Calendar No. 244

111TH CONGRESS
1ST SESSION

H. R. 730

IN THE SENATE OF THE UNITED STATES

MARCH 26, 2009

Received; read twice and referred to the Committee on Homeland Security and Governmental Affairs

DECEMBER 17, 2009

Reported by Mr. LIEBERMAN, with an amendment

[Strike out all after the enacting clause and insert the part printed in italic]

AN ACT

To strengthen efforts in the Department of Homeland Security to develop nuclear forensics capabilities to permit attribution of the source of nuclear material, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

~~**SECTION 1. SHORT TITLE.**~~

~~This Act may be cited as the ''Nuclear Forensics and Attribution Act''.~~

~~**SEC. 2. FINDINGS.**~~

~~Congress finds the following:~~

(1) The threat of a nuclear terrorist attack on American interests, both domestic and abroad, is one of the most serious threats to the national security of the United States. In the wake of an attack, attribution of responsibility would be of utmost importance. Because of the destructive power of a nuclear weapon, there could be little forensic evidence except the radioactive material in the weapon itself.

(2) Through advanced nuclear forensics, using both existing techniques and those under development, it may be possible to identify the source and pathway of a weapon or material after it is interdicted or detonated. Though identifying intercepted smuggled material is now possible in some cases, pre-detonation forensics is a relatively undeveloped field. The post-detonation nuclear forensics field is also immature, and the challenges are compounded by the pressures and time constraints of performing forensics after a nuclear or radiological attack.

(3) A robust and well-known capability to identify the source of nuclear or radiological material intended for or used in an act of terror could also deter prospective proliferators. Furthermore, the threat of effective attribution could compel improved security at material storage facilities, preventing the

unwitting transfer of nuclear or radiological materials.

(4)(A) In order to identify special nuclear material and other radioactive materials confidently, it is necessary to have a robust capability to acquire samples in a timely manner, analyze and characterize samples, and compare samples against known signatures of nuclear and radiological material.

(B) Many of the radioisotopes produced in the detonation of a nuclear device have short half-lives, so the timely acquisition of samples is of the utmost importance. Over the past several decades, the ability of the United States to gather atmospheric samples—often the preferred method of sample acquisition—has diminished. This ability must be restored and modern techniques that could complement or replace existing techniques should be pursued.

(C) The discipline of pre-detonation forensics is a relatively undeveloped field. The radiation associated with a nuclear or radiological device may affect traditional forensics techniques in unknown ways. In a post-detonation scenario, radiochemistry may provide the most useful tools for analysis and characterization of samples. The number of radiochemistry programs and radiochemists in United States Na-

tional Laboratories and universities has dramatically declined over the past several decades. The narrowing pipeline of qualified people into this critical field is a serious impediment to maintaining a robust and credible nuclear forensics program.

(5) Once samples have been acquired and characterized, it is necessary to compare the results against samples of known material from reactors, weapons, and enrichment facilities, and from medical, academic, commercial, and other facilities containing such materials, throughout the world. Some of these samples are available to the International Atomic Energy Agency through safeguards agreements, and some countries maintain internal sample databases. Access to samples in many countries is limited by national security concerns.

(6) In order to create a sufficient deterrent, it is necessary to have the capability to positively identify the source of nuclear or radiological material, and potential traffickers in nuclear or radiological material must be aware of that capability. International cooperation may be essential to catalogue all existing sources of nuclear or radiological material.

SEC. 3. SENSE OF CONGRESS ON INTERNATIONAL AGREEMENTS FOR FORENSICS COOPERATION.

It is the sense of the Congress that the President should—

(1) pursue bilateral and multilateral international agreements to establish, or seek to establish under the auspices of existing bilateral or multilateral agreements, an international framework for determining the source of any confiscated nuclear or radiological material or weapon, as well as the source of any detonated weapon and the nuclear or radiological material used in such a weapon;

(2) develop protocols for the data exchange and dissemination of sensitive information relating to nuclear or radiological materials and samples of controlled nuclear or radiological materials, to the extent required by the agreements entered into under paragraph (1); and

(3) develop expedited protocols for the data exchange and dissemination of sensitive information needed to publicly identify the source of a nuclear detonation.

SEC. 4. RESPONSIBILITIES OF DOMESTIC NUCLEAR DETECTION OFFICE.

