a first responder had to deal with a portion of the city that was in the RDD plume the responder did not have to deal with that entity as they might with a neighborhood. The private sector was better prepared and put in place their Business Continuity Plan, thus allowing the first responder to attend to the needs of others.

Private Sector Must be Part of the Government Communications
We must ensure that the private sector is integrated into the government's system for communications at the state, county, and city levels. When something bad happens it is imperative that the private sector is notified just a soon as possible. In Oregon, we created an email and phone system to notify the private sector. This system was for larger private sector organizations. We need to improve on this to try and reach more private sectors groups of different sizes. We are looking at using professional organizations or business alliances to act as focal points during the initial alert phase of an incident and have them relay the message. The private sector organizations in the greater Portland Oregon area are creating a regional communication network for emergencies call Oregon Regional Emergency Network (OREN) to begin addressing communications issues. I think this will work, but we need to expand this statewide.

Private Sector Must be Part of Government Emergency Operations Centers

One of the challenges is to try and have private sector representative(s) in government emergency operations centers (EOC). The real issue here is how to organize the private sector so as to have one representative or a small group in an EOC that can coordinate with multiple private sector organizations. The representative(s) must be integrated into government EOC's and be able to provide relevant information to multiple private sector organizations. This will require that private sector's receive training on the National Incident Management System (NIMS), participating in as many as possible government training exercises. I would submit that government personnel should receive training and participate in private sector exercises and training events.

Private Sector Must be Part of the Decision Making Process for Recovery

During the exercise it was very helpful to have the private sector become part of or know what decisions were made. In the response phase this allowed the private sector to know and make decisions that would effect how there business functions would be affected. Additionally, they can in some cases offer resources or personnel to help, that we in government make not realize.

Also, during the response phase the private sector can also be helpful in advising or recommending courses of action which may affect your initial recovery plans. The private sector is key to how the government entities begin to address short term and long term recovery and the decision making process. There is no doubt as we began working recovery issues that you must have the private sector at the table to provide recommendations and a coordinated effort to restart the economic engine of a jurisdiction.

During TOPOFF 4, Oregon's Governor immediately formed a long term recovery team to begin addressing issues to bring back normalcy to all levels of government and private entities. Along with this we need to expand this into a coordinated effort with private sector organizations so as to restart economic engines and do it in a coordinated fashion, which mutually supports all levels of public and private concerns.

CONCLUSION

TOPOFF was a very intense and rewarding event for Oregon and the City of Portland. We learned a great deal and we are still learning. We conducted an initial recovery tabletop exercise the Monday after the exercise finished and we are now preparing to conduct another tabletop on long-term recovery with are federal partners on December 4-5, 2007 here in Washington D.C..

As with any exercise we now must clearly and identify all lessons learned and then correct them quickly and retest are plans and actions to ensure that we have the best procedures and plans to support are efforts for prevention, mitigation, preparedness, response, and recovery for RDD events. Additionally, as we learn and correct we must consider how to ensure that what we decide and correct can support the entire State of Oregon.

I appreciate Congress' attention and focus on Radiological Dispersion Devices, first responders and the private sector. We must ensure that our systems have adequate resources to build plans and systems before a disaster and to fully integrate the private sector. I thank you for the opportunity to testify on behalf of the State of Oregon.

Testimony of Dr. Thomas S. Tenforde, President of the National Council on Radiation Protection and Measurements (NCRP) on November 15, 2007, to the Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia and the Subcommittee on State, Local, and Private Sector Preparedness and Integration at a hearing on *"Not a Matter of 'If', but of 'When': the Status of U. S. Response Following an RDD Attack."*

Senator Pryor and Members of the Subcommittees of the Senate Committee on Homeland Security and Governmental Affairs:

As the President of the National Council on Radiation Protection and Measurements (NCRP) I am pleased to present the views of NCRP on the status of U.S. readiness to prevent and, if necessary, counteract and recover from an act of nuclear or radiological terrorism. I will also briefly describe the recommendations contained in several important NCRP publications on this subject, and new efforts proposed to the Department of Homeland Security (DHS) and other federal agencies that involve the preparation of additional NCRP reports providing recommendations and guidance on counteracting acts of terrorism.

NCRP is a nonprofit organization located in Bethesda, MD, that was founded in 1929 and formally chartered by Congress in 1964 under Public Law 88-376 to serve as a national resource for guidance on radiation health protection and measurements. NCRP has served this role through the preparation of more than 200 publications during the past four decades that address the effects of radiation exposure on human health and the environment. NCRP has also conducted and published the proceedings of 43 annual meetings on subjects of importance to the government and public related to the measurement and assessment of health impacts of radiation exposures in occupational, medical and environmental settings.

NCRP Publications on Radiological Terrorism

Since 2001 NCRP has played an increasingly important role in providing guidance on responding to terrorist actions involving the release of radioactive materials in public areas. One month after the tragic events of September 11, 2001, NCRP issued its landmark Report No. 138 on *Management of Terrorist Events Involving Radioactive Materials.* This document provided a foundation for subsequent planning by the government at both federal and state levels to prepare an efficient defense and to mount effective countermeasures against a possible nuclear or radiological act of terrorism. The report contains guidance on:

- Command and control procedures;
- Consequence management, including protective equipment for responders, decontamination procedures, medical intervention measures, and minimizing psychosocial impacts;

- Communications between responders and with the public;
- Late-phase cleanup and decision making on cleanup and release for public use of contaminated areas;
- Advance preparation, including requirements for equipping and training first responders.

During the six years following Report No. 138, NCRP has issued additional publications of importance in homeland security and the response to nuclear or radiological terrorism incidents. These publications are:

- Commentary No. 19 (2005) on *Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism*; a PowerPoint presentation that summarizes the recommendations of the Commentary is available on the NCRP website at http://NCRPonline.org.
- Peer-reviewed articles in the proceedings of the 2004 NCRP Annual Meeting on *Advances in Consequence Management for Radiological Terrorism Events* were published in Health Physics, Vol. 89(No. 5), pp. 417-588 (2005);
- Three publications have been issued on operational safety and radiation exposure limitations in new technologies being developed for detection of weapons and nuclear materials:
    - Commentary No. 16 (2003) on *Screening of Humans for Security Purposes Using Ionizing Radiation,*
    - Commentary No. 17 (2003) on *Pulsed Fast Neutron Analysis System Used in Security Surveillance,* and
    - Commentary No. 20 (2007) on *Radiation Protection and Measurement Issues Related to Cargo Scanning with Accelerator Produced High-Energy X Rays.*

NCRP is also in an advanced stage of preparation of two reports that provide recommendations on decontamination and medical management of radioactively contaminated individuals. These reports, which will be issued in 2008, are:

- *Management of Persons Contaminated with Radionuclides,* and
- *Population Monitoring and Decontamination Following a Nuclear or Radiological Incident.*

Perspectives on Needs for Additional Planning and Guidance in Counteracting Radiological Terrorism

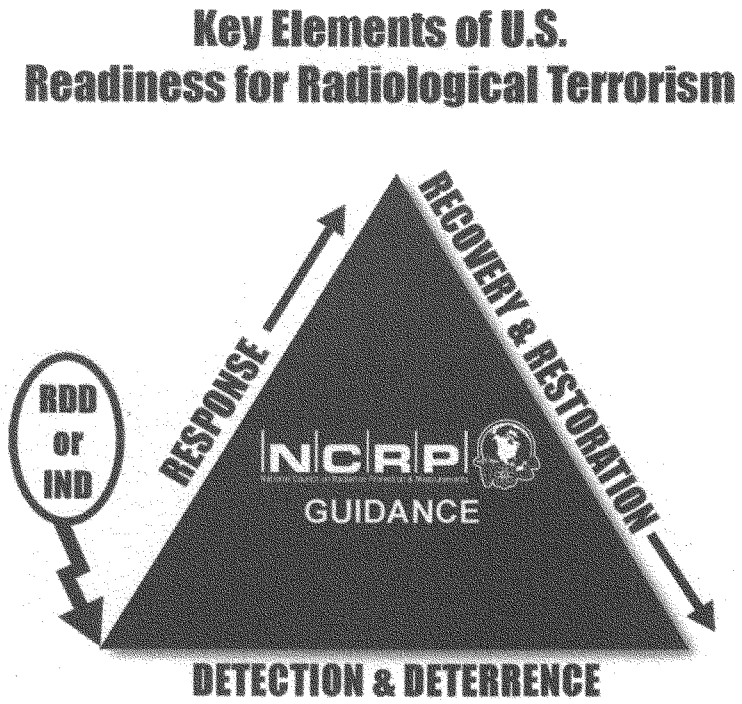
Based on analysis of publications such as the National Response Plan that address preparations for, and responses to, acts of terrorism, as well as discussions with planners, emergency responders, and radiological health experts at the local, state and federal levels, it is NCRP's view that there are several primary areas in which further guidance is essential. These include:

- the terrorism scenario of greatest concern is explosion of an IND (device with explosive nuclear materials) because of the potentially large scope of property destruction and the large number of individuals who might be contaminated locally and at a distance from the site of the incident; planning at the federal and state levels has been focused more on an RDD rather than an IND incident, and there is a significant and urgent need to accelerate planning for the latter type of incident;
- clear definition of responsibilities and communications between first responders and between responders and medical receivers of injured responders and members of the public; there is a need for agreements involving local and state responders and radiation control officials with responsible federal agencies on immediate versus longer-term response actions following a radiological terrorist incident;
- additional radiation measurement equipment and training on its use is needed at the local and state levels;
- more health physicists are needed for assistance in mounting a rapid and effective response to a radiological terrorism incident;
- pre-planning and development of protocols for decontamination and optimum use of local health care facilities to treat contaminated, injured responders and members of the public are essential needs, along with specialized training of medical staff;
- communications with the news media and public need to be given an increased emphasis in order to (1) avoid panic reactions and maintain control at the site of a terrorist incident, (2) avoid overwhelming local medical centers with uninjured individuals (the "worried well"), (3) instruct members of the public who self-evacuate on appropriate decontamination procedures at their residences, and (4) minimize the risk of long-term post-traumatic stress effects;
- frequent training is needed for responders and radiation control department staff at local and state levels, including the correct use of radiation measurement equipment;
- more extensive laboratory capabilities are needed to characterize contamination of affected individuals and public areas; and
- recovery and restoration plans for contaminated areas need to be developed, including prioritizing and optimizing the plans to ensure that critical social infrastructure requirements (such as medical facilities) are restored as quickly as possible.

