

Calendar No. 1086

110TH CONGRESS
2D SESSION**H. R. 2631**

IN THE SENATE OF THE UNITED STATES

JUNE 19, 2008

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

SEPTEMBER 25 (legislative day, SEPTEMBER 17), 2008

Reported by Mr. LIEBERMAN (for himself and Ms. COLLINS), 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.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Nuclear Forensics and
5 Attribution Act”.

6 **SEC. 2. FINDINGS.**

7 Congress finds the following:

1 (1) The threat of a nuclear terrorist attack on
2 American interests, both domestic and abroad, is one
3 of the most serious threats to the national security
4 of the United States. In the wake of an attack, attri-
5 bution of responsibility would be of utmost impor-
6 tance. Because of the destructive power of the weap-
7 on, there could be little forensic evidence except the
8 radioactive material in the bomb itself.

9 (2) Through advanced nuclear forensics, using
10 both existing techniques and those under develop-
11 ment, it may be possible to identify the source and
12 pathway of a weapon or material after it is inter-
13 dicted or detonated. Though identifying intercepted
14 smuggled material is now possible in some cases,
15 pre-detonation forensics is a relatively undeveloped
16 field. The post-detonation nuclear forensics field is
17 also immature, and the challenges are compounded
18 by the pressures and time constraints of performing
19 forensics after a nuclear or radiological attack.

20 (3) A robust and well-known capability to iden-
21 tify the source of nuclear or radiological material in-
22 tended for or used in an act of terror could also
23 deter prospective proliferators. Furthermore, the
24 threat of effective attribution could compel improved
25 security at material storage facilities, preventing the

1 unwitting transfer of nuclear or radiological mate-
2 rials.

3 (4)(A) In order to identify special nuclear mate-
4 rial and other radioactive materials confidently, it is
5 necessary to have a robust capability to acquire sam-
6 ples in a timely manner, analyze and characterize
7 samples, and compare samples against known signa-
8 tures of nuclear and radiological material.

9 (B) Many of the radioisotopes produced in the
10 detonation of a nuclear device have short half-lives,
11 so the timely acquisition of samples is of the utmost
12 importance. Over the past several decades, the abil-
13 ity of the United States to gather atmospheric sam-
14 ples—often the preferred method of sample acquisi-
15 tion has diminished. This ability must be restored
16 and modern techniques that could complement or re-
17 place existing techniques should be pursued.

18 (C) The discipline of pre-detonation forensics is
19 a relatively undeveloped field. The radiation associ-
20 ated with a nuclear or radiological device may affect
21 traditional forensics techniques in unknown ways. In
22 a post-detonation scenario, radiochemistry may pro-
23 vide the most useful tools for analysis and character-
24 ization of samples. The number of radiochemistry
25 programs and radiochemists in United States Na-

1 tional Laboratories and universities has dramatically
2 declined over the past several decades. The nar-
3 rowing pipeline of qualified people into this critical
4 field is a serious impediment to maintaining a robust
5 and credible nuclear forensics program.

6 (5) Once samples have been acquired and char-
7 acterized, it is necessary to compare the results
8 against samples of known material from reactors,
9 weapons, and enrichment facilities, and from med-
10 ical, academic, commercial, and other facilities con-
11 taining such materials, throughout the world. Some
12 of these samples are available to the International
13 Atomic Energy Agency through safeguards agree-
14 ments, and some countries maintain internal sample
15 databases. Access to samples in many countries is
16 limited by national security concerns.

17 (6) In order to create a sufficient deterrent, it
18 is necessary to have the capability to positively iden-
19 tify the source of nuclear or radiological material,
20 and potential traffickers in nuclear or radiological
21 material must be aware of that capability. Inter-
22 national cooperation may be essential to catalogue
23 all existing sources of nuclear or radiological mate-
24 rial.

1 **SEC. 3. SENSE OF CONGRESS ON INTERNATIONAL AGREE-**
2 **MENTS FOR FORENSICS COOPERATION.**

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

5 (1) pursue bilateral and multilateral inter-
6 national agreements to establish, or seek to establish
7 under the auspices of existing bilateral or multilat-
8 eral agreements, an international framework for de-
9 termining the source of any confiscated nuclear or
10 radiological material or weapon, as well as the
11 source of any detonated weapon and the nuclear or
12 radiological material used in such a weapon;

13 (2) develop protocols for the data exchange and
14 dissemination of sensitive information relating to nu-
15 clear or radiological materials and samples of con-
16 trolled nuclear or radiological materials, to the ex-
17 tent required by the agreements entered into under
18 paragraph (1); and

19 (3) develop expedited protocols for the data ex-
20 change and dissemination of sensitive information
21 needed to publicly identify the source of a nuclear
22 detonation.