(a) ADDITIONAL RESPONSIBILITIES.—Section 1902 of the Homeland Security Act of 2002 (as redesignated by Public Law 110–53; 6 U.S.C. 592) is amended—

(1) in subsection (a)—

(A) in paragraph (9), by striking ''and'' after the semicolon;

(B) by redesignating paragraph (10) as paragraph (14); and

(C) by inserting after paragraph (9) the following:

''(10) develop and implement, with the approval of the Secretary and in coordination with the heads of appropriate departments and agencies, methods and capabilities to support the attribution of nuclear or radiological material to its source when such material is intercepted by the United States, foreign governments, or international bodies or is dispersed in the course of a terrorist attack or other nuclear or radiological explosion;

''(11) establish, within the Domestic Nuclear Detection Office, the National Technical Nuclear Forensics Center to provide centralized stewardship, planning, assessment, gap analysis, exercises, improvement, and integration for all Federal nuclear

forensics activities in order to ensure an enduring national technical nuclear forensics capability and strengthen the collective response of the United States to nuclear terrorism or other nuclear attacks;

"(12) establish a National Nuclear Forensics Expertise Development Program which—

"(A) is devoted to developing and maintaining a vibrant and enduring academic pathway from undergraduate to post-doctorate study in nuclear and geochemical science specialties directly relevant to technical nuclear forensics, including radiochemistry, geochemistry, nuclear physics, nuclear engineering, materials science, and analytical chemistry; and

"(B) shall—

"(i) make available for undergraduate study student scholarships, with a duration of up to four years per student, which shall include, whenever possible, at least one summer internship at a national laboratory or appropriate Federal agency in the field of technical nuclear forensics during the course of the student's undergraduate career;

"(ii) make available for graduate study student fellowships, with a duration of up to five years per student, which—

"(I) shall include, whenever possible, at least two summer internships at a national laboratory or appropriate Federal agency in the field of technical nuclear forensics during the course of the student's graduate career; and

"(II) shall require each recipient to commit to serve for two years in a post-doctoral position in a technical nuclear forensics-related specialty at a national laboratory or appropriate Federal agency after graduation;

"(iii) make available to faculty awards, with a duration of three to five years each, to ensure faculty and their graduate students a sustained funding stream; and

"(iv) place a particular emphasis on reinvigorating technical nuclear forensics programs, while encouraging the participation of undergraduate students, graduate

students, and university faculty from historically Black colleges and universities, Hispanic-serving institutions, and Tribal Colleges and Universities;

''(13) provide an annual report to Congress on the activities carried out under paragraphs (10), (11), and (12); and''; and

(2) by adding at the end the following new subsection:

''(b) DEFINITIONS.—In this section:

''(1) HISTORICALLY BLACK COLLEGE OR UNIVERSITY.—The term 'historically Black college or university' has the meaning given the term 'part B institution' in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)).

''(2) HISPANIC-SERVING INSTITUTION.—The term 'Hispanic-serving institution' has the meaning given that term in section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a).

''(3) TRIBAL COLLEGE OR UNIVERSITY.—The term 'Tribal College or University' has the meaning given that term in section 316(b) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b)).''.

(b) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated the sum of $30,000,000 for

~~each of the fiscal years 2009, 2010, and 2011 to carry out paragraphs (10) through (13) of section 1902(a) of the Homeland Security Act of 2002, as added by subsection (a) of this section.~~

SECTION 1. SHORT TITLE.

This Act may be cited as the "Nuclear Forensics and Attribution Act".

SEC. 2. FINDINGS.

Congress finds the following:

(1) The threat of a nuclear terrorist attack on American interests, both domestic and abroad, is one of the most serious threats to the national security of the United States. In the wake of an attack, attribution of responsibility would be of utmost importance. Because of the destructive power of a nuclear weapon, there could be little forensic evidence except the radioactive material in the weapon itself.

(2) Through advanced nuclear forensics, using both existing techniques and those under development, it may be possible to identify the source and pathway of a weapon or material after it is interdicted or detonated. Though identifying intercepted smuggled material is now possible in some cases, pre-detonation forensics is a relatively undeveloped field. The post-detonation nuclear forensics field is also immature,

and the challenges are compounded by the pressures and time constraints of performing forensics after a nuclear or radiological attack.

(3) A robust and well-known capability to identify the source of nuclear or radiological material intended for or used in an act of terror could also deter prospective proliferators. Furthermore, the threat of effective attribution could compel improved security at material storage facilities, preventing the unwitting transfer of nuclear or radiological materials.

(4)(A) In order to identify special nuclear material and other radioactive materials confidently, it is necessary to have a robust capability to acquire samples in a timely manner, analyze and characterize samples, and compare samples against known signatures of nuclear and radiological material.