Many efforts are underway at the local, state and federal levels to address these needs and improve readiness and training for response to a potential act of nuclear or radiological terrorism. These efforts can be facilitated in a significant way by recommendations and guidance provided by NCRP, as described below.

NCRP's Plans for New Reports Addressing Key Issues in Counteracting Nuclear or Radiological Terrorism

In assessing the need for additional guidance on mounting effective countermeasures against nuclear and radiological terrorism, it is NCRP's view that there are three primary elements of readiness.



1) Developing and deploying effective methods for detection and deterrence of entry and use of radiological materials for terrorist actions in the United States;

2) mounting a rapid and highly effective response to a nuclear or radiological terrorism incident; and

3) performing timely and efficient recovery and restoration activities in sites that are radioactively contaminated by acts of terrorism.

The following provides a brief summary of new work by NCRP that is either underway or has been proposed to DHS and other federal agencies.

➢ Information Needed by Decision Makers. An important step toward addressing the national need for guidance on key issues in preparing for, and responding to, acts of nuclear or radiological terrorism, has been taken by NCRP in preparing a report on *Key Decision Points and Information Needed by Decision Makers in the Aftermath of a Nuclear or Radiological Terrorism Incident.* This report, the preparation of which is being funded by DHS, will have two primary components:

(1) information needed by decision makers at all levels of government to protect the health and safety of emergency responders and the public, and to ensure security of the affected area;

(2) consolidated recommendations on key decision points, levels of radiation doses or concurrent hazards (fire, chemical release, *etc.*) at which a response must be initiated, and the nature, timing, and extent of the response.

NCRP has submitted proposals to DHS and the U.S. Environmental Protection Agency (EPA) for the preparation of new reports that provide guidance in the primary areas of need described above. The focus of these reports will be as follows.

➢ Detection and Deterrence. NCRP has proposed to DHS the preparation of a report on *Recommendations on the Performance Requirements and Testing Criteria for Stationary and Mobile Portal Monitors.*

➢ Response to Terrorist Incident. NCRP has proposed to DHS the preparation of reports on *Protection Against, Mitigation of, and Treatment for Radiation Health Effects Resulting from a Radiological Terrorism Incident* and *Assessment and Treatment of Radioactively Contaminated Wounds in Victims of a Radiological Terrorism Incident.*

➢ Recovery and Site Restoration Following a Terrorist Incident. NCRP has proposed to EPA the preparation of a report on *Approach to Optimizing Decision Making for Late Phase Recovery from Nuclear or Radiological Terrorism Incidents.* This report will provide detailed recommendations on the optimization process for site recovery and restoration that was described in general terms in the *Protective Action Guides for Radiological Dispersal Device and Improvised Nuclear Device Incidents.* These guidelines were initially prepared by DHS and are currently being finalized by EPA. NCRP has also proposed to DHS the preparation of a report on *Management and Long-Term Safe Containment of Contaminated Materials Generated by Cleanup Following a Nuclear or Radiological Terrorism Incident.*

In concluding this testimony, I wish to again thank the subcommittee members for providing this opportunity to present NCRP's views on actions that must be taken to improve the readiness of the United States for acts of nuclear or radiological terrorism. I want to again stress that NCRP is uniquely qualified to assist in strategic planning as the United States prepares for potential acts of radiological terrorism.

Statement of

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Before the

Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia

and the

Subcommittee on State, Local, and Private Sector Preparedness and Integration

Committee on Homeland Security and Government Affairs

United States Senate

November 15, 2007

Washington, DC

Chairman Pryor, Chairman Akaka, Senator Voinovich, Senator Sununu, and members of the subcommittees. I appreciate the opportunity to participate in this hearing concerning preparedness for a radiological incident. My name is Wayne Tripp, and I am the Program Manager for the Domestic Preparedness Equipment Technical Assistance Program (DPETAP), Homeland Security and Emergency Management Services for General Physics Corporation.

I have been involved in emergency management and response since 1975, and have at various times served as a fire fighter, emergency medical technician, hazardous materials responder, planner, trainer and exercise manager. I have been with General Physics Corporation (GP) since August, 2001, providing planning, training and exercise support for non-governmental organizations, state, local and Federal agencies.

DPETAP was started in 1998, and is a partnership between the Pine Bluff Arsenal (PBA), the U.S. Department of Homeland Security (DHS) and operated by GP. DPETAP is a nationwide technical assistance equipment training program on the capabilities and limitations of chemical, biological, radiological, nuclear, and explosive (CBRNE) detection, protection, decontamination and response equipment for the Nation's first responders and first receivers. DPETAP is a comprehensive WMD and all hazards program focused on providing needed equipment technical assistance to state and local emergency response agencies and organizations in the areas of maintenance, training, and technical information support. Target jurisdictions are those that receive equipment grant funds from DHS. GP provides on-site assistance through mobile technical assistance teams based at PBA. Services offered by DPETAP are provided as requested, and include:

- Analysis of current CBRNE detection, protection, and response equipment as well as recommendations for technologies to enhance the current response posture of the jurisdiction or state
- Training on the capabilities, limitations and use of equipment
- Training on routine equipment maintenance and calibration
- Training in procedures for mass casualty personnel decontamination and hospital mass casualty patient decontamination

- Training in procedures for donning, doffing, working, and communicating in all threats/hazards-related personal protective equipment (PPE)
- Practical and tabletop exercises to support training and evaluation

DPETAP supports four of the seven National Preparedness goal priorities and 20 of the 36 capabilities on the Target Capabilities List.

I have been asked to discuss the types of radiological detection equipment available, the proficiency of responders, and community and hospital decontamination programs that could help prevent the spread of radiological materials in the aftermath of a Radiological Dispersion Device (RDD) attack. I will focus my discussion on what we have observed during our more than 7 years of providing DPETAP Technical Assistance to more than 82,000 responders in 45 states, two territories and the District of Columbia.

Before I discuss the current radiological detection technologies, I would like to provide a very brief overview of radiation and radiation detection. Because radiation is not detectable to our senses, we need to have some method to determine its presence, and the risk that it represents.

The radiation risk from a terrorist use of a Radiation Dispersal Device (RDD) is directly correlated to the type, quality, and quantity of materials used. The immediate harm is due to the explosive device used to disperse the substance. The harm from the radiation is generally delayed. The ionizing energy that is released by a radioactive material takes the form of particles or waves. These radioactive particles and waves are named from the Greek alphabet: alpha, beta, and gamma. Ionizing radiation changes the physical state of the atoms that it strikes. This causes them to become electrically charged or "ionized."

- Alpha radiation is made of heavy, positively charged particles. Because alpha particles are big by atomic standards, they can be stopped by the outer layer of human skin or an ordinary sheet of paper.
- Beta radiation is made of electrons. Because beta particles are much smaller than alpha particles, they are more penetrating. Beta particles can pass through one to two centimeters of water or into human skin. But beta radiation can be stopped by a sheet of aluminum that's just a few millimeters thick.

- Gamma, as well as x-rays are also types of ionizing radiation. Unlike alpha and beta, gamma and x-rays are merely waves of energy that are released when an atom decays. Gamma and x-rays can pass right through the body, but they are almost completely absorbed by lead.

Although alpha radiation can be stopped by human skin, materials that emit alpha radiation can enter the body through air, food, and water, or open wounds. Once inside the body, alpha as well as beta, gamma and x-ray radiation can affect internal tissues. Detectors have been developed to identify the presence of these types of ionizing radiation.

Since the discovery of x-rays by Wilhelm Röntgen in 1895, radiation detectors have experienced a constant evolution. The phosphorescent screen where Roentgen observed x-ray was the first real-time detector and the precursor to the scintillation crystal detectors still in use today.

The gas filled radiation detector was created by Hans Geiger while working with Ernest Rutherford in 1908. This device was later refined by Geiger and Wilhelm Mueller and is sometimes called simply a Geiger counter or a G-M counter which is the most commonly used portable radiation instrument. The main drawback of the G-M counter is its inability to provide information on the energy of the radiation it detects – in other words, how penetrating the radiation is.

