

August 15, 2006

The President  
The White House  
Washington D.C. 20500

Dear Mr. President:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), and in accordance with Section 651(d) of the Energy Policy Act of 2005 (Public Law 109-58), I am providing the enclosed Report documenting the efforts of the Radiation Source Protection and Security Task Force. [This is the first report of the Task Force](#); the next one will be four years from now.

The Energy Policy Act charged the Task Force with 1) evaluating and providing recommendations relating to the security of radiation sources in the United States from potential terrorist threats, including acts of sabotage, theft, or use of a radiological source in a radiological dispersal device; and 2) providing recommendations for appropriate regulatory and legislative changes to the Congress and the President.

Under your leadership, the Executive Branch of the U.S. government and G-8 Nations have taken aggressive action to reduce the potential use of radioactive material in a malevolent act. At the June 2003 Evian Summit, you and other G-8 Leaders launched an initiative which culminated in the September 2003 publication by the International Atomic Energy Agency of the "Code of Conduct on the Safety and Security of Radioactive Sources." By your actions at the 2004 Sea Island and 2005 Gleneagles Summits, the United States continues to lead the world in endorsing and adopting the Code of Conduct and has succeeded in obtaining political commitments to the Code of Conduct from 83 countries. There are numerous other examples of the United States' leadership in facing and addressing the threat of radiological terrorism.

The results of the Task Force's efforts are documented in the enclosed report. Representatives of 14 Federal agencies were involved in preparing this report. A hard copy of the Executive Summary, Task Force Charter, and the Task Force Membership List are enclosed, along with a CD copy of the entire report. The report contains a number of

recommendations that, once implemented, will enhance the security of risk-significant radioactive sources in the United States. At this time, the Task Force is not making any recommendations for legislative changes.

If you have any questions, please contact me.

Respectfully,

*/RA/*

Dale E. Klein

Enclosures:

1. Executive Summary
2. Task Force Charter
3. Membership List
4. CD Copy of Radiation Source  
Protection and Security Task  
Force Report

August 15, 2006

The Honorable Richard B. Cheney  
President of the United States Senate  
Washington, D.C. 20510

Dear Mr. President:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), and in accordance with Section 651(d) of the Energy Policy Act of 2005 (Public Law 109-58), I am providing the enclosed Report documenting the efforts of the Radiation Source Protection and Security Task Force. This is the first report of the Task Force; the next one will be four years from now.

The Energy Policy Act charged the Task Force with 1) evaluating and providing recommendations relating to the security of radiation sources in the United States from potential terrorist threats, including acts of sabotage, theft, or use of a radiological source in a radiological dispersal device; and 2) providing recommendations for appropriate regulatory and legislative changes, to the Congress and the President.

In August 2005, in response to a need for better coordination of the efforts of diverse Federal agencies that are working to reduce the risk of radiological terrorism, the Congress amended the Atomic Energy Act to create the Task Force on Radiation Source Protection and Security. The Task Force is Chaired by the U.S. Nuclear Regulatory Commission and includes representatives of the Department of Homeland Security, the Federal Emergency Management Agency, the Department of Defense, the Department of Energy, the Department of Transportation, the Department of Justice, the Department of State, the Department of Health and Human Services, the Office of the Director of National Intelligence, the Central Intelligence Agency, the Federal Bureau of Investigation, the Environmental Protection Agency, and the Office of Science and Technology Policy. The Task Force also includes the Organization of Agreement States and the Conference of Radiation Control Program Directors as non-voting members.

As described in this report, the agencies represented on this Task Force have made remarkable progress in the United States and abroad in ensuring the security of radioactive sources. In this report, the Task Force recommends additional actions that will further strengthen the domestic and international security of radioactive sources. A hard copy of the Executive Summary, Task Force Charter, and the Task Force Membership List are enclosed, along with a CD copy of the entire report. At this time, the Task Force is not making any recommendations for legislative changes.

If you have any questions, please feel free to contact me or Mr. Jack R. Strosnider, Director of NRC's Office of Nuclear Material Safety and Safeguards, who serves as the NRC point person for Task Force activities. Mr. Strosnider may be reached by phone at (301) 415-7800, or by e-mail at [JRS2@nrc.gov](mailto:JRS2@nrc.gov).

Sincerely,

*/RA/*

Dale E. Klein

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1. Executive Summary
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Force Report

Similar letter sent to:

The President  
The White House  
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The Honorable Richard B. Cheney  
President of the United States Senate  
Washington, D.C. 20510

The Honorable J. Dennis Hastert  
Speaker of the United States  
House of Representatives  
Washington, D.C. 20515

The Honorable Pete V. Domenici  
Chairman, Committee on Energy  
and Natural Resources  
United States Senate  
Washington, D.C. 20510  
cc: Senator Jeff Bingaman

The Honorable James M. Inhofe  
Chairman, Committee on Environment  
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The Honorable Joe Barton  
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cc: Representative John D. Dingell

The Honorable Ralph M. Hall  
Chairman, Subcommittee on Energy and Air Quality  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, D.C. 20515  
cc: Representative Rick Boucher

The Honorable George V. Voinovich  
Chairman, Subcommittee on Clean Air,  
Climate Change, and Nuclear Safety  
Committee on Environment and Public Works  
United States Senate  
Washington, D.C. 20510  
cc: Senator Thomas Carper

# Executive Summary

## Part 1

### Introduction

The terrorist attacks of September 11, 2001, heightened the nation's concerns regarding the potential use of radioactive material for a malevolent act. Preventing a terrorist attack involving a radiological dispersal device (RDD) or radiological exposure device (RED) has been a top priority for the Bush administration. As described further below, the United States Government, with the strong support of the President, has been aggressively involved in efforts to address this concern for the past several years. In August 2005, sharing the Administration's concern, the Congress amended the Atomic Energy Act to create the Task Force on Radiation Source Protection and Security. This is the first report of the Task Force.

#### **Members of the Task Force**

- *Chairman of the Nuclear Regulatory Commission (Chair)*
- *Secretary of Homeland Security*
- *Secretary of Defense*
- *Secretary of Energy*
- *Secretary of Transportation*
- *Attorney General*
- *Secretary of State*
- *Director of National Intelligence*
- *Director of the Central Intelligence Agency*
- *Director of the Federal Emergency Management Agency*
- *Director of the Federal Bureau of Investigation*
- *Administrator of the Environmental Protection Agency*

#### Other Invited Agencies

- *Department of Health and Human Services*
- *Office of Science and Technology Policy*
- *Organization of Agreement States and Conference of Radiation Control Program Directors (non-voting member)*

This executive summary is divided into three parts. Part 1 provides an introduction, a list of key accomplishments of the U.S. Government related to the security of radioactive materials in use, storage, or transport, the formation of a task force pursuant to the Energy Policy Act (EPA) of 2005, (Public Law 109-58), and the International Atomic Energy Agency (IAEA) Code of Conduct on the Safety and Security of Radioactive Sources (Code of Conduct). Part 2 presents a summary of the individual chapters contained in the body of the report, and Part 3 summarizes the major conclusions and the recommendations and actions proposed by the Task Force.

A task group of federal agencies and a state representative reviewed the status of programs related to the protection and security of radiation sources and concluded that since September 11, 2001, Federal Agencies have implemented or are in the process of implementing actions to increase security. While implementation of some of these activities is still in progress, the actions taken to date have substantially enhanced security. Nevertheless, completion of the ongoing activities should continue to be a high priority.

## Background

Although the U.S. Government has long been involved in efforts to address radioactive source protection and security, the events of September 11, 2001, heightened the nation's concerns regarding the use of risk-significant radioactive materials in a malevolent act. Such an attack has been of particular concern because of the widespread use of radioactive materials (often contained in sealed sources) in the United States and abroad by industry, hospitals, and academic institutions. Loss or theft of such materials, in risk-significant quantities, could lead to their diversion for malicious use in an RDD or an RED. An RDD is a device or mechanism that is intended to spread radioactive material from the detonation of conventional explosives or other means. RDDs are considered weapons of mass disruption; few deaths would occur due to the radioactive nature of the event, however, significant social and economic impacts could result from public panic, decontamination costs, and denial of access to infrastructure and property for extended periods of time. An RED is a device whose purpose is to expose people to radiation, rather than to disperse radioactive material into the air, as would an RDD.

The U.S. Government, in coordination with the Agreement States, has completed a number of activities to enhance the security of radioactive materials in use, storage, or transport. This report discusses many of these activities. Key accomplishments are highlighted below.

