

110TH CONGRESS
2D SESSION

S. 2669

To provide for the implementation of a Green Chemistry Research and Development Program, and for other purposes.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 26, 2008

Ms. SNOWE (for herself, Mr. ROCKEFELLER, Mr. PRYOR, Ms. COLLINS, and Mr. KERRY) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To provide for the implementation of a Green Chemistry Research and Development Program, 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 “Green Chemistry Re-
5 search and Development Act of 2008”.

6 **SEC. 2. DEFINITIONS.**

7 In this Act:

8 (1) GREEN CHEMISTRY.—The term “green
9 chemistry” means chemistry and chemical engineer-
10 ing to design chemical products and processes that

1 reduce or eliminate the use or generation of haz-
2 arduous substances while producing high quality
3 products through safe and efficient manufacturing
4 processes;

5 (2) INTERAGENCY WORKING GROUP.—The term
6 “Interagency Working Group” means the inter-
7 agency working group established under section 3(c);
8 and

9 (3) PROGRAM.—The term “Program” means
10 the Green Chemistry Research and Development
11 Program described in section 3.

12 **SEC. 3. GREEN CHEMISTRY RESEARCH AND DEVELOPMENT**

13 **PROGRAM.**

14 (a) IN GENERAL.—The President shall establish a
15 Green Chemistry Research and Development Program to
16 promote and coordinate Federal green chemistry research,
17 development, education, and technology transfer activities.

18 (b) PROGRAM ACTIVITIES.—The activities of the Pro-
19 gram shall be designed to—

20 (1) provide sustained support for green chem-
21 istry research, development, education, and tech-
22 nology transfer through—

23 (A) merit-reviewed competitive grants to
24 individual investigators and teams of investiga-

1 tors, including, to the extent practicable, young
2 investigators, for research and development;

3 (B) grants to fund collaborative research
4 and development partnerships among univer-
5 sities, industry, and nonprofit organizations;

6 (C) green chemistry research, development,
7 and technology transfer conducted at Federal
8 laboratories; and

9 (D) to the extent practicable, encourage-
10 ment of consideration of green chemistry in—

11 (i) the conduct of Federal chemical
12 science and engineering research and de-
13 velopment; and

14 (ii) the solicitation and evaluation of
15 all proposals for chemical science and engi-
16 neering research and development;

17 (2) examine methods by which the Federal Gov-
18 ernment can create incentives for consideration and
19 use of green chemistry processes and products;

20 (3) facilitate the adoption of green chemistry
21 innovations;

22 (4) expand education and training of under-
23 graduate and graduate students, and professional
24 chemists and chemical engineers, including through

1 partnerships with industry, in green chemistry
2 science and engineering;

3 (5) collect and disseminate information on
4 green chemistry research, development, and tech-
5 nology transfer, including information on—

6 (A) incentives and impediments to develop-
7 ment and commercialization;

8 (B) accomplishments;

9 (C) best practices; and

10 (D) costs and benefits;

11 (6) provide venues for outreach and dissemina-
12 tion of green chemistry advances such as symposia,
13 forums, conferences, and written materials in col-
14 laboration with, as appropriate, industry, academia,
15 scientific and professional societies, and other rel-
16 evant groups;

17 (7) support economic, legal, and other appro-
18 priate social science research to identify barriers to
19 commercialization and methods to advance commer-
20 cialization of green chemistry; and

21 (8) provide for public input and outreach to be
22 integrated into the Program by the convening of
23 public discussions, through mechanisms such as cit-
24 izen panels, consensus conferences, and educational
25 events, as appropriate.

1 (c) INTERAGENCY WORKING GROUP.—The President
2 shall establish an Interagency Working Group, which shall
3 include representatives from the National Science Founda-
4 tion, the National Institute of Standards and Technology,
5 the Department of Energy, the Environmental Protection
6 Agency, and any other agency that the President may des-
7 ignate. The Director of the National Science Foundation
8 and the Assistant Administrator for Research and Devel-
9 opment of the Environmental Protection Agency shall
10 serve as co-chairs of the Interagency Working Group. The
11 Interagency Working Group shall oversee the planning,
12 management, and coordination of the Program. The Inter-
13 agency Working Group shall—

14 (1) establish goals and priorities for the Pro-
15 gram, to the extent practicable in consultation with
16 green chemistry researchers and potential end-users
17 of green chemistry products and processes; and

18 (2) provide for interagency coordination, includ-
19 ing budget coordination, of activities under the Pro-
20 gram.