Most modern spectrometers depend on scintillation crystals or semiconductor radiation detectors. Scintillation crystals respond to radiation by emitting a flash of light proportional to the energy of the photon that is stopped in the crystal.

The most recent class of detector developed is the solid state detector. These detectors convert the incident photons directly into electrical pulses.

The instruments that are available today include handheld, backpack, wristwatch, and portal monitors – each using a variety of different technologies and used for different purposes. The best detector for a given application depends on several factors. There are currently 149 different radiation detectors listed on the Responder Knowledge Base, grouped into 5 categories:

Personal Radiation Detectors, used to alert an individual to the possible presence of radiation. These are generally most effective at detecting gamma radiation.

Portable Survey Meters, used to identify areas of contamination, type of radiation, as well as the intensity of the radiation. Portable survey meters, depending upon the device and probes included, can detect many types of radiation.

Portable Radionuclide Identifiers, used to determine the specific substance present. These identify the specific isotope that is emitting the radiation.

Dosimeters, used to determine the specific level of exposure over time for an individual; and

Portal Monitors, which are used to identify the presence and, in some cases, type of radiation at a fixed location such as a doorway or port of entry.

The majority of detectors we have observed in the field tend to be the portable survey meters and an increasing number of personal radiation detectors such as the pager. In the following section on responder proficiency, I will focus on what we have observed via DPETAP and Homeland Defense Equipment Reuse (HDER) Program technical assistance visits.

The Homeland Defense Equipment Reuse (HDER) Program was a joint effort among the Department of Homeland Security (DHS), the Department of Energy (DOE), the Department of the Navy (USN), the Health Physics Society (HPS) and Helping Our Own (HOO) to provide excess radiological detection instrumentation and other equipment, training and long-term technical support to emergency responder agencies nationwide. This equipment was rehabilitated and provided at NO COST to the recipient. On-site training on the use of the equipment was provided to emergency responders through a partnership between the Domestic Preparedness Equipment Technical Assistance Program (DPETAP) and DOE's Transportation Emergency Preparedness Program (TEPP). HDER has been integrated into DPETAP.

As the training partner for HDER, DPETAP personnel provided training to nearly 1,000 responders from 65 different agencies during 2004 and 2005. DPETAP has provided radiation related training, including the HDER program, to more than 15,000 first responders and first receivers since 2000. The vast majority of our participants (74%) are from the fire service, with law enforcement the second most frequent, although they are only about 6% of our total. Firefighters, by nature of their responsibility in most areas for operating in hazardous environments, including hazardous materials response teams, tend to have the most equipment,

particularly in portable survey detectors, while law enforcement tends to have more of the personal detectors such as the pagers. The quality of the detector varies widely, as does the familiarity. Areas where there is a pre-existing radiation risk, such as those in the planning zones for nuclear power plants, tend to have more equipment and a regular training and practice program, while those in more suburban and rural communities have less equipment, frequently older and not utilized often. An additional issue is the maintenance and upkeep. We have run across jurisdictions where the detectors had not been maintained, and the detectors (which need to be recalibrated for accuracy on a regular basis) were so far out of calibration as to be unusable to the responders.

One of the key components to protection following any incident that has the potential to contaminate people is the use of appropriate decontamination methods.

Decontamination is the process of removing a substance from an individual or item. Ideally, this would occur very near to the incident site. Historically, we know that many injured will self-evacuate to a hospital for treatment – they won't necessarily wait for the arrival of an ambulance. If the hospitals are not aware of the potential radiation risk on the arriving patients, they may not establish a decontamination system in time to prevent the spread of contamination into the hospital. It is much easier to remove contamination from the individual patient than it is to remove the contamination from the facility.

DPETAP has provided decontamination training more than 6,500 responders and hospital personnel from 443 agencies. This training provides them with hands-on practice utilizing their decontamination, equipment, procedures and plans to decontaminate victims from a chemical, radiological or biological incident. We have found that this is a critical training need for hospitals across the country, which are likely to be receiving contaminated patients. The confidence that the participants gain is important to their ability to respond appropriately should the need arise.

The training provided on decontamination and the operation, maintenance and use of detection technologies is only one component of proficiency. The agency personnel must also be working under an appropriate plan and set of procedures that define when to use the detectors and what to do if there is radiation detected. Plans, procedures, and training are best validated using

exercises. An effective exercise program aids the responders and their leadership in better understanding deployment, information management, and decision making in response to an emergency. Each exercise must be evaluated on an honest basis, with an after action report and improvement plan developed, implemented, and then tracked, in order to ensure that preparedness is moving forward. An effective after action report and improvement plan is one that identifies areas for improvement based on specific observations, recommendations, and implementing actions that are based on solid guidance or procedures.

The training provided by DPETAP is only one component to the overall preparedness of a responder. DPETAP supports the National Priorities of Expanding Regional Collaboration, Strengthening CBRNE Detection, Response, and Decontamination capabilities, and Strengthening Planning and Citizen Preparedness. We also aid jurisdictions in improving their readiness in several of the Target Capabilities, including CBRNE Detection, WMD/Hazardous Materials Response and Decontamination, and Planning.

SUMMARY

Not all explosions, fortunately, involve a radiological dispersion device. The response to the one that does, however, will likely start the same as any other report of an explosion. Unless some type of detector is used early, the radiological risk will not be identified, and people will not be protected or appropriately decontaminated until significant harm has already occurred. A continuous cycle of planning, training, and exercises, with an effective after action review and improvement plan implemented, is key to the long term enhancement of the front line personnel across the nation that would be called upon to respond to a terrorist incident.

Thank you for the opportunity to discuss these important national preparedness issues, and I would be pleased to answer any questions you may have.

U.S. Department of Homeland Security
Capabilities Directorate

Homeland Security — *Capabilities Directorate*

DPETAP

Domestic Preparedness Equipment Technical Assistance Program (DPETAP)

The Capabilities Directorate, within the Federal Emergency Management Agency (FEMA), has established the Domestic Preparedness Equipment Technical Assistance Program (DPETAP), a comprehensive, national technical assistance program for emergency responders. DPETAP was developed in partnership with the United States Army's Pine Bluff Arsenal, the Department of Defense's center of expertise for chemical and biological defensive equipment production and support.

DPETAP provides onsite technical assistance and training to assist emergency responders to better choose, operate, and maintain their chemical, biological, radiological, nuclear, and explosive (CBRNE) detection and response equipment. Technical Assistance (TA) is provided by DPETAP Mobile Technical Assistance Teams. These teams provide detailed technical information and hands-on equipment operation and maintenance training. DPETAP offers 45 courses and practical exercises that range from one to 24 hours (three eight-hour days) in length and include the following:

CBRNE Detection Technologies

Four courses are currently being offered. The three detection technologies courses were designed to train "apprentice through journeyman" from beginners having no prior knowledge of CBRNE-related technologies to the veteran responders in need of a refresher. The courses are:

1. **Introduction to WMD-related Hazardous Material** – Substances and Symptoms, provides a foundation for those unfamiliar with the "WMD Delta" of hazardous materials.

2. **WMD Detection Technologies** – primarily covers Weapons of Mass Destruction (WMD) detection technologies, types of detection equipment, their capabilities and limitations, and the CBRNE material that can be detected.

3. **Advanced WMD Detection Technologies** – an advanced version of the Intermediate WMD Detection Technologies course.

4. **Radiological Detection Survey Techniques** – provides extensive hands-on practical experience in laying out grids, conducting surveys, and data-logging. Additionally, for those utilizing Homeland Defense Equipment Reuse (HDER) Program equipment, this course addresses the various technologies employed in HDER Program detection and monitoring equipment, and can be presented in modular format.

Detection Equipment Operation and Maintenance (O&M) Courses

There are currently 29 hands-on courses that range from one to four hours in length and cover the capabilities, limitations, preoperation, operation, and preventive and corrective maintenance of CBRNE detection equipment.

WMD Mass Casualty Personnel Decontamination Training

This 24-hour course presents an in-depth study of the principles and procedures of mass casualty decontamination. Training involves high-energy tabletop exercises and practical applications to reinforce the objectives. Students undergo a rigorous analysis of a mass casualty incident from initial attack to clean up and reconstitution. Finally, students perform decontamination in four simulated personnel contamination situations: emergency responder, ambulatory victim, non-ambulatory victim, and pre-transport/ER.

For medical facilities, a one-day **Hospital Mass Casualty Patient Decontamination** training course incorporates many of the elements above, while focusing on the unique challenges of patient decontamination at a medical facility. A detailed fact sheet is available upon request.

WMD Personal Protective Equipment (PPE) Field Training

This 24-hour hands-on course covers the following topical modules:

- Introduction to WMD Personal Protective Equipment (PPE)
- Considerations for the selection of PPE
- Hot Area Operations
- PPE Practical Exercise (Note: This module consists of a 2-part, 12-hour practical exercise.)

Tabletop Practical Exercises

There are currently seven exercise scenarios. These one to two hour practical exercises present students with a variety of potential CBRNE event scenarios that require teams to evaluate the conditions; identify effective technologies detection equipment to be used in each situation; describe how they would use the equipment; and present their findings to the entire class. Hot washes and group discussions follow student team presentations.

Objectives

Enable emergency responders to gain a necessary level of expertise regarding CBRNE detection, monitoring, protection and remediation equipment.

Delivery Method

Mobile teams provide on-site assistance and training as well as training materials and equipment.