(B) Many of the radioisotopes produced in the detonation of a nuclear device have short half-lives, so the timely acquisition of samples is of the utmost importance. Over the past several decades, the ability of the United States to gather atmospheric samples—often the preferred method of sample acquisition—has diminished. This ability must be restored and modern techniques that could complement or replace existing techniques should be pursued.

(C) The discipline of pre-detonation forensics is a relatively undeveloped field. The radiation associated with a nuclear or radiological device may affect traditional forensics techniques in unknown ways. In a post-detonation scenario, radiochemistry may provide the most useful tools for analysis and characterization of samples. The number of radiochemistry programs and radiochemists in United States National Laboratories and universities has dramatically declined over the past several decades. The narrowing pipeline of qualified people into this critical field is a serious impediment to maintaining a robust and credible nuclear forensics program.

(5) Once samples have been acquired and characterized, it is necessary to compare the results against samples of known material from reactors, weapons, and enrichment facilities, and from medical, academic, commercial, and other facilities containing such materials, throughout the world. Some of these samples are available to the International Atomic Energy Agency through safeguards agreements, and some countries maintain internal sample databases. Access to samples in many countries is limited by national security concerns.

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SEC. 3. SENSE OF CONGRESS ON INTERNATIONAL AGREEMENTS FOR FORENSICS COOPERATION.

It is the sense of the Congress that the President should—

(1) pursue bilateral and multilateral international agreements to establish, or seek to establish under the auspices of existing bilateral or multilateral agreements, an international framework for determining the source of any confiscated nuclear or radiological material or weapon, as well as the source of any detonated weapon and the nuclear or radiological material used in such a weapon;

(2) develop protocols for the data exchange and dissemination of sensitive information relating to nuclear or radiological materials and samples of controlled nuclear or radiological materials, to the extent required by the agreements entered into under paragraph (1); and

(3) develop expedited protocols for the data exchange and dissemination of sensitive information needed to publicly identify the source of a nuclear detonation.

SEC. 4. RESPONSIBILITIES OF DOMESTIC NUCLEAR DETECTION OFFICE.

(a) ADDITIONAL RESPONSIBILITIES.—Section 1902 of the Homeland Security Act of 2002 (as redesignated by Public Law 110–53; 6 U.S.C. 592) is amended—

(1) in subsection (a)—

(A) in paragraph (9), by striking "and" after the semicolon;

(B) by redesignating paragraph (10) as paragraph (14); and

(C) by inserting after paragraph (9) the following:

"(10) lead the development and implementation of the national strategic five-year plan for improving the nuclear forensic and attribution capabilities of the United States required under section 1036 of the National Defense Authorization Act for Fiscal Year 2010;

"(11) establish, within the Domestic Nuclear Detection Office, the National Technical Nuclear Forensics Center to provide centralized stewardship,

planning, assessment, gap analysis, exercises, improvement, and integration for all Federal nuclear forensics and attribution activities—

"(A) to ensure an enduring national technical nuclear forensics capability to strengthen the collective response of the United States to nuclear terrorism or other nuclear attacks; and

"(B) to coordinate and implement the national strategic five-year plan referred to in paragraph (10);

"(12) establish a National Nuclear Forensics Expertise Development Program, which—

"(A) is devoted to developing and maintaining a vibrant and enduring academic pathway from undergraduate to post-doctorate study in nuclear and geochemical science specialties directly relevant to technical nuclear forensics, including radiochemistry, geochemistry, nuclear physics, nuclear engineering, materials science, and analytical chemistry;

"(B) shall—

"(i) make available for undergraduate study student scholarships, with a duration of up to 4 years per student, which shall include, if possible, at least 1 summer intern-

ship at a national laboratory or appropriate Federal agency in the field of technical nuclear forensics during the course of the student's undergraduate career;

"(ii) make available for doctoral study student fellowships, with a duration of up to 5 years per student, which shall—

"(I) include, if possible, at least 2 summer internships at a national laboratory or appropriate Federal agency in the field of technical nuclear forensics during the course of the student's graduate career; and

"(II) require each recipient to commit to serve for 2 years in a postdoctoral position in a technical nuclear forensics-related specialty at a national laboratory or appropriate Federal agency after graduation;

"(iii) make available to faculty awards, with a duration of 3 to 5 years each, to ensure faculty and their graduate students have a sustained funding stream; and

"(iv) place a particular emphasis on reinvigorating technical nuclear forensics programs while encouraging the participation of undergraduate students, graduate students, and university faculty from historically Black colleges and universities, Hispanic-serving institutions, Tribal Colleges and Universities, Asian American and Native American Pacific Islander-serving institutions, Alaska Native-serving institutions, and Hawaiian Native-serving institutions; and