21 (d) AGENCY BUDGET REQUESTS.—Each Federal
22 agency and department participating in the Program
23 shall, as part of its annual request for appropriations to
24 the Office of Management and Budget, submit a report
25 to the Office of Management and Budget which identifies

1 its activities that contribute directly to the Program and
2 states the portion of its request for appropriations that
3 is allocated to those activities. The President shall include
4 in his annual budget request to Congress a statement of
5 the portion of each agency's or department's annual budg-
6 et request allocated to its activities undertaken pursuant
7 to the Program.

8 (e) REPORT TO CONGRESS.—Not later than 2 years
9 after the date of enactment of this Act, the Interagency
10 Working Group shall transmit a report to the Committee
11 on Science and Technology of the House of Representa-
12 tives and the Committee on Commerce, Science, and
13 Transportation of the Senate. This report shall include—

14 (1) a summary of federally funded green chem-
15 istry research, development, demonstration, edu-
16 cation, and technology transfer activities, including
17 the green chemistry budget for each of these activi-
18 ties; and

19 (2) an analysis of the progress made toward
20 achieving the goals and priorities for the Program,
21 and recommendations for future program activities.

22 **SEC. 4. MANUFACTURING EXTENSION CENTER GREEN SUP-**
23 **PLIERS NETWORK GRANT PROGRAM.**

24 Section 25(a) of the National Institute of Standards
25 and Technology Act (15 U.S.C. 278k(a)) is amended—

1 (1) by striking “and” at the end of paragraph
2 (4);

3 (2) by striking the period at the end of para-
4 graph (5) and inserting “; and”; and

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

6 “(6) the enabling of supply chain manufactur-
7 ers to continuously improve products and processes,
8 increase energy efficiency, increase recycling, iden-
9 tify cost-saving opportunities, and optimize resources
10 and technologies with the aim of reducing or elimi-
11 nating the use or generation of hazardous sub-
12 stances.”.

13 **SEC. 5. UNDERGRADUATE EDUCATION IN CHEMISTRY AND**
14 **CHEMICAL ENGINEERING.**

15 (a) PROGRAM AUTHORIZED.—

16 (1) IN GENERAL.—As part of the Program ac-
17 tivities under section 3(b)(4), the Director of the
18 National Science Foundation shall carry out a pro-
19 gram to award grants to institutions of higher edu-
20 cation to support efforts by such institutions to re-
21 vise their undergraduate curriculum in chemistry
22 and chemical engineering to incorporate green chem-
23 istry concepts and strategies.

24 (2) AWARD OF GRANTS.—Grants shall be
25 awarded under this section on a competitive, merit-

1 reviewed basis and shall require cost sharing in cash
2 from non-Federal sources, to match the Federal
3 funding.

4 (b) SELECTION PROCESS.—

5 (1) APPLICATION.—An institution of higher
6 education seeking funding under this section shall
7 submit an application to the Director of the Na-
8 tional Science Foundation at such time, in such
9 manner, and containing such information as the Di-
10 rector may require. Minority serving institutions
11 shall receive due consideration for such funding. The
12 application shall include at a minimum—

13 (A) a description of the content and sched-
14 ule for adoption of the proposed curricular revi-
15 sions to the courses of study offered by the ap-
16 plicant in chemistry and chemical engineering;
17 and

18 (B) a description of the source and amount
19 of cost sharing to be provided.

20 (2) EVALUATION OF APPLICATIONS.—In evalu-
21 ating the applications submitted under paragraph
22 (1), the Director shall consider, at a minimum—

23 (A) the level of commitment demonstrated
24 by the applicant in carrying out and sustaining

1 lasting curriculum changes in accordance with
2 subsection (a)(1); and

3 (B) the amount of cost sharing to be pro-
4 vided.

5 (c) **AUTHORIZATION OF APPROPRIATIONS.**—In addi-
6 tion to amounts authorized under section 8, from sums
7 otherwise authorized to be appropriated by the National
8 Science Foundation Authorization Act of 2002, there are
9 authorized to be appropriated to the National Science
10 Foundation for carrying out this section \$7,000,000 for
11 fiscal year 2009, \$7,500,000 for fiscal year 2010, and
12 \$8,000,000 for fiscal year 2011.