Target Audience

Members of all emergency response communities, including:

- Hazardous Materials (HAZMAT)
- Fire
- Law Enforcement
- Emergency Management
- Emergency Medical Services
- Environmental Health

Certificate

A certificate is issued for each course completed.

For further information and to obtain complete descriptions of all courses and practical exercises offered through DPETAP, as well as eligibility and schedule information, contact the Centralized Scheduling and Information Desk at **1-800-368-6498** or e-mail at **askcsid@dhs.gov**

U.S. Department of Homeland Security
Capabilities Directorate

Hospital Mass Casualty Patient Decontamination (HMCPD)

The Capabilities Directorate, within the Federal Emergency Management Agency, has established the Domestic Preparedness Equipment Technical Assistance Program (DPETAP), a comprehensive, national technical assistance program for emergency responders. DPETAP was developed in partnership with the United States Army's Pine Bluff Arsenal, the Department of Defense's center of expertise for chemical and biological defensive equipment production and support.

DPETAP provides onsite HMCPD technical assistance and training utilizing the principles and procedures for mass casualty patient decontamination and the associated equipment in a hospital environment. Technical Assistance (TA) is provided by DPETAP Mobile Technical Assistance Teams. Training involves a high-energy drill exercise and practical application undergoing a rigorous analysis of many issues including hospital decontamination for WMD threats and the use of personal protective equipment in a simulated personnel contamination environment.

For further information and to obtain assistance with utilizing DSDP for your jurisdiction, region or state, contact the Centralized Scheduling and Information Desk at **1-800-368-6498** or e-mail at **askcsid@dhs.gov**

HMCPD Course Objective
To enable hospital emergency responders to gain a basic level of expertise regarding Mass Casualty Patient Decontamination and related equipment.

Course Description
This 8-hour Technical Assistance Visit presents a study of the principles and procedures for mass casualty patient decontamination and the associated equipment in a hospital environment. Training involves a high-energy drill exercise and practical application to reinforce the objectives. Students undergo a rigorous analysis of many issues including hospital decontamination for WMD threats to the use of personal protective equipment. Finally, students perform decontamination in a simulated personnel contamination environment. As in all DPETAP hands-on evolutions, safety will be stressed throughout the Technical Assistance Visit.

Class Size
Minimum: 15 Maximum: 25

Target Audience
- Members of Hospital Decontamination Teams
- Triage Personnel
- Emergency Department Personnel
- Hospital Support Staff
- Hospital Administrators

BACKGROUND
NOT A MATTER 'IF', BUT OF 'WHEN':
THE STATUS OF U.S. RESPONSE FOLLOWING AN RDD ATTACK
November 15, 2007

Background

Much discussion regarding a nuclear or radiological attack has centered on prevention: securing radiological materials most attractive for use in a RDD, both domestically, and overseas, and installing radiation portal monitors at various ports of entry around the U.S. to detect efforts to smuggle such material or a RDD in the U.S. Less attention has been paid to the unpleasant reality of post-detonation challenges. It is generally acknowledged that the threat of a RDD attack in the U.S. is far higher than that of a nuclear attack given the availability of radioactive sources commonly used in industry and medicine. Osama Bin Laden has explicitly stated that it is his "religious duty" to acquire and detonate a RDD or a nuclear weapon in the U.S. While the U.S. has been extremely fortunate that it has not yet been subject to such an attack, it is also the case that post-detonation capabilities have not adequately been tested. Exercises such as TOPOFF IV[1], while extremely important, are of limited utility if they do not test all necessary functions needed to address an RDD attack adequately or if the "lessons learned" from such an exercise are not properly vetted and addressed.

Staff Report by the Staff of the House Subcommittee on Investigations and Oversight, Science and Technology Committee

On October 25, 2007, the staff of the House Subcommittee on Investigations and Oversight, Science and Technology Committee issued a report on environmental and clinical laboratory capabilities in the aftermath of a radiological attack. The staff report concluded that, in a real world RD event, the critical lack of a sufficient laboratory capacity will delay appropriate public health care actions and plans, increase public panic, degrade public trust in government officials, and increase the economic losses due to delays in assessment in cleanup[2].

The staff report points out that the Federal government would be unable adequately torespond to a radiological attack similar to that established in National Planning Scenario (NPS) #11[3]. For example, NPS #11 assumes three simultaneous RDD attacks in three separate, but

[1] Top Officials, or TOPOFF is a Congressionally mandated, national, biennial exercise series designed to assess the Nation's integrated crisis and consequence management capability against terrorist use of WMD.
It examines national relationships among state, local, and federal jurisdictions in response to a challenging series of integrated, geographically dispersed terrorist WMD threats and acts. TOPOFF IV, conducted October 15-19, 2007, tested the ability for Federal, state and local governments to respond to a RDD attack. It involved the simultaneous detonation of three RDDs in three different locations: Arizona, Oregon and the U.S. territory of Guam.
[2] "Radiological Response: Assessing Environmental and Clinical Laboratory Capabilities," Staff report to Chairman Bart Gordon and Subcommittee Chairman Brad Miller by the Staff of the Subcommittee on Investigations and Oversight, House Science and Technology Committee, October 25, 2007.
[3] 15 National Planning Scenarios were created by DHS to highlight a plausible range of major events such as terrorist attacks, major disasters, and other emergencies, that pose the greatest risk to the Nation. The scenarios are intended to illustrate the tasks and capabilities required to respond to a wide range of major events. The National Planning Scenarios are supposed to be used by entities at all levels of government as a reference to help identify the

regionally close, moderate-to-large cities, using Cesium-137[4]. The scenario assumed 180 casualties, 270 injuries, and the contamination of 20,000 people at each of the three sites. A similar scenario was tested during the recent TOPOFF IV national exercise in which a RDD was simulated to have been detonated at two U.S. sites and one U.S. territory. The staff report notes that, using NPS #11, validated methods to test clinical specimens in such an emergency exist for only six of the 13 highest priority radioisotopes most likely to be used in a terrorist scenario. Cs-137 is one of those radioisotopes. According to the report, screening 1000,000 individual clinical specimens in the wake of an RDD attack could take more than four years to complete due to the shortfall in radiochemistry laboratories, personnel and equipment. In addition, environmental sampling could take up to six years to complete given existing capacity in the U.S. radiochemistry laboratory infrastructure.

While the U.S. has not been subject to a RDD attack, the staff report notes that a number of events involving radiological materials are instructive in pointing to shortfalls in the U.S. capability to respond to such an attack. The November 2006 poisoning of former Russian KGB agent Vladimir Litvinenko with Polonium-210 (Po-210) prompted the U.S. Centers for Disease Control (CDC) to identify 160 U.S. citizens who were potentially exposed to the material while staying at the same hotel at Litvinenko or eating in the same restaurants while staying in London. However, CDC was only able to find one U.S.-based laboratory that was able and certified to conduct a clinical analysis for potential Po-210 exposure. If a larger event were to occur in which a larger number of samples had to be processed, more than one accredited lab would be needed to conduct the requisite analyses on victims.

The Litvinenko case also highlighted interagency emergency response issues. Specifically, while DOE maintains the analytical capability to conduct the clinical analyses that were needed in the Litvinenko case, CDC was reluctant to use that capability because the lab was not certified under the Clinical Laboratory Improvement Amendments (CLIA)[5].

According to the Staff Report, the recent TOPOFF IV exercise also confirmed that existing laboratory capacity would not be sufficient to analyze the large number of samples as a result of three simultaneous RDD attacks.

GAO Report on DOE Emergency Response Assets

In September 2006 the Government Accountability Office (GAO) released a report entitled "Combating Nuclear Terrorism: Federal Efforts to Respond to Nuclear and Radiological Threats and to Protect Emergency Response Capabilities Could be Strengthened.[6]" In that report, GAO found that DOE maintains unique capabilities and assets to prevent and respond to a nuclear or radiological attack in the U.S., located at the Remote Sensing Laboratories at Nellis

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critical tasks and capabilities that would be required from all sources in a coordinated national effort to manage major events.

[4] Scenario 11: Radiological Attack – Radiological Dispersal Devices

[5] Congress passed CLIA in 1988 establishing quality standards for all clinical laboratory testing to ensure the accuracy, reliability and timeliness of patient test results.

[6] GAO-06-1015, September 2006

Air Force Base in Nevada and Andrews Air Force Base in Maryland. Despite the critical and unique nature of these capabilities, they are protected at the lowest level of physical security allowed by DOE guidance because, according to DOE, assets for responding to a nuclear or radiological emergency are not concentrated in these two facilities, but spread around the country. However, GAO found that, despite this contention, a number of critical capabilities for responding to such an event exist only at the Remote Sensing Laboratories and whose loss would significantly hamper DOE's ability to respond quickly to a radiological attack. As a result, GAO concluded that the physical security measures at these two facilities may not be sufficient to ensure their availability in the event of an attack.