- In June 2002, the Secretary of Energy and the Nuclear Regulatory Commission (NRC) Chairman met to discuss the adequate protection of inventories of nuclear materials that could be used in an RDD. At the June meeting, the Secretary of Energy and the NRC Chairman agreed to convene an Interagency Working Group on Radiological Dispersal Devices to address security concerns. In May 2003, the NRC and Department of Energy (DOE) issued a joint report entitled, "Radiological Dispersal Devices: An Initial Study to Identify Radioactive Materials of Greatest Concern and Approaches to Their Tracking, Tagging, and Disposition," hereafter called the DOE/NRC RDD Report or RDD Report. This study contained a number of recommendations to provide a higher level of protection for radioactive materials.
- On March 17, 2003, the NRC, in cooperation with the Agreement States, issued advisories to licensees to enhance security measures, consistent with the launch of Operation LIBERTY SHIELD.
- During 2002–2003, the U.S. Government and the international community worked to establish international guidelines for the safety and security of radioactive sources. These efforts resulted in a major revision of the IAEA "Code of Conduct on the Safety and Security of Radioactive Sources," hereafter called the Code or Code of Conduct. The Code of Conduct contains non-binding international guidance for effective life-cycle control of radioactive sources used in non-military applications.
- The Department of State (DOS) has led international negotiations on the IAEA Code of Conduct and IAEA import/export guidance and has built political momentum for widespread international acceptance of the Code and the

Guidance by gaining high-level political commitments in forums such as the IAEA G-8, APEC, OSCE, and SPP, as well as national commitments from over 83 countries to follow the Code. DOS has also been effective in strengthening international assistance programs that support sustainable radioactive source control globally.

- In 2004, the Department of Homeland Security (DHS), with DOE and NRC participation, conducted a radiological pilot project, to assess security at nine medical facilities in New York and New Jersey.
- The NRC, with the assistance of Sandia National Laboratories, has conducted security assessments on selected representative facilities possessing Category 1 and 2 quantities of radioactive material.
- In April 2005, a Presidential Directive created the Domestic Nuclear Detection Office (DNDO) within DHS to coordinate efforts to detect and report instances of illicit trafficking.
- The NRC, in coordination with the Executive Branch, has issued a final rule amending the export and import regulations to impose more stringent controls over the Category 1 and 2 materials defined by the IAEA Code of Conduct. This rule reflects a key element of the Code of Conduct and its import/export guidance by increasing licensing requirements, as well as notice and consent requirements. The United States was one of the first countries to implement the export/import provisions of the Code of Conduct.
- The NRC is working closely with DOE, Agreement States, DHS, the Environmental Protection Agency (EPA), the Department of Transportation (DOT), DOS, the Department of Commerce, the Department of Defense (DOD), and the Federal Bureau of Investigation (FBI) to develop a National Source Tracking System (NSTS) to track risk-significant radioactive sources.
- The NRC has developed and is maintaining an interim inventory of Category 1 and 2 radioactive sources for both NRC and Agreement State licensees until completion of the NSTS.
- DOE issued a data call and collected information on Category 1 and 2 sources at DOE sites.
- The NRC has required security enhancements for various classes of NRC and Agreement State materials licensees, including independent spent fuel storage installations, fuel cycle facilities, large irradiators, and manufacturers and distributors of radioactive material. The NRC and Agreement States have issued orders or legally binding requirements to all NRC and Agreement State materials licensees that are authorized to possess Category 1 or 2 quantities of radioactive material. These include licensees in the medical, academic, and industrial fields (e.g., blood irradiators, gamma-knives, and radiographers).
- The NRC has issued security orders governing the transportation of spent nuclear fuel and other radioactive materials in Category 1 quantities. In addition,

the NRC has implemented the Homeland Security Advisory System for NRC and Agreement State licensees.

- DOE has accelerated the collection of high-risk radioactive sources that pose a potential safety or security risk through its Offsite Source Recovery Program. From 1999-2005, this DOE program has recovered over 12,000 sources from approximately 400 locations in the United States.
- DOT has issued regulations that require a security plan for transport of hazardous materials, including highway route-controlled quantities (HRCQ) of radioactive material.
- DHS/Transportation Security Administration (TAS) has issued regulations requiring Federal fingerprint-based criminal history checks of various transport personnel, including aircraft flight crew members, persons with authority to perform checked baggage or cargo functions, and drivers for land transport of hazardous materials (including HRCQ of radioactive material).
- The DOE International Threat Reduction Program seeks to accelerate securing and/or removing vulnerable radiological material throughout the world by performing physical security upgrades at vulnerable sites possessing high-risk radioactive sources.

### **The Energy Policy Act Task Force**

The EPAAct established the Task Force under the leadership of the NRC to evaluate and provide recommendations to the President and Congress relating to the security of radiation sources in the United States from terrorist threats, including acts of sabotage, theft, or use of a radiation source in a RDD.

The Task Force comprises representatives from the NRC (chair), DHS, DOD, DOE, DOT, Department of Justice (DOJ), DOS, Office of the Director of National Intelligence (ODNI), Central Intelligence Agency (CIA), Federal Emergency Management Agency (FEMA), FBI, EPA, Office of Science and Technology Policy (OSTP), and Department of Health and Human Services (HHS). The Task Force includes a nonvoting member representing the Organization of Agreement States (OAS) and the Conference of Radiation Control Program Directors (CRCPD).

The Task Force members represent agencies with broad authority over radioactive sources of all categories, including regulatory, security, and intelligence, in addition to international activities. The Task Force reviewed existing programs and planned near-term activities and summarized the current practice or programs, as well as the planned activities, at the various agencies. Based on this information, the Task Force made a number of recommendations to further enhance security. These recommendations are the major findings of the Task Force. In addition, the Task Force noted a number of ongoing actions that the agencies plan to complete, but which do not rise to the level of a recommendation. These actions are related to activities that are underway or planned for the near term.

The EPA defines the term “radiation sources” (hereinafter referred to as radioactive sources) as a Category 1 or a Category 2 source, as defined by the IAEA Code of Conduct, and any other material that poses a threat requiring protection and security, as determined by the Commission, other than spent nuclear fuel and special nuclear materials.

### **The IAEA Code of Conduct**

The IAEA Code of Conduct contains non-binding international guidance for effective life-cycle control of radioactive sources used in nonmilitary applications. The U.S. Government played a leading role in negotiating the Code of Conduct and has encouraged broad international commitment to the Code. The President, in hosting the G-8 Summit at Sea Island, Georgia, in 2004, made a strong push for prompt G-8 action.

The U.S. Government has formally notified the Director General of the IAEA of its strong support for the current Code of Conduct. The U.S. Government has made a nonlegally binding political commitment to work towards following the guidance in the Code of Conduct. The Code contains basic principles that the IAEA believes are necessary for the safe and secure use of radioactive materials. It also includes guidelines for effective cradle-to-grave control of sealed radioactive sources used in nonmilitary applications for use by countries on a national basis. Specifically, the Code states the following:

The objectives of this Code, through the development, harmonization and implementation of national policies, laws and regulations, and through the fostering of international co-operation, to:

- (i) achieve and maintain a high level of safety and security of radioactive sources;
- (ii) prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources, so as to reduce the likelihood of accidental harmful exposure to such sources or the malicious use of such sources to cause harm to individuals, society or the environment; and
- (iii) mitigate or minimize the radiological consequences of any accident or malicious act involving a radioactive source

The United States continues to work actively to encourage other countries to reflect the Code in their national law and has succeeded in achieving political commitments to work towards following the Code from 83 countries and by leaders of the G-8 (2003 Evian Summit, 2004 Sea Island Summit, and 2005 Gleneagles Summit), European Union (EU) (2004 U.S.-EU Shannon Summit), Asia Pacific Economic Cooperation (APEC) (2005 APEC Leaders Statement), Organization on Security Cooperation in Europe (OSCE) (2005 OSCE Plenary Meeting); and three North American leaders in the Security and Prosperity Partnership. Such attention by world leaders reinforces the value of the Code as an international standard.

The specific categorization of radioactive sources described below is one of the essential features of the IAEA Code of Conduct. This categorization provides a foundation upon which countries worldwide can base their national regulatory infrastructures to control radioactive sources. In addition, the categorization provides the basis for international exchanges of radioactive sources with an international framework

for export control. Furthermore, the IAEA is likely to incorporate the categorization into new international transportation guidance that it is developing.

The IAEA Code of Conduct lists 26 radionuclides and identifies three threshold activity levels for each, referred to as Categories 1, 2, and 3. Sixteen of these radionuclides are commonly used in radioactive sources; the other 10 are unlikely to be used in individual sealed sources with activity levels that would place them within Categories 1-3. The categorization is based on a definition of a dangerous source. Such a source could, if not under control, give rise to exposure sufficient to cause severe deterministic effects (i.e., fatal or life threatening) or a permanent injury. The IAEA Safety Guide No. RS-G-1.9, "Categorization of Radioactive Sources," details the underlying methodology for the categorization. The Code of Conduct only applies to the first three categories shown below, whereas, RS-G-1.9 covers all five categories.

