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U.S. HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY
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Good morning. Mr. Chairman and Members of the Committee, I am Dana Tulis, Deputy Office Director for the Office of Emergency Management at the U.S. Environmental Protection Agency (EPA). I appreciate the opportunity to discuss the status of EPA's efforts to assess environmental radioanalytical capability and capacity in radiological response. I would also like to share with you broader activities EPA has underway to protect the Nation in the event of an accidental or intentional release of radiological material.

ROLE OF ENVIRONMENTAL RADIOANALYTICAL LABORATORIES IN RADIOLOGICAL RESPONSE

In the event of a radiological or nuclear Incident of National Significance (INS), fixed environmental radiological laboratories will serve as a critical source of high quality and interpretable data to support incident response and consequence management activities. When EPA responds to radiological incidents, it is essential that the environmental radiological laboratories, whether federal, state, or commercial, that conduct analyses on environmental samples meet EPA's standards for stringent accuracy and quality control. The fixed laboratories must have the capability of analyzing for the broadest possible range of radiological contaminants while achieving the most sensitive measurements in terms of detection capabilities. Data from fixed environmental radiological laboratories will be particularly critical during consequence management activities such as decontamination and clearance efforts, and will be used to make long-term decisions to protect the public from radiological contamination, and to restore any affected critical infrastructure and key resources, such as ensuring the safety of our drinking water.

NATIONAL REPONSE PLAN: EPA'S RADIOLOGICAL EMERGENCY RESPONSE RESPONSIBILITY

Under the National Response Plan's (NRP's) Nuclear/Radiological Incident Annex, the Department of Energy (DOE) coordinates radiological monitoring and assessment activities for the initial phases of a response to a radiological incident. DOE coordinates Federal radiological environmental monitoring and assessment activities as the lead technical organization in what is known as the Federal Radiological Monitoring and Assessment Center or the "FRMAC." The FRMAC is an interagency organization with representatives from various federal, state, and local radiological response organizations. The FRMAC provides an operational framework for coordinating all federal radiological monitoring and assessment activities during a response to support the Federal Coordinating Agency, state(s), local, and/or tribal governments. 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 for the state and local authorities to draw upon. 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.

FRMAC leadership responsibility, and leadership of Federal radiological environmental monitoring and assessment activities, is transferred to EPA per the Nuclear/Radiological Incident Annex to the NRP, at a mutually agreeable time, and after consultation with the Department of Homeland Security (DHS) and its coordination entities, as well as State, local, and tribal governments. The following conditions are intended to be met prior to transfer:

- The immediate emergency condition is stabilized;
- Offsite releases of radioactive material have ceased, and there is little or no potential for further unintentional offsite releases;
- The offsite radiological conditions are characterized and the immediate consequences are assessed;
- An initial long-range monitoring plan has been developed in conjunction with the affected State, local, and tribal governments and appropriate Federal agencies; and
- EPA has received adequate assurances from the other Federal agencies that the required resources, personnel, and funds are available for the duration of the Federal response.

When the FRMAC is transferred to EPA, EPA assumes responsibility for coordination of radiological monitoring and assessment activities.

EPA’S PERSONNEL AND EQUIPMENT RESOURCES

Throughout the response effort, however, EPA provides resources for defining and delineating the environmental impact of the radiological incident, whether under DOE leadership or EPA leadership, and uses these resources to carry out its mission and NRP responsibilities. These responsibilities encompass maintaining personnel and asset readiness for radiological emergency responses, which include participating in emergency response situations and providing technical expertise and support. EPA brings to bear both personnel and equipment to this mission, including 250 On-Scene Coordinators and its 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 Counter Terrorism Evidence Response Team (NCERT) which each bring specialized personnel and equipment, and the expertise gained every day in protecting human health and the environment. More specifically, the RERT has up to 50 people who can be deployed to the field or a support role and the NDT has 15 people who are available for deployment. Altogether EPA has approximately 350 personnel for emergency responses and is also building a Response Support Corps to expand our response capability. The Agency's radiation health and safety and detection equipment assets run the gamut from approximately 300 personnel dosimeters to measure dose to protect response personnel to more than 200 pieces of emergency response/assessment equipment to detect alpha, beta, or gamma radiation, depending on the equipment, in different environmental matrices. Equipment also includes mobile laboratories, a scanner van, and field based equipment that can identify specific gamma sources.