GAO also found that, despite the benefits of conducting aerial background radiation surveys, they remain underutilized because neither DOE nor DHS has mission responsibility for funding and conducting them. Aerial surveys can help detect radiological threats in U.S. cities more quickly and can measure radiation levels after a radiological attack to assist in and reduce the costs of cleanup efforts. DOE maintains the technical capability to conduct such surveys, using helicopters mounted with external radiation detectors and equipped with a global position system. Despite having this capability, DOE has only conducted a survey of one major city. In 2005, the New York City Police Department asked DOE to conduct a survey of the New York City metropolitan area. Using a portion of the $30 million in DHS funding provided to New York City to develop a regional radiological detection and monitoring system, the NYPD requested that DOE conduct an aerial survey of all five boroughs. GAO was informed by DHS that grant funding could be used for such radiation surveys if cities requested them. However, neither DOE nor DHS has provided information to cities about the benefits of conducting them.

As a result of its findings, GAO made three principal recommendations. First, NNSA should review the physical security measures at other Remote Sensing Laboratories to determine whether additional physical security measures should be implemented to protect the emergency response capabilities DOE maintains in the event of a radiological attack. Second, GAO recommended that NNSA and DHS evaluate the costs, benefits, and limitations of conducting aerial background radiation surveys of metropolitan areas and determine whether they can help prevent or respond to a nuclear or radiological attack. Finally, GAO recommended that, should NNSA and DHS find that aerial surveys can help prevent and respond to a nuclear or radiological attack, they should work together to develop a strategy for making greater use of them.

NCRP Report on Management of Terrorist Events Involving Radioactive Material

On October 24, 2001, the National Council on Radiation Protection and Measurements (NCRP) issued a comprehensive report entitled "Management of Terrorist Events Involving Radioactive Material." That report contained information and recommendations on radiation effects, medical management of radiation victims, issues surrounding the psychosocial impact, communications with the public and the media, and detailed recommendations on the organization and training of those responsible for responding to a terrorist event involving radioactive material. Although the report was prepared prior to the attacks of September 11, 2001, the information and recommendations remain relevant.

For example, NCRP found that it is unlikely that first responders on the scene of a RDD attack will have received the training normally required of workers who are routinely exposed to radiation, but that they will, in the course of responding to the attack, be exposed to radiation. For that reason, NCRP recommended that emergency response personnel or response vehicles likely to be first on the scene should be equipped with radiation detection equipment that would alert responders that they are entering a radiological environment. The report also emphasized the importance of clear communications with the public and that they should be fully informed of the projected impact of the incident as soon as possible after the incident. NCRP also underscored the important of taking social and psychological issues into account in consequence-management planning and execution, and in particular, efforts to prevent and ameliorate the wide range of longer-term psychosocial effects that could be expected after a radiological terrorist incident.

The report also includes a *Sample Joint Information Center Checklist*, and *Sample Pre-Prepared Public Information Statements*, including a discussion of potential key messages that should be conveyed to the public. Elements of such messages should, according to NCRP, include acknowledgement of safety as a first priority, expressions of sympathy for the event, assurances of cooperation among the involved entities responding to the event, and disclosure of all relevant information by authorities.

UK Study Finds that Government Response to Litvinenko Poisoning A Demonstration of Optimum Dirty Bomb Response

A new report published in the British Medical Journal concludes that the response by authorities in the United Kingdom to the radiation poisoning of former Russian spy Alexander Litvinenko stands as an example for the official response to any radiological "dirty bomb" attack[7]. According to the report, the British government was able to avert possible public panic by quickly and clearly explaining the circumstances of Litvinenko's death and the dangers of the polonium 210 that was slipped into his tea poisoning him.

Among the more than 1,000 London residents interviewed by a research team at the King's College Institute of Psychiatry, only 11.7 percent believed that they had been endangered by the incident. The respondents included 86 people who could have been exposed to the polonium. Sixty-two percent of the respondents said that authorities kept them well informed on the attack.

By quickly informing London residents about the areas known to be contaminated with polonium 210, public health agencies relieved concerns among roughly three-quarters of those surveyed that their health was at risk because they had not been in any of the affected places.

In response to the findings, a public health professor quoted in the British Medical Journal warned that an incident understood as a terrorist attack rather than a murder of an individual

[7] "Public information needs after the poisoning of Alexander Litvinenko with polonium-210 in London: cross sectional telephone survey and qualitative analysis", James Rubin, Lisa Page, Oliver Morgan, et al, British Medical Journal, November 1, 2007.

could inspire greater public panic. He noted that "in a large-scale terrorist attack involving radioactive materials — a 'dirty bomb,' for example — levels of public concern could be dramatically higher." He added that the intent behind such a public health incident does not reduce the importance of providing the public with "detailed, comprehensive and relevant" information, stating that "in a terrorist incident involving radioactive materials, effective risk communication may be the most important way to reduce morbidity and mortality, tackle people's concerns, avoid the impact on behavior, and maintain public trust and confidence."

The Domestic Preparedness Equipment Training Assistance Program (DPETAP)

DPETAP operates out of Pine Bluff Arsenal (PBA) in Arkansas. The program is administered by the General Physics Corporation and receives funding from the Department of Homeland Security. It was originally developed in partnership with the United States Army's Pine Bluff Arsenal, the Department of Defense's center of expertise on chemical and biological defensive equipment production and support, but has since expanded to provide radiation detection and decontamination courses for local first responders.

The headquarters at PBA employs about 40 experts who travel by invitation to local first responder stations (police, fire, EMTs, and hospitals). There, DPETAP provides onsite technical assistance and training for emergency first responders to better choose, operate, and maintain their chemical, biological, radiological, nuclear, and explosive (CBRNE) detection and response equipment. Training is provided by DPETAP mobile technical assistance teams at no cost to the local jurisdictions. Local first responders can choose among over 6,000 different courses. Over the past seven years, DPETAP has trained over 80,000 first responders in 48 states. Since first responders will provide the first line of defense in a dirty bomb situation, it is crucial that they be able to identify radiological materials with alacrity.

TOPOFF 4

The Top Officials Exercises, or TOPOFF, are a series of Congressionally-mandated exercises that test our level of preparedness for various disasters at the federal, state, and local levels of government. They are coordinated by DHS but take place around the country in different regions and/or cities every two years. TOPOFF exercises 1-3 have addressed threats from terrorist attacks using chemical and biological weapons.

The recent TOPOFF 4 exercise occurred in Portland, Oregon, Phoenix, Arizona, and Guam. It was the Nation's premier terrorism preparedness simulation, focusing on an exercise scenario in which an improvised explosive dispersed radioactive Cesium-137. Taking place October 15-19, 2007, the TOPOFF 4 Full-Scale Exercise (T4 FSE) featured over 15,000 thousand federal, state, territorial, and local officials. The exercise addressed policy and strategic issues that mobilize prevention and response systems, required participants to make difficult decisions, carry out essential functions, and challenge their ability to maintain a common operating picture during an incident of national significance. It stressed five key goal areas including prevention, defined as the ability to handle the flow of operational intelligence between agencies in order to prevent an

attack, intelligence, which focused on the flow of information between agencies in response to an attack, incident management, testing the ability of top officials' capacities to response consistent with the National Response Plan and NIMS, public information, which exercised the strategic coordination of media relations and communication with the public in the wake of the disasters, and evaluation, to identify lesson learned.

Though the TOPOFF 4 exercise highlighted genuine efforts to coordinate between fire and police departments, hospitals, emergency managers, and local government officials, the exercise also revealed some crucial gaps in our national and local response capabilities. As noted above, public panic and psychosocial reactions would be a key determinant of the effects of an RDD on a city, and a key factor in lowering panic would be the ability to determine and certify individual levels of exposure to radiation. However, at present the U.S. has validated methods to test clinical specimens for fewer than half the materials likely to be used in a dirty bomb attack. Worse, screening methods are slow for the 6 of 13 radioactive materials that do exist. It would take over four years, for instance, to screen 100,000 individual clinical samples in the wake of a radiological attack.

Another potential issue pinpointed in TOPOFF was an inability to identify or register individuals under treatment in hospitals. The hospital system in Portland, Oregon revealed in the exercise their plans to treat contaminated and potentially contaminated individuals anonymously, negating the ability of first responders and everyday citizens to search for missing family members. Though private sector technology experts have collaborated to create a searchable website called *peoplefinder.com* that would allow hospitals, first responders, and volunteer organizations such as the Red Cross to document citizens and evacuees, it has yet to be incorporated into our national response plan. Additional problems such as transportation logistics, economic impact, and environmental cleanup were also identified in the TOPOFF exercise.

Question#:	1
Topic:	communications plan
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Responses to Questions from Glenn M. Cannon

Question: A recent study published in the British Medical Journal concluded that, in future incidents involving radiological material, it is important to ensure that detailed, comprehensible information about the risks of exposure be made available.

Can you tell me if each of your respective agencies' have public communication plans that would be used in the event of a radiological incident?

Response:

In the event of a radiological incident, the Department of Homeland Security's Federal Emergency Management Agency (FEMA) would follow the guidelines set forth in the National Response Plan's (soon to be National Response Framework) Nuclear/Radiological Incident Annex and the Emergency Support Function 15 External Affairs Annex (ESF-15) for communicating critical information to the public.

Question#:	2
Topic:	international help
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Question: In the aftermath of Hurricane Katrina, a number of countries provided help to the U.S. However, there was no mechanism to assist and direct the aid. As a result, much was wasted.

Have DHS and DOE taken steps to ensure mechanisms are in place to receive international help if needed after a dirty bomb attack?