Category 1 sources, if not safely managed or securely protected would be likely to cause permanent injury to a person who handled them, or were otherwise in contact with them, for more than a few minutes. It would probably be fatal to be close to this amount of unshielded material for a period of a few minutes to an hour. These sources are typically used in practices such as radiothermal generators, irradiators and radiation teletherapy.

Category 2 sources, if not safely managed or securely protected, could cause permanent injury to a person who handled them, or were otherwise in contact with them, for a short time (minutes to hours). It could possibly be fatal to be close to this amount of unshielded radioactive material for a period of hours to days. These sources are typically used in practices such as industrial gamma radiography, high dose rate brachytherapy and medium dose rate brachytherapy.

Category 3 sources, if not safely managed or securely protected, could cause permanent injury to a person who handled them, or were otherwise in contact with them, for some hours. It could possibly—although it is unlikely—be fatal to be close to this amount of unshielded radioactive material for a period of days to weeks. These sources are typically used in practices such as fixed industrial gauges involving high activity sources (for example, level gauges, dredger gauges, conveyor gauges, and spinning pipe gauges) and well logging devices.

Category 4 sources, are very unlikely to permanently injure anyone. However, this amount of unshielded radioactive material, if not safely managed or securely protected, could possibly – although it would be unlikely – temporarily injure someone who handled it or who was otherwise in contact with it for many hours, or who was close to it for a period of many weeks.

Category 5 sources, could not permanently injure anyone.<sup>1</sup>

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1 This statement does not take into account possible delayed health effects.

The Task Force, consistent with U.S. policy, has looked to the Code of Conduct in its review of the U.S. programs. The Code defines levels of risk for various sources and appropriate actions to provide for their secure use.

Unless otherwise noted, throughout this report the terms Category 1 and Category 2 sources refer to the 16 radionuclides listed in Annex I of the Code of Conduct at or above the Category 1 or Category 2 threshold, respectively. Category 1 or Category 2 quantities of radioactive material refers to aggregated radioactive material that meets or exceeds the Category 1 or Category 2 thresholds in the Code of Conduct. The aggregated material may include sources smaller than Category 2. The term risk-significant sources refers to Category 1 and Category 2 sources, while the term risk-significant quantities of radioactive material refers to aggregated radioactive material that meets or exceeds the Category 1 or Category 2 thresholds in the Code of Conduct.

Radioactive sources provide critical capabilities in the oil and gas, electrical power, construction, and food industries. They are used to treat millions of patients each year in diagnostic and therapeutic procedures and are also used in a variety of military applications. In addition, academic, government, and private institutions use radioactive sources in technology research and development. These materials are as diverse in geographical location as they are in functional use.

In the United States, there are millions of sources of radioactive material and tens of thousands of authorized users (licensees). The amount of radioactive material authorized for these licensees ranges from one-millionth of a curie (i.e., sources used in gauges) to millions of curies (i.e., sources used in large irradiators). The majority of sources is either Category 4 or Category 5 and poses little risk for use in an RDD. Only a small fraction (approximately 44,000) of these sources, possessed by approximately 1,400 NRC and Agreement State licensees, are Category 1 or 2 sources. DOE controls approximately 2300 additional risk-significant sources in 25 locations. In general, sources with small quantities of radioactive material present lower risk to public health and safety and to common defense and security and are more widely used than sources with large quantities of radioactive material.

## **Part 2**

This section of the report provides a summary of the Task Force’s deliberations on each topic the EAct mandates. The following table lists these topics and provides a pointer to the report chapter that discusses each.

**Table ES.1 Energy Policy Act Topics**

<b>Topic</b>	<b>Chapter Number</b>
The list of sources requiring security, based on potential attractiveness of the source to terrorists and criminals and the extent of the threat to public health and safety	3

The national system for recovery of lost or stolen sources	8
Storage of radioactive sources	7
The National Source Tracking System	11
A national system (including user fees and other methods) to provide for proper disposal of sources	9
Import <sup>2</sup> and export controls on sources to ensure that foreign and U.S. recipients of sources are able and willing to adequately control them	10
Alternative technologies available that may perform some or all of the functions performed by devices or processes that employ radioactive sources and appropriate regulations and incentives for the replacement of the devices and processes with alternative technologies or with sources that would pose a lower risk to public health and safety	12
Procedures for improving the security of use, transportation, and storage of sources, including the inspection program; security measures; fines and background checks for individuals with access to radioactive sources; exchange of information on background checks; physical security of facilities that contain radioactive sources; and the screening of shipments to facilities to ensure that the shipments do not contain explosives	4 (security and control) 5 (transportation) 6 (background checks) 7 (storage)

### Radioactive Source Lists (Chapter 3)

Many agencies have developed lists of radionuclides (and associated thresholds) for various purposes in order to implement their programs. Some of the lists identify the sources that are required to be secured based on the potential attractiveness of the sources for malevolent use and the extent of the threat to public health and safety.

The Task Force reviewed available information on lists of radioactive sources that Government agencies have established for security or safety-related purposes. The Task Force reviewed the following programs and accompanying lists:

- IAEA Code of Conduct
- DOE Radiological Threat Reduction Program
- DOE/NRC Radiological Dispersal Devices Report
- U.S. import/export controls
- National Source Tracking System

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2 The EPAAct only requires the Task Force to address the export of radioactive sources. The Task Force decided to also address import.

- NRC security orders
- NRC standards for protection against radiation
- DOE occupational radiation protection regulations
- transportation rules

The Task Force concludes that agencies are protecting the appropriate radioactive sources (i.e., those sources requiring security based on the potential attractiveness of the source to terrorists and the extent of the threat to public health and safety). At this time, the Task Force does not recommend that additional radionuclides be added to the list of risk-significant sources. The Task Force notes that the source lists are tailored to the specific program and objectives to which it applies. The one list of radionuclides that is different from the Code of Conduct categorization of sources is used in transportation security. The Task Force encourages the U.S. Government to continue the efforts underway internationally to better align transportation guidance with the Code of Conduct. Overall the programs appropriately address the sources consistent with the Code of Conduct.

The Code of Conduct serves as an appropriate framework for considering which sources may warrant additional protection. The Code of Conduct considers that a country should “define its domestic threat, and assess its vulnerability with respect to this threat for the variety of sources used within its territory, based on the potential for loss of control and malicious acts involving one or more radioactive source.” In general, the U.S. programs adhere to this philosophy. However, the threat environment is not static, but is continually changing. Therefore, it is good practice to occasionally reevaluate the potential attractiveness of the radioactive sources. The Task Force recommends that the U.S. Government periodically reevaluate the list of radioactive sources that may warrant additional security and protection. This reevaluation should be coordinated within the Federal family and can be performed as part of the Task Force activities every 4 years. If the reevaluation determines that the list of sources should be expanded, the U.S. Government will work to revise our national requirements and, if appropriate, will work with the international community to revise the Code of Conduct, as appropriate.

#### **Security and Control of Radioactive Sources (Chapter 4)**

The U.S. framework for security and control of radioactive sources requires multijurisdictional coordination. Several U.S. Governmental agencies have authority, sometimes overlapping authorities, to regulate radioactive materials. Reducing the risk of the malevolent use of radioactive material involves many crosscutting activities and issues. Protection of these risk-significant sources is important in preventing RDD and RED proliferation.

The basic principles of the IAEA Code of Conduct state that, “every State should define its domestic threat, and assess its vulnerability with respect to this threat for the variety of sources used within its territory, based on the potential for loss of control and malicious acts involving one or more radioactive sources.” Both the NRC and DOE, in conjunction with other Federal and State entities are responsible for establishing and overseeing security measures for the civilian and certain defense nuclear facilities and materials users, respectively. These agencies regularly coordinate with the intelligence community and Federal law enforcement organizations to review and assess threat information and incorporate a graded threat concept into their security programs. The

NRC and DOE share and coordinate assessments of threat information and strive for comparable protection for comparable material. One of the key steps in the DHS National Infrastructure Protection Program (NIPP) project is to identify and assess the vulnerability of key assets, utilizing to a large extent the work that has been completed by NRC and DOE, and to analyze the potential risks based on threats and consequences. Similar to the NIPP method for risk analysis and management of critical assets protection, vulnerability and security assessments determine where additional security and control measures or mitigating strategies are needed for risk-significant radioactive material. The Chemical and Nuclear Preparedness and Protection Division within DHS has the responsibility for implementing the NIPP framework for the Nuclear Reactors, Materials, and Waste Sector.