"(C) shall—

"(i) provide for the selection of individuals to receive scholarships or fellowships under this section through a competitive process primarily on the basis of academic merit and the nuclear forensics and attribution needs of the United States Government;

"(ii) provide for the setting aside of up to 10 percent of the scholarships or fellowships awarded under this section for individuals who are Federal employees to enhance the education of such employees in areas of critical nuclear forensics and attri-

bution needs of the United States Government, for doctoral education under the scholarship on a full-time or part-time basis;

"(iii) provide that the Secretary may enter into a contractual agreement with an institution of higher education under which the amounts provided for a scholarship under this section for tuition, fees, and other authorized expenses are paid directly to the institution with respect to which such scholarship is awarded;

"(iv) require scholarship recipients to maintain satisfactory academic progress; and

"(v) require that—

"(I) a scholarship recipient who fails to maintain a high level of academic standing, as defined by the Secretary, who is dismissed for disciplinary reasons from the educational institution such recipient is attending, or who voluntarily terminates academic training before graduation from the educational program for which the

scholarship was awarded shall be liable to the United States for repayment within 1 year after the date of such default of all scholarship funds paid to such recipient and to the institution of higher education on the behalf of such recipient, provided that the repayment period may be extended by the Secretary if the Secretary determines it necessary, as established by regulation; and

"(II) a scholarship recipient who, for any reason except death or disability, fails to begin or complete the post-doctoral service requirements in a technical nuclear forensics-related specialty at a national laboratory or appropriate Federal agency after completion of academic training shall be liable to the United States for an amount equal to—

"(aa) the total amount of the scholarship received by such recipient under this section; and

"(bb) the interest on such amounts which would be payable if at the time the scholarship was received such scholarship was a loan bearing interest at the maximum legally prevailing rate;

"(13) provide an annual report to Congress on the activities carried out under paragraphs (10), (11), and (12); and"; and

(2) by adding at the end the following new subsection:

"(b) DEFINITIONS.—In this section:

"(1) ALASKA NATIVE-SERVING INSTITUTION.—The term 'Alaska Native-serving institution' has the meaning given the term in section 317 of the Higher Education Act of 1965 (20 U.S.C. 1059d).

"(2) ASIAN AMERICAN AND NATIVE AMERICAN PACIFIC ISLANDER-SERVING INSTITUTION.—The term 'Asian American and Native American Pacific Islander-serving institution' has the meaning given the term in section 320 of the Higher Education Act of 1965 (20 U.S.C. 1059g).

"(3) HAWAIIAN NATIVE-SERVING INSTITUTION.—The term 'Hawaiian native-serving institution' has

the meaning given the term in section 317 of the Higher Education Act of 1965 (20 U.S.C. 1059d).

"(4) HISPANIC-SERVING INSTITUTION.—The term 'Hispanic-serving institution' has the meaning given that term in section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a).

"(5) HISTORICALLY BLACK COLLEGE OR UNIVERSITY.—The term 'historically Black college or university' has the meaning given the term 'part B institution' in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)).

"(6) TRIBAL COLLEGE OR UNIVERSITY.—The term 'Tribal College or University' has the meaning given that term in section 316(b) of the Higher Education Act of 1965 (20 U.S.C. 1059c(b)).".

(b) JOINT INTERAGENCY ANNUAL REPORTING REQUIREMENT TO CONGRESS AND THE PRESIDENT.—

(1) IN GENERAL.—Section 1907(a)(1) of the Homeland Security Act of 2002 (6 U.S.C. 596a(a)(1)) is amended—

(A) in subparagraph (A)(ii), by striking "; and" and inserting a semicolon;

(B) in subparagraph (B)(iii), by striking the period at the end and inserting "; and"; and

(C) by adding at the end the following new subparagraph:

"(C) the Director of the Domestic Nuclear Detection Office and each of the relevant departments that are partners in the National Technical Forensics Center—

"(i) include, as part of the assessments, evaluations, and reviews required under this paragraph, each office's or department's activities and investments in support of nuclear forensics and attribution activities and specific goals and objectives accomplished during the previous year pursuant to the national strategic five-year plan for improving the nuclear forensic and attribution capabilities of the United States required under section 1036 of the National Defense Authorization Act for Fiscal Year 2010;

"(ii) attaches, as an appendix to the Joint Interagency Annual Review, the most current version of such strategy and plan; and

"(iii) includes a description of new or amended bilateral and multilateral agree-

ments and efforts in support of nuclear forensics and attribution activities accomplished during the previous year.".

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