Response:

Hurricane Katrina was the first time the USG accepted international assistance on such a large scale. An ad hoc system was developed to: respond to foreign offers, facilitate the flow of accepted offers, and distribute donations to agencies involved in the response. The Departments involved subsequently developed a system for future response operations.

In the future, if foreign countries would like to provide assistance to the U.S. in the event of a domestic disaster, the USG will encourage cash donations to non-governmental organizations active in the disaster.

For offers of commodity assistance, the agencies involved will utilize the International Assistance System (IAS).
The IAS outlines policies and procedures to:

- accept or decline offers of formal assistance, -receive and distribute donated commodities,
- procure resources not domestically available in the required quantity or time.

As per the IAS, the agencies involved will carry out certain roles and responsibilities. To summarize:

- The Department of State will be the formal point of contact with the international community
- DHS/FEMA will identify disaster requirements.
- USAID will handle all logistics required for integrating commodities into domestic disaster response.
- Regulatory agencies will work with USAID to insure that all regulatory requirements are fulfilled.

Question#:	2
Topic:	international help
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Requests for international assistance to respond to a radiological or nuclear incident would be made through the Department of State in accordance with the IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. This convention was adopted by the US and most members of the United Nations on September 26, 1986, during the 8th plenary meeting. There does not need to be separate mechanisms in place by DHS or DOE.

Question#:	3
Topic:	NRP
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Question: There are six principal agencies in the National Response Plan with responsibility for leading the Federal response to terrorist incidences or accidents involving nuclear or radioactive materials.

How frequently do these agencies meet at the working level to coordinate response activities?

Response:

The National Response Framework (NRF) applies a functional approach that groups the capabilities of Federal Departments and Agencies and the American Red Cross into Emergency Support Functions (ESF) to provide the planning, support, resources, program implementation, and emergency services that are most likely to be needed during a disaster. The ESF structure provides mechanisms for interagency coordination for declared disasters and emergencies under the Stafford Act and for non-Stafford Act incidents. In addition, the FEMA-led Federal Radiological Preparedness Coordinating Committee (FRPCC), which includes all six principal agencies, as well as other departments and agencies with key radiological response roles meets at least quarterly to discuss issues related to terrorist incidents or accidents involving nuclear or radioactive materials. While the main focus of the FRPCC is the Radiological Emergency Preparedness Program for nuclear power plants, the committee also acts as a forum for discussions on Federal response, taking on issues such as terrorist attacks involving Radioactive Dispersal Devices and Improvised Nuclear Devices, and also discusses accidents involving nuclear or radioactive materials.

The Federal Emergency Management Agency (FEMA) has invested substantial time in meeting with ESF Departments and Agencies in both Emergency Support Function Leaders Group (ESFLG) and one-on-one meetings to discuss disaster response roles and responsibilities; address issues relating to functional and operational procedures and assignments; review capabilities; discuss special issues; and provide additional clarification where needed. The meetings have ensured that ESFs can maintain situational awareness and common operating picture capabilities. Additionally, FEMA holds Regional Interagency Steering Committee (RISC) meetings. The steering committees are comprised of Departments and Agencies in each of the 10 FEMA

Question#:	3
Topic:	NRP
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Regions that would respond to a major disaster under the NRF. FEMA conducts regularly scheduled meetings with this group to discuss issues, initiatives and advances that relate to FEMA's and each Department's and Agency's disaster response capabilities and to coordinate future response activities.

FEMA also routinely convenes multi-agency video teleconferences and conference calls involving the ESFLG, FEMA Regional staff, and incident-specific command and operations centers at the Federal and State levels upon receipt of actionable warnings. At these events, basic incident-specific preparedness, response, and initial recovery actions are introduced, coordinated, and synchronized in preparation for possible response. Through the experiences and lessons learned during cycles of disasters, FEMA can note areas of improvement and focus resources and capabilities appropriately on those Regions and States that may need assistance.

In accordance with a range of policy and statutory authorities, FEMA is responsible for developing, fielding, and maintaining a National Training Program (NTP) and a National Exercise Program (NEP). These integrated programs provide a comprehensive network of individual, collective, and organizational training and exercise activities that benefit the interagency and State and local governments. The release of NEP guidance continues to improve the coordination of preparedness activities of the homeland security/emergency management community and provides the tools to systematically plan, organize, conduct, evaluate, and report on exercise activities. When fully implemented, the NTP will integrate all preparedness-related training and exercise activities, streamlining the Nation's preparedness resources and improving readiness levels overall.

FEMA has participated in a number of National-level exercises over the past year designed to test and refine the coordinated response activities of FEMA and its partners. These exercises included:

- Exercise TOPOFF4, (October 15-19);
- Exercise Ardent Sentry Northern Edge 07(April 30 through May 17); and
- Exercise Vigilant Shield 07 (Dec. 4 through Dec. 14 2006)

Question#:	4
Topic:	IAEA
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Question: The International Atomic Energy Agency (IAEA) maintains a number of emergency response capabilities that could be valuable in the aftermath of an RDD attack.

How would DHS coordinate with or provide information to the IAEA after such an attack?

Response:

The IAEA maintains baseline response capabilities to assist member states that cannot field qualified response teams of their own, or would benefit from international support. Response teams in the U.S., in particular those of the Departments of Defense and Energy, and the Environmental Protection Agency, are generally considered to have a high degree of field-ready capability by international standards, and assistance of the IAEA is not considered necessary for a U.S. event. However, information sharing with the IAEA on significant radiological incidents is standard practice, both to address possible international implications of the incident, and for lessons learned. Such coordination occurs through established departmental liaisons with the IAEA, and via the State Department.

Question#:	5
Topic:	international notifications
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Question: In 2002, the IAEA issued a document under its safety Standards series entitled Preparedness and Response for a Nuclear or Radiological Emergency. That document was approved by the Board of Governors on which the U.S. sits.

It establishes requirements for international notification and information exchange in the case of a transnational emergency, including a nuclear or radiological emergency of actual, potential or perceived radiological significance for more than one State. A dirty bomb attack can fall under this category. Has the U.S. adopted this safety standard and if it has, how does DHS implement it in the context of an RDD attack?

Response:

The Department of State would have a greater awareness of the status of the adoption of this safety standard and so FEMA defers to the U.S. Department of State.

Question#:	6
Topic:	IAEA guide
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Question: The IAEA has published a practical guide for first responders to radiation emergencies, including dirty bombs, which is being used by many countries, and, in fact, a number of U.S. states.

What steps has DHS taken to integrate this document into its efforts and assistance to first responders?

Response:

The IAEA writes guidance that must meet the needs of all its member states; these include countries like the U.S. and U.K., and those with poorly developed radiological licensing, control, response and mitigation capabilities. Generally, the U.S. will adopt international standards where appropriate, such as new radiation dose conversion factors, and guidelines for public health exposure. However, guides for response are often developed with particular national-level provisions, especially where systems are already well advanced, as in the U.S. or U.K. In the development of U.S. responder guides, the IAEA guides are considered and consistency is encouraged where appropriate.

Question#:	7
Topic:	numerical guidelines
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Question: Why does the DHS guidance on long-term restoration of a contaminated site not contain pre-established numerical guidelines for cleanup levels?

Response:

The Guidance regarding long-term site restoration and clean up is based on the principle of site specific optimization. Optimization is a concept that is common to many State, Federal, and international risk management programs that address radionuclides and chemicals, although it is not always referred to as such. Broadly speaking, optimization is a flexible, multi-attribute decision process that seeks to consider and balance many factors. Optimization analyses are quantitative and qualitative assessments applied at each stage of site restoration decision-making, from evaluation of remedial options to implementation of the chosen alternative. The evaluation of cleanup alternatives, for example, should factor in all relevant variables, including areas impacted (e.g., size and location relative to population), types of contamination (chemical, biological, and/or radioactive), human health, public welfare, technical feasibility, costs, and available resources to implement and maintain remedial options, short-term effectiveness, long-term effectiveness, timeliness, public acceptability, and economic effects (e.g., on residents, tourism, business, and industry).

The optimization process was designed to account for the extremely broad nature of potential impacts from radiological and nuclear terror incidents, from light contamination of a street or building, to widespread destruction of a major metropolitan area. Thus, a pre-established numeric guideline was not recommended as best serving the needs of decision makers in the late phase. Rather, a site-specific process is recommended for determining the societal objectives for expected land uses and the options and approaches available to address RDD or IND contamination. For example, if the incident is an RDD of limited size, such that the impacted area is small, then it might reasonably be expected that a complete return to normal conditions can be achieved within a short period of time. However, if the impacted area is very large, then achieving even very low criteria for remediation of the entire area and/or maintaining existing land uses may not be practicable.

Question#:	7
Topic:	numerical guidelines
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

The risk management framework in which the optimization process is embedded involves engaging knowledgeable technical experts and key stakeholders to provide decision makers with input on the options, costs, and implications of various courses of action. The guidance recommends that the level of effort and resources invested be scaled to the significance of the incident, scope of contamination, potential severity of economic impact, technical feasibility, and resource constraints. The optimization process provides the best opportunity for decision makers to gain public confidence through the involvement of stakeholders.

The optimization process is designed to accommodate a variety of dose and/or risk benchmarks identified from State, Federal, or other sources (e.g., national and international advisory organizations) as goals or starting points in the analysis of remediation options. These benchmarks should be useful for analyzing remediation options, and levels may move up or down depending on the site-specific circumstances and balancing of other relevant factors.