Consistent with the threat analysis and potential consequences of malevolent use, and the objectives of the Code of Conduct, the purpose of the U.S. security and control programs is to achieve and maintain a high level of safety and security of radioactive sources to prevent radioactive material from being used for malevolent purposes. This is accomplished by (1) preventing radioactive material within the United States from being redirected for malevolent purposes and (2) preventing radioactive material intended for malevolent use from entering into the United States. The following actions achieve this goal:

- assuring that authorized users have adequate security and controls for risk-significant radioactive materials to enhance deterrence, detection, and defense in response to the current threat
- coordinating with law enforcement agencies to develop tactics to deter and prevent terrorist attacks on fixed nuclear facilities and material in transport
- detecting radioactive materials at key U.S. entry points where these materials either enter the United States or pass through before being transported to other countries
- detecting unauthorized shipments of radioactive materials within the United States
- tracking legitimate shipments of risk-significant radioactive materials into or through the United States
- assuring that the interim database, the import/export database, and eventually the NSTS database include all risk-significant radioactive sources used legitimately in the United States

A recent Government Accountability Office (GAO) report revealed that its investigators were able to enter the United States with radioactive sources using a counterfeit NRC document. In addressing these concerns, the NRC has worked with DHS Customs and Border Protection, and a program is in place to verify the legitimacy of shipments of licensed radioactive material entering the United States through established ports of entry. This information has included (1) 24/7 contact information for each Agreement State, as well as information on their various capabilities, (2) copies of all active import/export licenses and the import/export database, (3) information from the NRC

License Tracking System database (used to track the NRC byproduct, source, and special nuclear material licenses), and (4) information from the interim database. The NRC provides updates to the databases every 2 weeks. Furthermore, the agency will continue to work with Customs staff to improve upon existing procedures and to meet future needs.

Based on its evaluations, including the security assessments and the DHS Radiological Pilot Project results, the NRC has taken additional steps to heighten the security posture for Category 1 and 2 quantities of radioactive material. The NRC and Agreement States have imposed enhanced security and control requirements on licensees authorized to possess Category 1 and 2 quantities of radioactive material. The enhanced security measures and controls are implemented only if the licensee possesses the material. The measures are subject to inspection and enforcement actions by the NRC and the Agreement States.

The regulatory programs of the NRC, Agreement States, and DOE provide controls for the production, use, transportation, storage, and disposal of radioactive sources. After September 11, 2001, many of these controls were augmented by additional legally binding requirements. These requirements strengthened measures that were primarily for public health and safety to enable them to address the national security vulnerabilities raised by the RDD and radiological sabotage threats. The Task Force found that the regulatory controls strengthened by the additional measures reduce the vulnerabilities to national security. Most licensees have just implemented the new requirements and are still adjusting to the requirements, which were effective May 2006. The additional actions planned or underway (i.e., fingerprinting, verification of license, inspections) will further strengthen the regulatory controls.

The Task Force found no significant gaps that are not already being addressed. The Task Force believes that the combination of direct regulations concerning source security and control, personnel protection regulations, guidance, and the recently issued orders, along with the inspection and enforcement program, provides reasonable assurance that Category 1 and 2 sources in use and storage at NRC- and Agreement State-licensed facilities and at DOE facilities are safe and secure. Additional training of both responders and the public is desirable and will improve the response function. Finally, a need exists for continued coordination and communication of ongoing activities by various agencies to obtain the best results without duplication of effort.

## **Transportation (Chapter 5)**

Historically, the transport regulations for radioactive material have focused on protecting persons, property, and the environment from the radiation, criticality, and thermal hazards associated with transport of radioactive material. Because of the international nature of the nuclear industry, international packaging and transport safety standards are needed to support the transport of industrial, medical, research, and fuel cycle material. The IAEA develops these international standards and published them as, "Regulations for the Safe Transport of Radioactive Material, TS-R-1," in September 2005. To ensure international standards are consistent with the transportation requirements in the United States, DOS has designated DOT and the NRC as the U.S. representatives in the IAEA transportation standards development program. To date, these efforts have resulted in complementary international transport standards that afford seamless transport into, out of, through, and within the United States.

In response to the events of 9/11, and changing attitudes in the world, safety standards that do not include security measures were no longer considered adequate in all circumstances. Accordingly, all Federal agencies involved with the transport of radioactive materials initiated programs to improve the security of hazardous materials in our Nation's transportation system.

The current memorandum of understanding (MOU) between DOT and the NRC has served as the foundation of cooperation and consultation for the transportation safety program for transportation subject to their jurisdiction. However, it does not cover transportation security. TSA is primarily involved in transportation security and it was not a signatory to the existing MOU. Because of the importance of transportation security, there should be a similar MOU that addresses security. Therefore, the Task Force recommends that an MOU for transportation security of risk-significant sources be developed. This agreement, similar to the one for transport safety, would clarify the roles and responsibilities of each agency, forge a spirit of cooperation and awareness among the participants, reduce duplication of efforts, and most importantly ensure development of a comprehensive and consistent transport security program.

DOT requires that persons who offer for transport, or transport, hazardous materials (including HRCQ of radioactive material) develop and implement security plans. These plans must include an assessment of the possible transport security risks and appropriate measures to address the identified risks. Plans must also allow that specific security measures may vary with the level of threat at a particular time. At a minimum, DOT requires a security plan to address personnel security (i.e., confirmation of information provided by employees and job applicants), unauthorized access (i.e., risk associated with unauthorized access to hazardous materials) and en route security (i.e., security risks from point of origin to point of destination). Security plans must be in writing and must be retained for as long as they remain in effect. A copy of the security plan or applicable section must be available to the employees who are responsible for implementing it. Companies must revise and update their security plans as necessary to reflect changing circumstances.

The NRC issued orders to NRC and Agreement State licensees that are known to be transporters of Code of Conduct Category 1 materials requiring the implementation of additional security measures during the transport of radioactive material. These measures provide for enhanced transportation security measures beyond current

regulations and enhanced security in preplanning and coordination of shipments, advance notification of shipments to both the NRC and the States through which the shipment will pass, control and monitoring of shipments that are underway, trustworthiness and reliability of personnel, and information security considerations. The NRC provides information to government agencies on a daily basis regarding the Category 1 radioactive material in transit.

The NRC and the Agreement States issued legally binding requirements for increased controls for radioactive materials licensees that use and transport Code of Conduct Category 2 quantities of radioactive material. For the transport of Code of Conduct Category 2 radioactive material, these enhancements provide increased controls beyond current regulations for preplanning and coordination of shipments, use of carriers that control and track shipments, trustworthiness of personnel, and information protection. These legally binding requirements are now in effect.

In addition to the issuance of the orders, legally binding requirements, and standing advisories, the NRC has also routinely adjusted the security measures for shipments to reflect changes in the Homeland Security Advisory System threat level. For example, during national special security events, as defined by DHS, the NRC has issued safeguards advisories to alert licensees to avoid shipping through geographical areas of concern.

Internationally, IAEA has developed the Code of Conduct and the Guidance on Import and Export of Radioactive Sources (Guidance), which supplements the Code. These documents address notification and consent provisions for imports and exports of Category 1 and 2 sources. They do not include notification and consent provisions or provisions relating to security of sources during transit (no conveyance change) or transshipment (involving conveyance change) of radioactive sources that do not have an origination or final destination point within a given country, but are transported through the country. During the development of the Code of Conduct and the Guidance, there was an acknowledged need for further consideration of the transit and transshipment portions of transportation, including how to define transit and transshipment. It is also an area that the Task Force recognizes it cannot solve on its own; the resolution will require international cooperation to develop enhanced security measures for inclusion in international transportation standards. The Transit and Transshipment Security Interagency Working Group was formed to specifically evaluate this area and to develop a U.S. position that can be used in international negotiations on this issue. Not only should these efforts continue, they should be accelerated.

The Task Force recommends that the NRC, DOT, DOS, and other interested Federal agencies continue to work with IAEA to develop international transport security guidance material for risk-significant sources, consistent with international law. The participating agencies should work to harmonize the IAEA program with the existing U.S. requirements and ensure that the guidance on security measures is incorporated into national laws and regulations in the United States at the earliest possible opportunity.

Given the current level of technology, tracking of packages, shipments, and conveyances is possible and would improve security. Although not a fatal flaw in the tracking of hazardous materials, the rapid growth of technology available to track packages, shipments, and conveyances may offer the transport community good benefit at marginal costs. To take full advantage of this technology, transport security officials

need to research the technology, including cost-benefit, to determine where it should be applied.

### **Background Checks (Chapter 6)**

Most Federal agencies require some background investigations for their employees. Some agencies require background checks and investigations for licensees and others covered by their regulations; these checks may include criminal history checks or identity verification for foreign nationals. Background checks involve different types of investigations and/or analysis that may include all or some of the following elements: verification of true identity, trustworthy and reliability check, character and reputation check, credit history check, employment history check, personal history questionnaire, local agency criminal history check, FBI criminal history check, psychological assessment, and a demographic data check. Some of these elements require fingerprinting. Licensees conduct only some of these checks; law enforcement agencies do others. This report discusses the various agencies' background check programs as they relate to radioactive sources.