In addition to personnel and assets, EPA's NRP responsibilities include maintaining and enhancing the Nation's most comprehensive ambient radiation monitoring network named RadNet, which 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 radionuclide specific determinations 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.

GUIDANCE FOR RADIATION RESPONSES

EPA has worked closely with DHS and our other Federal partners to ensure that the Protective Action Guidelines, or PAGs that can be applied to almost any radiological or nuclear incident, including radiation dispersal devices (dirty bombs). EPA has developed PAGs, which suggest precautions that can be taken to keep people from receiving an amount of radiation that might be dangerous to their health. The PAGs are decision levels to help state and local authorities make protective action decisions during emergencies, and should be applied using incident-specific information. Users of PAGs may include hazardous materials teams, emergency managers, anyone working on terrorism preparedness, and nuclear power plant communities.

The PAGs Manual, which EPA issued in 1992, presented guidance for the early or emergency phase e.g., first four days, and intermediate phase, e.g., source is controlled and field data become available, of a response to primarily nuclear power plant accidents. A revision is underway that addresses all radiological incidents such as a terrorist use of a dirty bomb, and incorporates DHS' guidance for dealing with long-term site restoration following a major radiological release. The DHS guidance does not recommend pre-established numerical guidelines for cleanup levels because of the broad range of potential impacts that may occur.

Instead, it proposes an optimization process in which potential actions to reduce radiation dose are evaluated, and the benefits of each are then compared to the detriments of the action. We have also developed guidance for Agency personnel on radiation turnback levels. Turnback levels help incident responders know how far they can go into a radiation area; they are 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, and we recommend that other organizations develop their own.

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. Through training, research, development and technical support activities, EPA continues to increase its preparedness, and its response and recovery capabilities for chemical, biological or radiological incidents that threaten homeland security. The Agency continues to assemble and evaluate private sector tools and capabilities to ensure effective response approaches can be identified and evaluated for future first responders, decision makers, and the public to use. EPA continues to work with Federal institutions and other organizations through collaborative research efforts to strengthen decontamination capabilities. EPA promotes improved response capabilities across government and industry in areas where EPA has unique knowledge and expertise. 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 to enhance capacity of commercial laboratories throughout the United States.

HIGHLIGHTS OF "ASSESSMENT OF NATIONAL ENVIRONMENTAL RADIOLOGICAL LABORATORY CAPACITY GAP"

In April 2004, the White House released Homeland Security Presidential Directive Number 10 (HSPD-10). This directive requires EPA to determine the nationwide laboratory capacity required to support environmental decontamination of chemical, biological, and radiochemical-nuclear agents by reviewing federal, state, local, and private laboratory capabilities specifically related to environmental sampling and testing and to ensure evidentiary considerations. To respond to HSPD-10 requirements, 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 INS, such as a terrorist attack involving radiological or nuclear materials. In order to determine the national environmental radiological laboratory capacity needs associated with an INS involving radiochemical or nuclear agents, EPA conducted an assessment of the environmental sample demand for the White House Homeland Security Council's Planning Scenario #11 which involves the detonation of Radiological Dispersal Devices (RDD) in three major urban business districts.

The results of the assessment of the sample demand and estimates of the existing nationwide environmental radiological laboratory capacity are summarized in EPA's draft document entitled *Assessment of National Environmental Radiological Laboratory Capacity Gap*. The estimated sample demand resulting from a single RDD event is approximately 360,000 samples over a one-year period. This estimate equates to an average sample demand of approximately 7,000 to 8,000 samples per week over 52 weeks and a peak sample demand of 13,000 to 15,000 samples per week. These numbers do not include the quality control analyses the laboratories will perform in conjunction with the samples which contribute to the overall analysis demands on the laboratories' personnel. EPA's analysis of the Nation's existing radiological laboratory capacity relative to the estimated sample demand from the RDD scenario reveals a significant laboratory capacity gap with an estimated peak capacity shortfall of approximately 7,000 to 9,000 samples per week and an estimated average capacity shortfall of approximately 3,000 samples per week. This gap will result in a lack of timely, reliable, and interpretable data which will delay national and local response and consequence management activities.