Question#:	8
Topic:	public communications plan
Hearing:	Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?
Primary:	The Honorable Daniel K. Akaka
Committee:	HOMELAND SECURITY (SENATE)

Question: A recent study published in the British Medical Journal concluded that, in future incidents involving radiological material, it is important to ensure that detailed, comprehensible information about the risks of exposure be made available.

Can you tell me if DHS has a public communication plan that would be used in the event of a radiological incident?

Response:

In the event of a radiological incident, the Department of Homeland Security's Federal Emergency Management Agency (FEMA) would follow the guidelines set forth in the National Response Plan's (soon to be National Response Framework) Nuclear/Radiological Incident Annex and the Emergency Support Function 15 External Affairs Annex (ESF-15) for communicating critical information to the public.

Post-Hearing Questions for the Record
Submitted to Dr. Steven Aoki, Deputy Undersecretary of Energy for Counterterrorism, Department Of Energy/National Nuclear Security Administration
From Senator Daniel K. Akaka

RDD

Q1. In your testimony, you discuss DOE's technical nuclear forensic and attribution capability and how this expertise could help provide clues or leads to law enforcement to assist in the forensics investigation after a dirty bomb attack.

Are you confident that, should such an attack occur five to ten years down the line, DOE will have an adequate number of experts and the facilities to conduct such analyses?

A1: Maintaining the capability of DOE's national laboratory system is essential to ensuring that the nation retains the ability to carry out nuclear forensic and attribution tasks, should the need ever arise. DOE's National Nuclear Security Administration -- which administers the nuclear weapons laboratories -- is currently planning the transformation of the laboratory complex to assure that it can continue to meet critical national security requirements over the long term. Providing for the facilities and expertise to conduct nuclear forensic analysis is an important element in that planning process.

RDD

Q2: In the aftermath of Hurricane Katrina, a number of countries provided help to the U.S. However, there was no mechanism to assist and direct the aid. As a result, much was wasted.

Have DHS and DOE taken steps to ensure mechanisms are in place to receive international help if needed after a dirty bomb attack?

A2: Offers for assistance from other countries would be coordinated by the Department of State.

QUESTIONS FROM SENATOR DANIEL K. AKAKA

RDD

Q3: Only two entities within the United States have the ability to perform a special kind of analysis called cytogenetic biodosimetry -- a small civilian laboratory at the Oak Ridge National Laboratory and one for military use at the Armed Forces Radiobiology Research Institute. The analysis itself, while slow, provides an important tool for increasing the ability of medical response personnel to determine the radiation dose a victim receives in a dirty bomb attack. Without this information, decision making and treatment can be much more difficult and complicated. Credible dose information is also important to eliminate the anxiety and fear associated with the perception of exposure.

What is NNSA doing to bolster this capability and advancing it so that the work can be done more quickly?

A3: In March 2007 NNSA (DOE) re-established the REAC/TS Cytogenetic Biodosimetry Lab (CBL) , which was closed in the 1990's. The initial start -up funding from NNSA for this REAC/TS lab was absolutely essential for re-establishing this second U.S. federally funded CBL lab at REAC/TS. NNSA has also recently provided additional funds to purchase additional automated equipment in order to increase throughput capabilities.

One of the primary issues with the throughput rate of the CBL is the limited number of cytogenetic experts available to evaluate the data. The number of these experts available in this country is limited. REAC/TS CBL Technical Director, Dr. Gordan Livingston, is attending a World Health Organization meeting in Geneva in December 2007 to discuss possible enhancement of the processing of the data by establishing a virtual web network to share digital chromosome images among worldwide cytogenetic experts. Such a network could also significantly increase throughput of the CBL.

QUESTIONS FROM SENATOR DANIEL K. AKAKA

RDD

Q4: In 2002, the IAEA issued a document under its Safety Standards series entitled Preparedness and Response for a Nuclear or Radiological Emergency. That document was approved by the Board of Governors on which the U.S. sits.

It establishes requirements for international notification and information exchange in the case of a transnational emergency, including a nuclear or radiological emergency of actual, potential or perceived radiological significance for more than one State. Dirty bomb attacks can fall under this category.

Has the U.S. adopted this safety standard and if it has, how does DOE implement it in the context of an RDD attack?

A4: The U.S. Government and the Department of Energy do follow the principles of the safety standard document "Preparedness and Response for a Nuclear or Radiological Emergency" (GS-R-2). DOE believes that a strong emergency management system is key for an effective response in order to mitigate the effects of any nuclear or radiological incident, whether an accident or intentional event. Emergency management systems play a key role in prevention and readiness by ensuring that we have programs and strong tools to protect the health and safety of workers, the public, and to protect the environment.

DOE has plans and procedures in place to notify the IAEA's Incident and Emergency Center (IEC), via the Department of State, in the event of a nuclear or radiological accident or event that may have transborder or transnational impact. DOE also has plans and procedures in place to support the Response and Assistance Network (RANET), IAEA's plan under which emergency assistance is requested and delivered for on-the-ground or home-based response. International response to a RDD would be managed and provided under RANET.

QUESTIONS FROM SENATOR DANIEL K. AKAKA

RDD

Q5: The Secretary of HHS recently hosted a meeting with seven other Health Ministers and issued a COMMUNIQUÉ which pledged to enhance capacities to prepare for and to deal with the threat of international biological, chemical and radio-nuclear terrorism under a Global Health Security Initiative.

The COMMUNIQUÉ also indicated that the Health Ministers had agreed to a strategy "to address CBRN threats through research and development for novel medical countermeasures, and to explore options for expanded access to needed countermeasures".

Given that the National Response Plan assigns DOE the role of "Maint(ing) and improve(ing) the ability to provide medical assistance, advisory teams, and training related to nuclear/radiological accidents and incidents now resident in REAC/TS,", how is the Department of Energy integrated into this program?

A5: While we have not addressed this communiqué directly, Dr. Albert Wiley, the Director of REAC/TS and the World Health Organization (WHO) Collaborating Center at Oak Ridge, has been working in the international forum to enhance our capabilities to respond to radio-nuclear terrorism. Dr. Wiley is a member of various IAEA and WHO Working Groups/Committees that over the past year have discussed how possible collaborations among IAEA and WHO countries might facilitate medical response to WMD. The possible international collaborations between the world's cytogenetic biodosimetry labs noted above have been a part of these discussions.

DOE's plans and procedures are designed to support international emergency response as established by the Conventions on Early Notification of a Nuclear Accident and Assistance in the Case of a Nuclear Accident or Radiological Emergency. The lead for implementation of these two conventions is vested in the IAEA's Incident and Emergency Center which serves to coordinate international communication and deliver international assistance under RANET in the event of an emergency. The DOE plans and procedures ensure that DOE maintains operational control of its assets that would provide international assistance. On a non-emergency basis, the IEC also plays an important role in the development of harmonized emergency management capabilities.

The Office of Emergency Operations is assisting the IAEA's IEC in developing the core elements of strong emergency management and response capabilities. Through 2009, we will provide approximately four million dollars to the IAEA for emergency management activities to include purchasing equipment necessary for the enhanced IAEA Incident and Emergency Center; providing support staff to ensure action on and implementation of the Action Plan to Strengthen International Emergency Preparedness and Response; and support cooperative research projects involving transportation accidents. Additionally, technical assistance is being provided to address emergency management issues and ensure harmonized worldwide emergency management systems. DOE is working to ensure that the resulting system is effective, efficient and harmonized with US policies.

QUESTIONS FROM SENATOR DANIEL K. AKAKA

RDD

Q6: A recent study published in the British Medical Journal concluded that, in future incidents involving radiological material, it is important to ensure that detailed, comprehensible information about the risks of exposure be made available.

Can you tell me if DOE has a public communication plan that would be used in the event of a radiological incident?

A6: DOE is part of an interagency effort that is developing a coordinated Public Education Action Plan. This Plan includes an approach to ensure that detailed, comprehensible information about the risks of exposure are made available to the public in the event of a radiological incident.

Responses to Questions from Thomas P. Dunne

November 15, 2007 Senate Committee on Homeland Security and Governmental Affairs Subcommittee on Oversight of Governmental Management, the Federal Workforce, and the District of Columbia Post Hearing Questions for the Record

1. Homeland Security Presidential Directive 10, issued in April 2004, requires EPA to determine the nationwide laboratory capacity required to support the cleanup of sites contaminated with chemical, biological or radiological or nuclear fallout. It is supposed to do so by reviewing federal, state, local, and private laboratory capabilities specifically related to environmental sampling and testing. In response to HSPD-10, EPA has plans to establish an Environmental Laboratory Response Network (eLRN). Can you tell me what the status of the network is?

The U.S. Environmental Protection Agency (EPA) has developed criteria and an application for membership to the eLRN. It plans to initiate the first phase of the eLRN to EPA laboratories in early 2008 and roll out the second phase to state and private laboratories in late 2008. As stated in EPA's testimony, there is a lack of laboratory capacity and capability to handle a significant radiological "dirty bomb" event.