The EPAct expands the NRC's fingerprinting authority for Federal criminal history check purposes to a broader class of persons. The legislation expands the class of entities covered by the authority for fingerprinting to include individuals or entities that (1) are licensed or certified to engage in an activity subject to NRC regulation, (2) have filed an application for a license or certificate to engage in an activity subject to NRC regulation, or (3) have notified the Commission in writing of an intent to file an application for licensing, certification, permitting, or approval of a product or activity subject to NRC regulation. The legislation provides the Commission with flexibility to establish procedures for fingerprinting and the use of criminal history information, while ensuring the privacy of those fingerprinted.

The NRC is in the process of implementing its new fingerprinting authority provided by the EPAct. The agency has several rulemakings either planned or already underway to implement various fingerprint-related provisions of the EPAct. NRC is planning to issue orders or legally binding requirements for fingerprinting until rulemaking is completed.

The Task Force encourages the NRC to require fingerprinting for Federal criminal history checks on any individual that has access to Category 1 or 2 quantities of radioactive material. Additionally, the Task Force suggests that the NRC consider imposing the requirement on applicants for a license, as well as on licensees. Screening the fingerprints of license applicants would provide assurance that persons with malevolent intent would be detected, thereby reducing the risk of radioactive material being diverted or used for malicious purposes. The Task Force encourages the NRC to expeditiously complete its implementation of the fingerprinting provisions of the EPAct for licensees with, or license applicants for, Category 1 and 2 quantities of radioactive material.

### **Storage of Radioactive Sources (Chapter 7)**

The EPAct specified that the Task Force examine "the storage of radiation sources that are not used in a safe and secure ...." When considering the legal possession of sources, they are in one of four basic conditions, in transit, in use, short-term storage between usage, and long-term storage. The transportation section of the report considers the in-transit (and storage-in-transit) condition for sources. Therefore, the

NRC interpreted the EPAct to mean that the Task Force was to examine sources in storage only and not to examine sources that are in use “in a safe and secure manner.” In other words, the Task Force need not examine sources that are in active use in accordance with applicable regulations.

The Task Force believes that the combination of direct regulations concerning source storage, personnel protection regulations, guidance, and the recently issued orders and legally binding requirements, along with the inspection and enforcement program, provide reasonable assurance that the Category 1 and 2 sources in storage at NRC and Agreement State licensed facilities and at DOE facilities are safe and secure. The new security and control measures will enhance the security of storage situations.

The Task Force did note that some sources in long-term storage are being held for eventual disposal. Either a lack of a legal disposal path or high costs because of a lack of adequate disposal options is causing some licensees to store their unused or unwanted sources until the disposal situation improves. Providing adequate disposal for these sources will have a much greater effect on reducing the total risk of long-term storage (by reducing the number of sources in long-term storage) than any additional changes to storage requirements.

### **Recovery of Lost or Stolen Sources (Chapter 8)**

The national system for recovery of lost and stolen sources is a cooperative and well-coordinated effort between the Federal Government, States, and private sector. It includes licensees authorized to possess and use radioactive sources; regulatory agencies, such as Agreement State radiation control programs and the NRC; response agencies, including DOE, DHS, and EPA, and Federal, State, and local law enforcement agencies.

The system and its capabilities are founded on the principle of protecting public health and safety and national security. Programs are not designed to deal only with lost and stolen sources. Rather, the Federal and State capabilities address a wide range of situations involving excess and unwanted sealed sources, as well as lost, stolen, abandoned, and missing sealed sources. These materials are commonly referred to as “orphan” sources. Additionally, these programs address the full range of concerns for radioactive materials management and are not limited to threats posed only by Category 1 and 2 sealed sources. A number of Federal agencies have resources available to support local emergency operations when orphan radioactive sources are found.

Most reports of lost or stolen material involve small or short-lived radioactive sources that are not a significant risk to public health or useful for terrorist purposes. There is no trend in incidents of loss or theft that would suggest a pattern of collecting such sources for criminal uses. As a result, most reports of lost or stolen sources do not result in emergency response efforts.

A review of NRC and Agreement State data regarding the lost and stolen Category 1 and 2 sources between 1994 and 2005 indicates that there were 60 events involving loss or theft of risk-significant sources (70 percent were lost sources and 30 percent were stolen). This is an average of about 5 lost or stolen risk-significant sources per year. In approximately 80 percent of the events for the 12-year period, the sources were recovered. This results in an average of about one unrecovered source per year. Ninety-five percent of these lost and stolen sources were Ir-192 sources in radiography cameras that were lost/stolen primarily because of the licensee's failure to meet requirements. Because of the short half-life of Ir-192 (74 days), these sources quickly decayed, and the current risk posed by these sources is negligible. NRC has established a performance goal of zero unrecovered risk-significant sources in any calendar year and NRC met that goal in 2005.

Although the number of risk-significant lost and stolen radioactive sources is very low, NRC takes each of these events very seriously. The NRC, in partnership with the Agreement State regulators, have enhanced the security and control measures for these sources, as a means of further reducing the number of lost and stolen sources. These measures have been put in place for all licensees throughout the United States. The NRC and the Agreement States are inspecting those licensees to verify compliance with these requirements.

The U.S. regulatory approach emphasizes accountability of the licensees in possession of the radioactive material, including radioactive sources defined under the EPCRA. This regulatory approach is aimed at protecting public health and safety and national security. The existing regulatory framework requires licensees to secure and control radioactive material at all times to prevent or reduce the potential for lost or stolen sources. This framework also requires routine inventory checks to ensure early discovery of lost or stolen sources. Timely reporting is also required for lost or stolen sources so that recovery operations may be initiated as soon as possible. Federal, State, and local governments have always worked together to investigate and recover lost or stolen sources.

In addition, Federal agencies, by working cooperatively with States, have the capability to address a wide range of situations, including recovering excess or unwanted sealed sources of all categories, as well as addressing issues related to lost, stolen, abandoned, and missing sealed sources. Recovery of excess or unwanted sources is extremely important to the overall protection of public health and safety and the reduction of potential security threats. These programs address the full range of concerns for radioactive materials management and are not limited to risk-significant sources.

From 1999–2005, the DOE OSRP recovered 12,024 sealed sources comprised of six principal isotopes. Each year since 2002, the OSRP has recovered between 1,200 and 3,200 radioactive sources from the licensed sector. Very few of the sources requiring recovery are Category 1 or 2 sources. Approximately 2,000 sources are registered for recovery annually. The owners vary from individuals, small firms, or colleges having one source to large firms possessing hundreds of sources. The OSRP forecasts that it will recover 1960 sources in FY 2006.

The Task Force believes that the current recovery programs for lost or stolen radioactive sources of all categories are effective in protecting public health and safety and providing for security of these sources. Federal, States, local law enforcement, and the private sector should continue to work cooperatively and to communicate effectively in the recovery of lost or stolen sources.

## **Disposal (Chapter 9)**

Disposition of risk-significant radioactive sources that have reached the end of their useful service lives and have no economic value to their current owner (or for various reasons do not have a readily identifiable owner) is an important consideration in ensuring the protection and security of this material. Current disposition programs cover a range of options, including storage, recycling, reconstitution, resale, and, as a final option, disposal as radioactive waste.

The ability to dispose of disused risk-significant radioactive sources in the United States depends on whether the source is a DOE source or sources resulting from certain Federal activities or if it is a commercial source subject to regulation by the NRC or Agreement States. DOE sources can be disposed of at certain DOE radioactive waste disposal facilities in accordance with DOE policies and orders. Commercial sources (discrete radium and accelerator-produced isotope sources are included in this group) may face a somewhat more complex path to disposal. Three major factors affecting the disposal of commercial sources are (1) restrictions associated with the Low-Level Radioactive Waste Policy Amendments Act (LLRWPA) of 1985, (2) waste classification requirements, and (3) cost.

The Task Force concludes that a number of challenges are associated with the disposal of commercial sources of all categories because of the limited number of available disposal facilities, the lack of options to dispose of all types of radioactive waste, and the high disposal costs. The GAO report to Congress entitled, "Low-Level Radioactive Waste Disposal Availability Adequate in the Short Term, but Oversight Needed to Identify Any Future Short Falls," issued June 2004 (GAO-04-604), addressed the potential shortfall in commercial low-level radioactive waste (LLRW) disposal capacity. The GAO report noted that the limitations imposed under the LLRWPA further complicate the disposal issue and that legislative options may be necessary. The Task Force did not identify any immediate security concerns related to disposal of Category 1 and 2 sources that warrant revisiting the LLRWPA. Disposal options for Category 1 and 2 sources are part of the bigger disposal picture. Since many of the risk-significant sources would be considered to be greater-than-Class C (GTCC) waste if disposed of, completion of DOE responsibilities for GTCC waste under the LLRWPA will provide a disposal pathway for these sources.