It should be noted that this gap is based on a single RDD event in which the source is a single radionuclide which is among the most straightforward to measure from a laboratory perspective. An RDD event with a more complex source – multiple, more difficult to analyze radionuclides, multiple RDD events as described in Planning Scenario 11, or multiple RDD events with different radiation sources would result in an even larger capacity gap. Although EPA has not conducted a detailed assessment, a limited analysis of an improvised nuclear device (IND) scenario indicates a contamination area of approximately 3,000 square miles, and a laboratory capacity gap with potentially millions of laboratory analyses required.

In addition to the capacity gap, EPA's national environmental radiological gap assessment also revealed capability and competency gaps. The capability gap relative to laboratory incident response is largely due to a lack of "tools" like rapid radiochemical methods and laboratory protocols specifically designed for response to radiological or nuclear incident.

The competency gap is due to an overall national declining infrastructure for radiological laboratories due to a number of factors including: reduction of personnel with radiochemistry expertise without adequate replacements; lack of formal training programs for radiological laboratory personnel; and a reduction in federal radiological proficiency testing (PT) programs.

LESSONS LEARNED FROM PREVIOUS RADIOLOGICAL CONTAMINATION INCIDENTS

EPA works continuously with Federal, state, and private sector emergency preparedness and response communities to ensure that lessons learned from incidents such as the 1987 Goiania incident in Brazil and the more recent Polonium-210 murder in the United Kingdom are integrated into the Nation's preparedness efforts. While the Goiania and London incidents provided numerous lessons of potential relevance to a dirty bomb response, it should be remembered that neither actually originated as an intentional effort to spread contamination throughout a densely populated area. In fact, environmental contamination was an unintended consequence. Thus, the scale of these two incidents, in particular, needs to be assessed carefully with respect to intentional efforts to harm the Nation's people and economy by spreading radiological contamination.

However, these and other incidents have taught us that there are a number of critical aspects in responding to radiological contamination. The Protective Action Guides must be accepted and understood prior to an incident. Adequate field personnel and instruments are needed to detect, identify and quantify the radioactive material. Extensive field and fixed laboratory capacity and capability will be needed to analyze the many air, water, soil and food samples that will be used to determine public protective measures.

ROLE IN TOPOFF IV

EPA participation in the DHS-led TOPOFF IV was extensive. EPA deployed over 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 Radiological Emergency Response Team (RERT), Environmental Response Team (ERT), National Decontamination Team (NDT), and the National Counter-terrorism Evidence Response Tem (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.

At the time this testimony was submitted to the Committee on Science and Technology, the TOPOFF IV counter-terrorism exercise had just concluded, and the Federal community is still working to analyze the exercise and develop conclusions. In addition to the functional exercise, TOPOFF IV includes a Long Term Recovery table top exercise, which will occur in December 2007. During this exercise, we expect to discuss the role of environmental laboratories in supporting the recovery phase. DHS will publish a final report that will provide a summary of conclusions, and we will be happy to provide you with additional information in the future.

However, it should be noted that the primary exercise venue, in Portland, Oregon, emphasized the initial emergency response activities rather than the extended recovery phase during which the majority of fixed laboratory samples will be analyzed. As noted earlier in my testimony, the spread of radiological contamination from multiple events such as in Portland, Phoenix and Guam would require more laboratory analyses than the assessment of capacity and capability done to date, which assumed a single RDD event.

CONCLUSION

We appreciate the Committee's interest in examining national radioanalytical laboratory capability and capacity to support radiological response and the opportunity to update you on the status of EPA's other efforts in the area of radiological response. We understand that radioanalytical capacity is a key component of a multi-faceted radiological response in an environment of declining radiochemistry infrastructure. EPA is working closely with other federal agencies via the DHS-sponsored Radiological Laboratory Working Group and with states to enhance national environmental radioanalytical capacity to maintain readiness to meet our responsibilities in the event of an accidental or intentional release of radiological or nuclear material.