2. What is the status of revision of EPA's Protective Action Guidelines document?

EPA's 1992 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (44 CFR § 351.22(b)), also referred to as the PAG Manual, was developed to help Federal, state, and local authorities make radiation protection decisions during radiological emergencies, such as nuclear power plan incidents. EPA developed the PAG Manual to provide guidance on actions to protect public health and the environment. A proposed revision to the 1992 PAG Manual is currently underway which uses current scientific information to:

- Apply the existing 1992 protective action guides and protective actions to new radiological and nuclear scenarios of concern,
- Lower the recommended dose for administration of stable iodine (KI pill) based on revised FDA guidance,
- Provide new guidance concerning consumption of water during or after a radiological emergency,
- Update Food and Drug Administration (FDA) food and animal feed guidance, and
- Add guidance for addressing long-term cleanup and restoration of impacted areas following a major radiological release.

The long-term guidance on recovery and cleanup in the updated Manual incorporates recommendations issued by the Department of Homeland Security (DHS) entitled "Application of Protective Action Guides for Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents" (71:174-196, Federal Register January 3, 2006), which was issued for interim use and comment. Comments on that document will be incorporated into the revised EPA PAG Manual as appropriate.

EPA's proposal for revising the PAG Manual will incorporate the revisions contained in the final DHS guidance; once the final DHS guidance has been completed, both documents must then undergo interagency review for consistency and potential impacts on other guidance. Currently, DHS' interim guidance is in effect.

3. Can you describe EPA's long-term cleanup plans of a site contaminated with fallout from a dirty bomb attack?

As discussed in EPA's testimony, the Agency has two roles during the long-term recovery phase of incidents involving dirty bombs or Improvised Nuclear Devices (INDs): the Agency will take over leadership of the radiological environmental characterization and it will assume responsibility for managing the Federal technical radiological clean-up activities. The framework that will guide EPA's plans for long-term clean up of a contaminated site is outlined in the DHS interim guidance entitled, "Application of Protection Action Guides for Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents." Specifically, the interim guidance proposes a site-specific optimization process in which potential actions to reduce radiation dose are evaluated within the context of a broad range of societal goals. The interagency working group that developed this guidance determined that the nature and range of potential impacts that may occur from RDDs and INDs was extremely broad, and that a site-specific process that incorporates local needs, health risks, costs, technical feasibility, and other factors is critical for establishing clean-up levels.

EPA will work with state, local and Federal agencies to begin planning for site cleanup and restoration as soon as possible after an incident. We will support the state/local decision makers in developing long-term cleanup plans for a radiological event through a process consistent with the organizational structure and procedures described in the Nuclear/Radiological Incident Annex to the National Response Plan, or its successor plans, and the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300). To guide cleanup efforts the Radiation Response Guide developed in 2006 will be used in conjunction with many other tools, i.e., the 1992 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400-R-92-001) and its subsequent update when finalized, which will include the DHS Application of Protection Action Guides for Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents (Federal Register Vol. 71, No. 1, p. 174, January 3, 2006).

4. A recent study published in the British Medical Journal concluded that, in future incidents involving radiological material, it is important to ensure that detailed, comprehensible information about the risks of exposure be made available. Can you tell me if EPA has a public communication plan that would be used in the event of a radiological incident?

As part of EPA's National Approach to Response, the Agency has finalized its Crisis Communications Plan (Plan) and started an Incident Management System training program specifically dealing with the public information component of an emergency response. The goal of EPA's Plan is to facilitate timely, accurate, and consistent communication of information to the public about EPA's activities and findings in response to an incident of national significance. The Plan is designed to facilitate better coordination among the field, regional, and HQ communications components of an INS response. The Plan defines the roles and responsibilities of those responsible for leading EPA's communication efforts, as well as the processes for informing the public in a consistent, accurate and timely manner via the web, press, fact sheets as well as other communication channels.

Additionally, EPA will begin developing a resource guide which will revise and organize existing crisis communication fact sheets, message maps and templates and other information to ensure accurate and consistent information can be accessed quickly at the time of response. The guide will include new information that will be developed based on identified needs. This guide is expected to be completed in 2008 and will be reviewed and revised annually thereafter.

Post-Hearing Questions for the Record
Submitted to Dr. Kevin Yeskey, Deputy Asst. Secretary for Preparedness and Response, DHHS
From Senator Daniel K. Akaka
"Not a Matter of 'If', But of 'When': The Status of U.S. Response Following an RDD Attack?"
November 15, 2007

1. *A recent study published in the British Medical Journal concluded that, in future incidents involving radiological material, it is important to ensure that detailed, comprehensible information about the risks of exposure be made available.*

   Can you tell me if HHS has a public communication plan that would be used in the event of a radiological incident?

   At the U.S. Department of Health and Human Services, our communications strategy is to coordinate with the media to publicly announce the local or national emergency, dispel misinformation among the public, and communicate the honest facts as rapidly as possible to the public.

   To that end, HHS agencies have developed a number of on-line tools that are available for State and local authorities, first-responders and the general public. The main HHS website has an informative explanation of a radiation emergency and event management, at the following internet address: http://www.hhs.gov/disasters/emergency/manmadedisasters/index.html. For physicians, HHS manages the Radiation Event Medical Management website, available at http://remm.nlm.gov.

   The HHS Centers for Disease Control and Prevention (CDC) has developed a public communications strategy that includes technical information, and guidance with recommendations, for radiological events and nuclear disasters. This document is available on the HHS/CDC web site, at the following internet addresses: http://emergency.cdc.gov, http://emergency.cdc.gov/firsthours/radiation.asp, and http://emergency.cdc.gov/radiation. The Office of the HHS Assistant Secretary for Preparedness and Response (ASPR) has also worked closely with subject-matter and public-affairs experts inside and outside the Department to develop a comprehensive communications plan that complements the work of HHS/CDC. The HHS Radiation Dispersal Device Playbook for ESF #8 contains a section on public messages and strategies available for just-in-time messaging, post-event message development, and public affairs. HHS/ASPR has also developed a draft annex to ESF#15, pending review by the U.S. Department of Homeland Security (DHS), that specifically addresses public-health communications in the event of an emergency that involves radiation.

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2. Senator Akaka's staff rephrased the initial QFR #2 with the following:

The Communique issued by the Secretary of HHS and others under the GHSI in November states that the GHSI will continue to take concrete actions to enhance capacities to prepare for and to deal with the threat of radio-nuclear terrorism. It also states that the GHSI has agreed to a strategy to maintain strong technical cooperation in this and other areas.

What concrete actions have you taken and are you planning to take under the GHSI in the area of radio-nuclear terrorism? Has this been coordinated with the US interagency? Are these areas under the responsibility of HHS in the National Response Plan?

The complexity and potential enormity of radiological/nuclear events require that our preparedness involve partnership among allies, and collaboration among a range of scientific and medical disciplines. Our planning to deal with the public-health consequences of radiological or nuclear events builds on long-standing relationships among scientists at the HHS National Institutes of Health (NIH), the U.S. Department of Defense (DoD) Armed Forces Radiobiology Research Institute, and international colleagues for research and development in the areas of biodosimetry, radiation injury to normal tissues, and medical countermeasures.

[A] What concrete actions have you taken and are you planning to take under the GHSI in the area of radio-nuclear terrorism?

With the establishment of preparedness activities centered in the Office of the Assistant Secretary for Preparedness and Response (ASPR), HHS frequently joins with GHSI member countries to coordinate national preparedness plans and engage in cooperative activities to prepare for and respond to the spectrum of possible radiological and nuclear events. In addition, HHS convenes frequent, research-related meetings that involve components of HHS/NIH (especially the HHS/NIH National Cancer Institute and National Institute of Allergy and Infectious Disease) related to improved diagnostic methodologies and finding finding new approaches to mitigating injury from radiation.

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[B] Has this been coordinated with the US interagency?

For all HHS radiological/nuclear activities, HHS/ASPR works closely with the Radiation Studies Branch of the HHS Centers for Disease Control and Prevention (CDC), components of HHS/NIH, and the HHS Food and Drug Administration (FDA). When appropriate, HHS coordinates with U.S. Government partners our activities and initiatives with GHSI member countries, according to ESF #8 of the National Response Plan. Examples include Risk-Communication efforts with several Federal partners such as the U.S. Department of Homeland Security, the U.S. Environmental Protection Agency, and others; the development of the Radiation-Event Medical Management tool (http://remm.nlm.gov) with Federal departments and private and international partners; and response planning with the HHS Playbooks.

[C] Are these areas under the responsibility of HHS in the National Response Plan?

The GHSI partnership was founded under the leadership of former HHS Secretary Tommy G. Thompson and fellow Secretaries and Ministers from G-7 countries, México and the European Commission. The GHSI seeks to create partnerships and develop initiatives consistent with the mission "A Nation Prepared," which we extend to a "World" prepared, to acknowledge that nations must coordinate efforts to provide a seamless response to situations that might require international cooperation. Disasters do not have national borders, and assisting with the preparation and security of our international partners enhances our own. These efforts enhance the ability of ESF #8 (and HHS) to perform its role in the framework of the National Response Plan and the Radiological/Nuclear Incident Annex.

Furthermore, the HHS Secretary's Operations Center is the designated U.S. National Focal point for reporting under the revised international health regulations (2005), which cover radiological/nuclear events in certain circumstances as public-health emergencies of international concern. HHS is the lead Federal department for the implementation of the regulations, which came into force for the United States on July 17, 2007, and everything we do in the area of preparedness for the public-health consequences of a radiological or nuclear event is consistent

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