Because not all Category 1 and 2 sealed sources are subject to current NRC financial assurance requirements and to ensure sufficient funds are set aside to properly disposition these sources at the end of their useful service, the Task Force recommends that NRC evaluate alternative financial assurance options. The evaluation should include a broadening of the financial assurance thresholds in 10 CFR Part 30.35, a source-specific surcharge for disposal, and a universal disposal surcharge on all licensees. The evaluation should consider impacts to the regulated community and

implementation approaches (e.g., the need for legislation and regulation development), and it should involve stakeholders.

### **Import and Export Controls for Radioactive Sources (Chapter 10)**

A key success for the United States in 2004 was adoption by the IAEA, of the nonlegally binding Guidance on the Import and Export of Radioactive Sources. The IAEA Guidance, which is supplemental to the nonlegally binding Code of Conduct, represents the first international guidance on controlling imports and exports of radioactive sources and an important step forward in preventing accidental use of sources or theft and diversion of materials potentially usable in a “dirty bomb.” The United States played a leading role in developing, negotiating, and generating political momentum for the Guidance.

The United States not only took a leadership role in the development and wide acceptance of this international guidance, but it is also among the first countries to take these recommendations into account. In light of new concerns in the security environment after September 11, 2001, the United States has worked quickly to strengthen its controls on the import and export of risk-significant radioactive sources, taking into account the Code and the Guidance. The NRC, which maintains regulatory jurisdiction over the vast majority of commercial U.S. radioactive source transactions, has amended its 10 CFR Part 110, “Export and Import of Nuclear Equipment and Material,” regulations to require specific import and export licenses for Category 1 and 2 quantities of radioactive material. The new rule requires notification of all Category 1 and 2 shipments, and the receipt of consent from the recipient country for Category 1 sources. It also requires licensees to verify that foreign companies receiving their exports are authorized to use the source. Finally, it requires the NRC, in consultation with the Executive Branch, to consider whether the recipient country has adequate controls to safely and securely manage the sources. DOE has undertaken similar internal policy formulation to update its radioactive source import and export procedures. Both agencies will periodically review these policies and procedures to ensure appropriate and efficient implementation. These actions are consistent with the U.S. political commitment to the nonlegally binding Code of Conduct and serve as an example for other States working toward reflecting the Code and Guidance in their national law and regulations. The NRC and DOE will continue to work with other U.S. government agencies to ensure the responsible import and export of risk-significant radioactive sources, while not unduly burdening international commerce in these vital radioactive sources.

### **The National Source Tracking System (Chapter 11)**

There is clearly broad U.S. Government and international interest in tracking risk-significant sources to improve accountability and control. The Task Force considers national source tracking to be part of a comprehensive radioactive source control program for risk-significant radioactive sources. Although a national source tracking system alone cannot guarantee the physical protection of radioactive sources, it can provide greater source accountability, which should foster increased control by licensees. A national source tracking system, in conjunction with other controls, will result in improved security and control for risk-significant radioactive sources.

The NRC, in conjunction with the States and DOE, is developing the NSTS to track IAEA Category 1 and 2 sources, plus three additional radionuclides of interest to DOE. In addition, NRC worked with other Federal agencies to develop the high level requirements for the NSTS. The system will provide information on source inventory and transaction tracking of source movement over the life cycle of that source. This information will support the Federal family in various activities (e.g., Customs and Border Patrol access to information on import/exports). This standardized, centralized information will assist Federal agencies and the States in monitoring the use and movement of risk-significant sources, in prioritizing and conducting inspections or investigations, in effective communication among the various agencies, in verifying legitimate ownership, and in analyzing potential hazards and security risks.

The NSTS is designed to be flexible and easily expanded to support the evolving needs of the U.S. Government. The NRC will publish the final rule establishing the regulatory foundation for the NSTS in August 2006. The agency expects to deploy the system in spring 2007.

### **Alternative Technologies (Chapter 12)**

The use of alternative technologies can eliminate the use of a risk-significant source entirely, make it less dangerous as an RDD or RED source, or reduce the likelihood of its theft. For a number of applications, alternative technologies exist or are in development that could reduce the risk or impact of an accidental or terrorist use involving a radioactive source. In addition, future research in this area could yield even more viable alternative technologies. However, the ultimate success of all such efforts is unclear until a number of critical concerns are addressed. These concerns include incentives for adoption of alternatives, collaboration between Federal agencies, and disposition of displaced sources.

Section 651 of the EPA Act requires that the NRC enter into an arrangement with the National Academy of Sciences (NAS) through which NAS will study industrial, research, and commercial (including medical) uses of radioactive sources and will identify technically and economically feasible replacements for sources that pose a high risk to public health and safety in an accident or terrorist attack. The NAS study will be available in 2007.

Additional effort is necessary before the Task Force can make an informed decision and make specific recommendations on which alternatives should be pursued, what type of incentives should be made available, etc. Therefore, the Task Force recommends that further study be conducted by the Alternative Technologies Subgroup to evaluate financial incentives, research needs for both alternative technologies and alternative designs, including financial support; and the cost versus the benefit of potential alternatives for Category 1 and 2 radioactive sources. These topics will be addressed in the next Task Force report.

A specific area of concern is the widespread use of cesium chloride (CsCl) in a highly dispersible form in certain devices. The Task Force recommends that high priority be given to conducting a study within 2 years to assess the feasibility of phasing out the use of CsCl in a highly dispersible form. This study should include consideration of the availability of alternative technologies for the scope of current uses, safe and secure disposal of existing material, and international safety and security implications. Any plan

to phase out these sources should involve industry and consider not only alternatives for uses of these materials, but also how to compensate owners of these sources so that they do not find their way into environments where less rigorous controls are in place.

## **Conclusions, Recommendations, and Actions**

The U.S. Government has been instrumental in working with other countries to develop international guidance on the safety and security of risk-significant radioactive sources. These efforts resulted in a major revision of the IAEA Code of Conduct and development of the Guidance on the Import and Export of Radioactive Sources, approved by the IAEA Board of Governors in 2003 and 2004, respectively. The U.S. Government has made a nonlegally binding political commitment to work toward following the Code and the Guidance.

The United States is actively working to achieve widespread implementation of the Code and Guidance, and has succeeded in obtaining political commitments from 83 countries and by Leaders of the G-8 (2003 Evian Summit, 2004 Sea Island Summit, and 2005 Gleneagles Summit), EU (2004 U.S.-EU Shannon Summit), Asia-Pacific Economic Cooperation (2005 APEC Leaders Statement), Organization for Security and Cooperation in Europe (2005 OSCE Plenary Meeting), and the three North American leaders in the Security and Prosperity Partnership. Such attention by world leaders reinforces the value of the Code and Guidance as international standards.

The Task Force found no significant gaps that are not already being addressed. However, the Task Force believes that the efforts underway in the international transport security area should be given a higher priority. The Task Force believes that the combination of direct regulations concerning source security and control, personnel protection regulations, guidance, orders, and inspection and enforcement provides reasonable assurance that the Category 1 and 2 sources in use and storage at NRC and Agreement State licensed facilities and at DOE facilities are safe and secure. The NRC and Agreement States will be conducting inspection of their licenses to verify compliance with the requirements. The additional near-term actions planned or underway (i.e., fingerprinting, verification of licenses, etc.) will further strengthen the regulatory controls. In addition, the Task Force has made several recommendations that will enhance the overall security of risk-significant radioactive materials.

The Task Force found the review of programs and activities to be beneficial, providing a convenient means of sharing information that may not have been widely distributed. It provided an opportunity for members to better understand the activities being conducted by other agencies. It is important that this spirit of cooperation and coordination continue into the future. The Task Force has made a recommendation to continue the coordination of activities between interested stakeholders. To assist in this coordination effort, the Task Force plans to meet periodically to discuss topics of interest, receive updates on activities being conducted by the other agencies, and obtain status reports on the implementation of the recommendations and the actions listed in this report.

## **Summary of Recommendations and Actions**

Tables ES.2 and ES.3 present the Task Force recommendations. The Task Force has made no effort to prioritize these actions. Instead, the tables divide the recommendations by type of action necessary to implement the recommendation—regulatory changes and other. Table ES.2 lists those recommendations that would require a policy, rule, or procedure change or development in order to implement. Table ES.3 includes recommendations that involve additional evaluation or study before a final recommendation can be made, as well as miscellaneous actions. At this time, the Task Force is not recommending any legislative changes that would require Congressional action to implement.