1 **SEC. 4. RESPONSIBILITIES OF DOMESTIC NUCLEAR DETEC-**
2 **TION OFFICE.**

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

6 (1) in subsection (a)—

7 (A) in paragraph (9), by striking “and”
8 after the semicolon;

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

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

13 “(10) develop and implement, with the approval
14 of the Secretary and in coordination with the heads
15 of appropriate departments and agencies, methods
16 and capabilities to support the attribution of nuclear
17 or radiological material to its source when such ma-
18 terial is intercepted by the United States, foreign
19 governments, or international bodies or is dispersed
20 in the course of a terrorist attack or other nuclear
21 or radiological explosion;

22 “(11) establish, within the Domestic Nuclear
23 Detection Office, the National Technical Nuclear
24 Forensics Center to provide centralized stewardship,
25 planning, assessment, gap analysis, exercises, im-
26 provement, and integration for all Federal nuclear

1 forensics activities to ensure an enduring national
2 technical nuclear forensics capability to strengthen
3 the collective response of the United States to nu-
4 clear terrorism or other nuclear attacks;

5 “(12) establish a National Nuclear Forensics
6 Expertise Development Program which—

7 “(A) is devoted to developing and main-
8 taining a vibrant and enduring academic path-
9 way from undergraduate to post-doctorate
10 study in nuclear and geochemical science spe-
11 cialties directly relevant to technical nuclear
12 forensics, including radiochemistry, geo-
13 chemistry, nuclear physics, nuclear engineering,
14 materials science, and analytical chemistry; and

15 “(B) shall—

16 “(i) make available for undergraduate
17 study student scholarships, with a duration
18 of up to four years per student, which shall
19 include, whenever possible, at least one
20 summer internship at a national laboratory
21 or appropriate Federal agency in the field
22 of technical nuclear forensics during the
23 course of the student’s undergraduate ca-
24 reer;

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

4 “(I) shall include, whenever pos-
5 sible, at least two summer internships
6 at a national laboratory or appro-
7 priate Federal agency in the field of
8 technical nuclear forensics during the
9 course of the student’s graduate ca-
10 reer; and

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

17 “(iii) make available to faculty
18 awards, with a duration of three to five
19 years each, to ensure faculty and their
20 graduate students a sustained funding
21 stream; and

22 “(iv) place a particular emphasis on
23 reinvigorating technical nuclear forensics
24 programs, while encouraging the participa-
25 tion of undergraduate students, graduate

1 students, and university faculty from his-
 2 torically Black colleges and universities,
 3 Hispanic-serving institutions, and Tribal
 4 Colleges and Universities;

5 “(13) provide an annual report to Congress on
 6 the activities carried out under paragraphs (10),
 7 (11), and (12); and”;

8 (2) by adding at the end the following new sub-
 9 section:

10 “(b) DEFINITIONS.—In this section:

11 “(1) HISTORICALLY BLACK COLLEGE OR UNI-
 12 VERSITY.—The term ‘historically Black college or
 13 university’ has the meaning given the term ‘part B
 14 institution’ in section 322(2) of the Higher Edu-
 15 cation Act of 1965 (20 U.S.C. 1061(2)).

16 “(2) HISPANIC-SERVING INSTITUTION.—The
 17 term ‘Hispanic-serving institution’ has the meaning
 18 given that term in section 502 of the Higher Edu-
 19 cation Act of 1965 (20 U.S.C. 1101a).

20 “(3) TRIBAL COLLEGE OR UNIVERSITY.—The
 21 term ‘Tribal College or University’ has the meaning
 22 given that term in section 316(b) of the Higher
 23 Education Act of 1965 (20 U.S.C. 1059e(b)).”.

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

1 each of the fiscal years 2009, 2010, and 2011 to carry
2 out paragraphs (10) through (13) of section 1902(a) of
3 the Homeland Security Act of 2002, as added by sub-
4 section (a) of this section.