**Table ES.2 Regulatory Change Recommendations**

<b>Recommendation 5-1</b>	The Task Force recommends development of a Transport Security Memorandum of Understanding to serve as the foundation for cooperation in the establishment of a comprehensive and consistent transport security program for risk-significant sources.
<b>Recommendation 5-3</b>	The Task Force recommends that the U.S. Government immediately develop a strategy and take actions to address the security of international shipments of Category 1 and 2 radioactive sources that transit or are transshipped through the land territory of the United States.
<b>Recommendation 9-2</b>	The Task Force recommends that the NRC evaluate the financial assurance required for possession of Category 1 and 2 radioactive sources to assure that funding is available for final disposition of the sources.

**Table ES.3 Other Recommendations**

<b>Recommendation 3-1</b>	The Task Force recommends that the U.S. Government periodically reevaluate the list of radioactive sources that warrant enhanced security and protection to assess their adequacy in light of the evolving threat environment.
<b>Recommendation 4-1</b>	The Task Force recommends that there be a coordinated public education campaign (Federal, State, and industry) to reduce fears of radioactivity, diminish the impact of a radiological attack if one were to occur, and provide a deterrent to attackers considering the use of radiological materials.
<b>Recommendation 4-2</b>	The Task Force recommends that the Federal agencies and States continue efforts to improve coordination and communication of their ongoing activities in the area of radiation protection and security for Category 1 and 2 sources.
<b>Recommendation 5-2</b>	The Task Force recommends that the U.S. Government evaluate the feasibility of using new and existing technologies to detect and discourage the theft of risk-

	significant radioactive material during transport. The evaluation should include the findings of operational testing of existing technologies offering enhanced security of motor carrier shipments of hazardous material; shipment tracking, including communication systems; radiofrequency identification; vehicle disabling technologies; and mobile and stationary radiation detection systems.
<b>Recommendation 9-1</b>	The Task Force recommends that the U.S. Government further evaluate the waste disposal options as outlined in the GAO reports on LLRW.
<b>Recommendation 12-1</b>	The Task Force recommends that the Alternatives Technology Subgroup evaluate financial incentives; research needs for both alternative technologies and alternative designs, including financial support; and the cost-benefit of potential alternatives for Category 1 and 2 radioactive sources.
<b>Recommendation 12-2</b>	The Task Force recommends that high priority be given to conducting a study within 2 years to assess the feasibility of phasing out the use of CsCl in a highly dispersible form. This study should consider the availability of alternative technologies for the scope of current uses, safe and secure disposal of existing material, and international safety and security implications.

Various agencies also have a number of actions that are underway or planned in the near term. In addition, adequate information was not yet available to make a final conclusion or recommendation regarding certain areas. While it is important to complete these items, they do not rise to the level of a recommendation. The issues are already being addressed and should be completed and implemented before further changes are introduced. The agencies conducting the actions are encouraged to expeditiously complete them. Table ES.4 summarizes these actions.

**Table ES.4 Actions**

<b>Action 3-1</b>	The NRC should evaluate the need to reissue the Orders to the Manufacturing and Distribution Licensees to make sure no security issues have been introduced from the use of different units of radioactivity.
<b>Action 3-2</b>	The DOT should examine the use of the Code of Conduct Category 1 and 2 thresholds in domestic transportation regulations.
<b>Action 4-1</b>	The NRC should consider imposing additional measures to verify the validity of licenses, before transfer of risk-significant radioactive sources, on all licensees authorized to possess Category 1 and 2 quantities of radioactive material.
<b>Action 5-1</b>	The Transportation Security Subgroup should review the findings and conclusions of all research conducted on securing “high hazard” hazardous materials transport to determine if any of the measures

	should be applied to transport of risk-significant radioactive sources.
<b>Action 5-2</b>	DOT should evaluate the best practices from the high threat urban area corridor assessments to determine whether it should incorporate any of the best practices into the requirements for security plans for high-risk radioactive material. DOT should also evaluate whether transport of lower risk radioactive material warrants a security plan or whether the transport could be exempted from some of the requirements.
<b>Action 6-1</b>	The NRC should expeditiously complete its implementation of the fingerprinting provisions of the EPAct for those applicants for and licensees with Category 1 and 2 quantities of radioactive material. The NRC should place a high priority on completing the EPAct Section 652 rulemaking. As part of the rulemaking, the NRC should require fingerprinting for any individual who could have access to Category 2 or above quantities of radioactive materials. The NRC should also require periodic reinvestigations of such persons.
<b>Action 6-2</b>	The NRC should evaluate the feasibility of establishing a national database for materials licensees that would contain information on pending applications and information on individuals cleared for unescorted access.
<b>Action 6-3</b>	The NRC and DHS should enter into a memorandum of understanding to cover access to the SAVE database for materials licensees.
<b>Action 7-1</b>	The NRC should evaluate requiring licensees to review and document the reasons for storage of risk-significant sources longer than 24 months and the feasibility of establishing a maximum time limit on the long-term storage of risk-significant sources not in use.
<b>Action 9-1</b>	The DOE should continue its ongoing efforts to develop GTCC disposal capability.
<b>Action 10-1</b>	The U.S. Government should continue the efforts to promote international harmonization of import and export controls for Category 1 and 2 radioactive sources.
<b>Action 10-2</b>	The U.S. Government should encourage suppliers to provide arrangements for the return of disused sources and examine means to reduce regulatory impediments that currently make this option unavailable.
<b>Action 10-3</b>	The Task Force suggests the use of education and creation of incentives to discourage the export of used Category 1 and 2 radioactive sources as an alternative to disposal.
<b>Action 10-4</b>	The U.S. Government should improve interagency evaluation of recipient authorization and recipient country controls to prevent fraudulent acquisition of risk-significant sources exported from the United States.
<b>Action 10-5</b>	The NRC should consider reevaluating the need for a specific import license to allow the import of Category 1 and 2 radioactive sources to a U.S.-licensed user.
<b>Action 11-1</b>	The Task Force encourages the NSTS Interagency Coordinating Committee to develop a procedure/policy with guidelines on how to handle both Government and non-Government requests for information in the NSTS.

<b>Action 11-2</b>	The NRC should consider programming the NSTS to provide automatic daily information to Customs on import/export shipment notifications.
<b>Action 11-3</b>	The Task Force suggests that a comprehensive analysis be conducted on the inclusion of Category 3 sources in the NSTS.

Each agency on the Task Force will prepare an action (implementation) plan, as appropriate, addressing the recommendations and actions contained in this report that are within the purview of that agency, and present that plan to the Task Force for inclusion in an overall implementation plan. Action plans should include development of timelines for completion and address resources for implementation.

## Appendix C

### Task Force Charter

#### TASK FORCE ON RADIATION SOURCE PROTECTION AND SECURITY CHARTER

##### Background

The Energy Policy Act of 2005 required establishment of an inter-agency task force on radiation source protection and security. The Task Force is being established to evaluate and provide recommendations to the President and Congress relating to the security of radiation sources in the United States from potential terrorist threats, including acts of sabotage, theft, or use of a radiation source in a radiological dispersal device.

The Energy Policy Act of 2005 defines a radiation source as a Category 1 Source or a Category 2 Source as defined in the Code of Conduct<sup>1</sup> and any other material that poses a threat such that the material is subject to Section 170H of the Atomic Energy Act, as determined by the Commission, by regulation, other than spent nuclear fuel and special nuclear materials.

##### Purpose and Scope

The Task Force shall evaluate and provide recommendations relating to the security of radiation sources in the United States from potential terrorist and criminal threats, including acts of sabotage, theft, or use of a radiation source in a radiological dispersal device.

Specifically, the Task Force will evaluate and make recommendations on the following:

- The list of sources requiring security based on potential attractiveness of the source to terrorists and criminals and the extent of the threat to public health and safety
- The national system for recovery of lost or stolen sources
- Storage of radiation sources that are not used in a safe and secure manner
- The national source tracking system

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1 "Code of Conduct on the Safety and Security of Radioactive Sources," approved by the Board of Governors of the International Atomic Energy Agency and dated September 8, 2003.

- A national system (including user fees and other methods) to provide for the proper disposal of sources
- Import and export controls on sources to ensure that foreign and U.S. recipients of sources are able and willing to adequately control sources
- Alternative technologies available that may perform some or all of the functions performed by devices or processes that employ radiation sources
- Appropriate regulations and incentives for the replacement of the devices and processes with alternative technologies or with sources that would pose a lower risk to public health and safety in the event of an accident or attack involving the radiation source
- Procedures for improving the security of use, transportation and storage of sources, including the inspection program; security measures; fines, background checks for individuals with access to radiation sources; exchange of information on background checks; physical security of facilities that contain radiation sources; and the screening of shipments to facilities to ensure that the shipments do not contain explosives

The Task Force may decide to include other pertinent topics in its evaluation.

During the evaluation of the programs, the Task Force shall consult with Federal, State, and local agencies; the Conference of Radiation Control Program Directors; and the Organization of Agreement States. The Task Force shall notice and provide an opportunity for public comment on its activities.

### **Membership**

The Task Force consists of representatives of NRC, Department of Homeland Security (DHS), Department of Defense (DOD), Department of Energy (DOE), Department of Transportation (DOT), Department of Justice (DOJ), Department of State (DOS), Director of National Intelligence (DNI), Central Intelligence Agency (CIA), Federal Emergency Management Agency (FEMA), Federal Bureau of Investigation (FBI), Environmental Protection Agency (EPA), Health and Human Services/Food and Drug Administration (HHS/FDA), and Office of Science and Technology Policy (OSTP). The Committee will be chaired by NRC.

### **Products**

The Task Force is chartered to produce the following:

- An initial report, in unclassified form with a classified annex if necessary, providing recommendations, including recommendations for appropriate regulatory and legislative changes related to the protection and security of radiation sources. The report is to be submitted to Congress and the President.
- Subsequent reports, in unclassified form with a classified annex if necessary, providing recommendations, including recommendations for appropriate

regulatory and legislative changes related to the protection and security of radiation sources. The reports are to be submitted to Congress and the President.

### **Report Content**

The first report will document what is currently being done (or planned in the near term), and where appropriate provide rationale for acceptability of the program element in each of the areas discussed above. The report will also identify inconsistencies and apparent weaknesses in these areas. Where possible, the report will identify and recommend specific actions to remediate them. For the second report, the Task Force will conduct a gap analysis and focus on areas and issues where there may not be actions underway or programs in place. The report will include an update on each of the areas discussed in the first Task Force report. Possible topics include emergency response from a local to national perspective.

### **Concept of Operations**

The Task Force may form Subgroups to evaluate specific topics. In evaluating topics, the Subgroup should endeavor to develop consensus findings and recommendations. Consensus does not mean that everyone agrees on every detail, but rather that they have a shared understanding of the issue and a basic level of widespread acceptability of the outcomes. Subgroup members should be allowed an opportunity to express their opinions. The Subgroup should look for alternatives that are acceptable to all participants. In achieving consensus, there should be no major objections or strong concerns related to the finding or recommendation. If the Subgroup cannot achieve consensus, the issue needing resolution should be brought to the attention of the full Task Force. The Subgroup should state the issue as concisely as possible, including possible alternatives for the consideration of the full Task Force. If after consideration the full Task Force cannot reach consensus on the topic, the Task Force may consider the inclusion of a minority view in the Task Force report.

### **Schedule**

The first report is to be submitted to Congress and the President no later than August 8, 2006. Subsequent reports to the Congress and the President are to be submitted not less than once every 4 years. The second report is to be submitted no later than August 8, 2010. Milestones for individual products will be developed on a case-by-case basis.

### **Level of Effort**

Initially, the Task Force and Subgroup meetings are expected to occur on a schedule needed to support development of the recommendations for source protection and security and delivery of the report to Congress and the President no later than August 8, 2006. Member agencies will provide necessary resources to support the Subgroups. Member agencies will provide input to the initial report, comment on the report, and concur on the report consistent with the agreed upon schedule. After the initial report is issued, the Task Force meetings will be convened on a schedule necessary to support delivery of the updated report every 4 years as required by the Act.

## Appendix D

### Task Force Membership

#### Task Force Members

Commissioner Jeffrey S. Merrifield, NRC - Task Force Chair acting for NRC Chairman Dale E. Klein

Jack Strosnider, NRC	D.L. Whaley, DOE
Joe Rivers, DOE	Kirsten Cutler, DOS
Chris Peloso, DNI	Bonnie Gitlin, EPA
Vayl Oxford, DHS	Greg Komp, DOD
John Serabian, CIA	Daryl Crutchfield, HHS/FDA
Dr. Joanna Prasher, HHS	Brigham McCown, DOT
Joseph Kaster, DOJ	Craig Conklin, FEMA
Amy Willke, FBI	Brian Vander-Heyden, OSTP
Pearce O'Kelley, OAS/CRCPD-SC (nonvoting member)	

#### Subgroup Members

##### Radiation Sources Subgroup

Donna-Marie Perez, NRC (lead)	Roberta Warren, NRC (lead)
Fritz Sturz, NRC	Tomas Herrera, NRC
Andrew Mauer, NRC	Melanie May, DOE
Pete O'Connell, DOE	Mark Mullen, DHS
Kirsten Cutler, DOS	Chris Peloso, DNI
CAPT Ty Naquin, DOD	Joshua Palotay, NRC
Ed Bailey, OAS/CRCPD-CA (nonvoting member)	

##### Security and Control of Radiation Sources Subgroup

Fritz Sturz, NRC (lead)	Tomas Herrera, NRC
Jim Shaffner, NRC	Andrew Mauer, NRC
Melanie May, DOE	Joe Rivers, DOE
Charlie Cox, DHS	CAPT Bill Adams, DOD
Dave Alberth, DOD	Andrew Sowder, DOS
CPT Scott Crail, DOD	Brendan Plapp, DOS
Joshua Palotay, NRC	
Cindy Cardwell, OAS/CRCPD-TX (nonvoting member)	

##### Transportation Security of Radiation Sources Subgroup

Rick Boyle, DOT (lead)	Rob Lewis, NRC
Adelide Giantelli, NRC	Mark Mullen, DHS
Deborah Kopsick, EPA	Jesse James, CIA

Hans Honeriah, DOD  
Joe Rivers, DOE  
Paul Schmidt, OAS/CRCPD-WI (nonvoting member)

Kirsten Cutler, DOS

National System for Recovery of Lost or Stolen Sources Subgroup

Joel Grimm, DOE (lead)  
James Whitney, NRC  
Andrew Mauer, NRC  
Pat McMonigal, FBI  
Craig Conklin, FEMA  
LTC John Cuellar, DOD  
Joshua Palotay, NRC  
Barbara Hamrick, OAS/CRCPD-CA (nonvoting member)

Michele Burgess, NRC  
Bill Huffman, NRC  
Deborah Kopsick, EPA  
Charlie Cox, DHS  
Rick Boyle, DOT  
LTC Casmere Taylor, DOD

Storage of Radiation Sources Subgroup

William Ward, NRC (lead)  
Joel Grimm, DOE  
Charlie Cox, DHS  
Tom Conley, OAS/CRCPD-KS (nonvoting member)

Fritz Sturz, NRC  
CAPT Lino Fragoso, DOD

National Source Tracking System Subgroup

Merri Horn, NRC (lead)  
Melanie May, DOE  
Julia Mathews, DHS  
Jim Williams, DOT  
Greg Komp, DOD  
Ed Bailey, OAS/CRCPD-CA (nonvoting member)

Andrew Mauer, NRC  
Kirsten Cutler, DOS  
Sally Hamlin, EPA  
LCDR Marvin Earles, DOD

National System to Provide for the Proper Disposal of Sources Subgroup

Christine Gelles, DOE (lead)  
Charlie Cox, DHS  
Kelly Crooks, DOD  
James Joyce, DOE  
Alice Rogers, OAS/CRCPD-TX (nonvoting member)

Jim Shaffner, NRC  
Deborah Kopsick, EPA  
Julie Clements, DOD  
George Dixon, DOE

Import and Export Controls for Radiation Sources Subgroup

Kirsten Cutler, DOS (lead)  
Brooke, Smith, NRC  
Heather Looney, DOE  
Judy Baron, HHS/FDA  
Jim Williams, DOT  
Jeffrey Schoeneck, CIA  
Jared Thompson, OAS/CRCPD-AR (nonvoting member)

Gary Purdy, DHS  
James Whitney, NRC  
Brian Littleton, EPA  
George Durgin, HHS/FDA  
Chris Peloso, DNI

Background Checks Subgroup

Brad Baxter, NRC (lead)  
Andrew Mauer, NRC  
Charlie Cox, DHS  
Jesse James, Jr., CIA  
Mary Gallion, DOE  
Rob Greger, OAS/CRCPD-CA (nonvoting member)

Tom Young, NRC  
Rick Boyle, DOT  
Stephen Thayer, DHS  
Pat McMonigoi, FBI  
Joshua Palotay, NRC

Alternative Technologies Subgroup

Daryl Crutchfield, HHS/FDA (lead)  
Joel Rabovsky, DOE  
Tony Huffert, NRC  
Andrew Sowder, DOS  
Dave Ferrand, DOD  
Debra McBaugh, OAS/CRCPD-WA (nonvoting member)

Sally Hamlin, EPA  
Ruth Watkins, DOE  
Kirsten Cutler, DOS  
Charlie Cox, DHS