5 **SECTION 1. FINDINGS.**

6 *Congress finds the following:*

7 *(1) The threat of a nuclear terrorist attack on*
8 *American interests, both domestic and abroad, is one*
9 *of the most serious threats to the national security of*
10 *the United States. In the wake of an attack, attribu-*
11 *tion of responsibility would be of utmost importance.*
12 *Because of the destructive power of the weapon, there*
13 *could be little forensic evidence except the radioactive*
14 *material in the bomb itself.*

15 *(2) Through advanced nuclear forensics, using*
16 *both existing techniques and those under development,*
17 *it may be possible to identify the source and pathway*
18 *of a weapon or material after it is interdicted or deto-*
19 *nated. Though identifying intercepted smuggled mate-*
20 *rial is now possible in some cases, pre-detonation*
21 *forensics is a relatively undeveloped field. The post-*
22 *detonation nuclear forensics field is also immature,*
23 *and the challenges are compounded by the pressures*
24 *and time constraints of performing forensics after a*
25 *nuclear or radiological attack.*

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

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

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

23 (C) *The discipline of pre-detonation forensics is*
24 *a relatively undeveloped field. The radiation associated*
25 *with a nuclear or radiological device may affect*

1 *traditional forensics techniques in unknown ways. In*
2 *a post-detonation scenario, radiochemistry may pro-*
3 *vide the most useful tools for analysis and character-*
4 *ization of samples. The number of radiochemistry*
5 *programs and radiochemists in United States Na-*
6 *tional Laboratories and universities has dramatically*
7 *declined over the past several decades. The narrowing*
8 *pipeline of qualified people into this critical field is*
9 *a serious impediment to maintaining a robust and*
10 *credible nuclear forensics program.*

11 *(5) Once samples have been acquired and charac-*
12 *terized, it is necessary to compare the results against*
13 *samples of known material from reactors, weapons,*
14 *and enrichment facilities, and from medical, aca-*
15 *ademic, commercial, and other facilities containing*
16 *such materials, throughout the world. Some of these*
17 *samples are available to the International Atomic*
18 *Energy Agency through safeguards agreements, and*
19 *some countries maintain internal sample databases.*
20 *Access to samples in many countries is limited by na-*
21 *tional security concerns.*

22 *(6) In order to create a sufficient deterrent, it is*
23 *necessary to have the capability to positively identify*
24 *the source of nuclear or radiological material, and po-*
25 *tential traffickers in nuclear or radiological material*

1 *must be aware of that capability. International co-*
2 *operation may be essential to catalogue all existing*
3 *sources of nuclear or radiological material.*

4 **SEC. 2. SENSE OF CONGRESS ON INTERNATIONAL AGREE-**
5 **MENTS FOR FORENSICS COOPERATION.**

6 *It is the sense of the Congress that the President*
7 *should—*

8 (1) *pursue bilateral and multilateral inter-*
9 *national agreements to establish, or seek to establish*
10 *under the auspices of existing bilateral or multilateral*
11 *agreements, an international framework for deter-*
12 *mining—*

13 (A) *the source of any confiscated nuclear or*
14 *radiological material or weapon; and*

15 (B) *the source of any detonated weapon and*
16 *the nuclear or radiological material used in such*
17 *a weapon;*

18 (2) *develop protocols for the data exchange and*
19 *dissemination of sensitive information relating to nu-*
20 *clear or radiological materials and samples of con-*
21 *trolled nuclear or radiological materials, to the extent*
22 *required by the agreements entered into under para-*
23 *graph (1); and*

24 (3) *develop expedited protocols for the data ex-*
25 *change and dissemination of sensitive information*

1 *needed to publicly identify the source of a nuclear det-*
2 *onation.*

3 **SEC. 3. RESPONSIBILITIES OF DOMESTIC NUCLEAR DETEC-**
4 **TION OFFICE.**

5 *(a) ADDITIONAL RESPONSIBILITIES.—Section 1902 of*
6 *the Homeland Security Act of 2002 (6 U.S.C. 592) is*
7 *amended—*

8 *(1) by striking “(a) MISSION”;*

9 *(2) in paragraph (9), by striking “and” at the*
10 *end;*

11 *(3) by redesignating paragraph (10) as para-*
12 *graph (14); and*

13 *(4) by inserting after paragraph (9) the fol-*
14 *lowing:*

15 *“(10) develop and implement, with the approval*
16 *of the Secretary, and in consultation with the Attor-*
17 *ney General, the Secretary of Defense, the Secretary*
18 *of Energy, the Secretary of State, the Director of Na-*
19 *tional Intelligence, and the heads of appropriate de-*
20 *partments and agencies, a ‘National Strategy and*
21 *Five-Year Implementation Plan for Improving the*
22 *Nuclear Forensic and Attribution Capabilities of the*
23 *United States Government’ and the methods, capabili-*
24 *ties, and capacity for nuclear materials forensics and*
25 *attribution, including—*

1 “(A) an investment plan to support nuclear
2 materials forensics and attribution;

3 “(B) the allocation of roles and responsibil-
4 ities for pre-detonation, detonation, and post-det-
5 onation activities; and

6 “(C) the attribution of nuclear or radio-
7 logical material to its source when such material
8 is intercepted by the United States, foreign gov-
9 ernments, or international bodies or is dispersed
10 in the course of a terrorist attack or other nu-
11 clear or radiological explosion;

12 “(11) establish, within the Domestic Nuclear De-
13 tection Office, the National Technical Nuclear
14 Forensics Center to provide centralized stewardship,
15 planning, assessment, gap analysis, exercises, im-
16 provement, and integration for all Federal nuclear
17 forensics and attribution activities—

18 “(A) to ensure an enduring national tech-
19 nical nuclear forensics capability to strengthen
20 the collective response of the United States to nu-
21 clear terrorism or other nuclear attacks; and

22 “(B) to coordinate and implement the na-
23 tional strategic plan and 5-year plan to improve
24 national forensics and attribution capabilities

1 *for all Federal nuclear and radiological forensics*
2 *capabilities;*

3 “(12) *establish a National Nuclear Forensics Ex-*
4 *pertise Development Program, which—*

5 “(A) *is devoted to developing and maintain-*
6 *ing a vibrant and enduring academic pathway*
7 *from undergraduate to post-doctorate study in*
8 *nuclear and geochemical science specialties di-*
9 *rectly relevant to technical nuclear forensics, in-*
10 *cluding radiochemistry, geochemistry, nuclear*
11 *physics, nuclear engineering, materials science,*
12 *and analytical chemistry; and*

13 “(B) *shall—*

14 “(i) *make available for undergraduate*
15 *study student scholarships, with a duration*
16 *of up to 4 years per student, which shall in-*
17 *clude, if possible, at least 1 summer intern-*
18 *ship at a national laboratory or appro-*
19 *priate Federal agency in the field of tech-*
20 *nical nuclear forensics during the course of*
21 *the student’s undergraduate career;*

22 “(ii) *make available for graduate study*
23 *student fellowships, with a duration of up*
24 *to 5 years per student, which shall—*

1 “(I) include, if possible, at least 2
2 summer internships at a national lab-
3 oratory or appropriate Federal agency
4 in the field of technical nuclear
5 forensics during the course of the stu-
6 dent’s graduate career; and

7 “(II) require each recipient to
8 commit to serve for 2 years in a post-
9 doctoral position in a technical nuclear
10 forensics-related specialty at a national
11 laboratory or appropriate Federal
12 agency after graduation;

13 “(iii) make available to faculty
14 awards, with a duration of 3 to 5 years
15 each, to ensure faculty and their graduate
16 students have a sustained funding stream;
17 and

18 “(iv) place a particular emphasis on
19 reinvigorating technical nuclear forensics
20 programs; and”.

21 (b) *JOINT INTERAGENCY ANNUAL REPORTING RE-*
22 *QUIREMENT TO CONGRESS AND THE PRESIDENT.—*

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

1 (A) in subparagraph (A)(ii), by striking
2 “and” at the end;

3 (B) in subparagraph (B)(iii), by striking
4 the period at the end and inserting “; and”; and

5 (C) by adding at the end the following:

6 “(C) the Director of the Domestic Nuclear
7 Detection Office and each of the relevant Depart-
8 ments that are partners in the National Tech-
9 nical Forensics Center—

10 “(i) includes, as part of the assess-
11 ments, evaluations, and reviews required
12 under this paragraph, each relevant agen-
13 cy’s activities and investments in support of
14 nuclear forensics and attribution activities;

15 “(ii) attaches, as an appendix to the
16 Joint Interagency Annual Review, the most
17 current version of the plan required under
18 section 1902(a)(10); and

19 “(iii) after March 31 of each year,
20 funds allocated for activities authorized
21 under section 1902 are not spent until the
22 submission to Congress of the report re-
23 quired under subsection (b).”.

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H. R. 2631

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.

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