13 **SEC. 6. STUDY ON COMMERCIALIZATION OF GREEN CHEM-**
14 **ISTRY.**

15 (a) **STUDY.**—The Director of the National Science
16 Foundation shall enter into an arrangement with the Na-
17 tional Research Council to conduct a study of the factors
18 that constitute barriers to the successful commercial appli-
19 cation of promising results from green chemistry research
20 and development.

21 (b) **CONTENTS.**—The study shall—

22 (1) examine successful and unsuccessful at-
23 tempts at commercialization of green chemistry in
24 the United States and abroad; and

1 (2) recommend research areas and priorities
2 and public policy options that would help to over-
3 come identified barriers to commercialization.

4 (c) REPORT.—The Director shall submit a report to
5 the Committee on Science and Technology of the House
6 of Representatives and the Committee on Commerce,
7 Science, and Transportation of the Senate on the findings
8 and recommendations of the study conducted under sub-
9 section (a) within 18 months after the date of the enact-
10 ment of this Act.

11 **SEC. 7. PARTNERSHIPS IN GREEN CHEMISTRY.**

12 (a) PROGRAM AUTHORIZED.—

13 (1) ESTABLISHMENT OF PARTNERSHIPS.—The
14 agencies participating in the Program shall carry
15 out a joint, coordinated program to award grants to
16 institutions of higher education to establish partner-
17 ships with companies in the chemical industry to re-
18 train chemists and chemical engineers in the use of
19 green chemistry concepts and strategies.

20 (2) AWARD OF GRANTS.—Grants shall be
21 awarded under this section on a competitive, merit-
22 reviewed basis and shall require cost sharing from
23 non-Federal sources by members of the partner-
24 ships.

1 (3) ELIGIBILITY.—In order to be eligible to re-
2 ceive a grant under this section, an institution of
3 higher education shall enter into a partnership with
4 two or more companies in the chemical industry.
5 Such partnerships may also include other institu-
6 tions of higher education and professional associa-
7 tions.

8 (4) USE OF GRANTS.—Grants awarded under
9 this section shall be used for activities to provide re-
10 training for chemists or chemical engineers in green
11 chemistry, including—

12 (A) the development of curricular materials
13 and the designing of undergraduate and grad-
14 uate level courses; and

15 (B) publicizing the availability of profes-
16 sional development courses of study in green
17 chemistry and recruiting graduate scientists
18 and engineers to pursue such courses.

19 Grants may provide stipends for individuals enrolled
20 in courses developed by the partnership.

21 (b) SELECTION PROCESS.—

22 (1) IN GENERAL.—An institution of higher edu-
23 cation seeking funding under this section shall sub-
24 mit an application at such time, in such manner,
25 and containing such information as shall be specified

1 by the Interagency Working Group and published in
2 a proposal solicitation for the Program. The applica-
3 tion shall include at a minimum—

4 (A) a description of the partnership and
5 the role each member will play in implementing
6 the proposal;

7 (B) a description of the courses of study
8 that will be provided;

9 (C) a description of the number and size of
10 stipends, if offered;

11 (D) a description of the source and
12 amount of cost sharing to be provided; and

13 (E) a description of the manner in which
14 the partnership will be continued after assist-
15 ance under this section ends.

16 (2) EVALUATION OF APPLICATIONS.—The eval-
17 uation of the applications submitted under para-
18 graph (1) shall be carried out in accordance with
19 procedures developed by the Interagency Working
20 Group and shall consider, at a minimum—

21 (A) the ability of the partnership to carry
22 out effectively the proposed activities;

23 (B) the degree to which such activities are
24 likely to prepare chemists and chemical engi-
25 neers sufficiently to be competent to apply

1 green chemistry concepts and strategies in their
2 work; and

3 (C) the amount of cost sharing to be pro-
4 vided.

5 **SEC. 8. AUTHORIZATION OF APPROPRIATIONS.**

6 (a) NATIONAL SCIENCE FOUNDATION.—There are
7 authorized to be appropriated to the National Science
8 Foundation to carry out the provisions of this Act—

9 (1) \$20,000,000 for fiscal year 2009;

10 (2) \$21,000,000 for fiscal year 2010; and

11 (3) \$22,000,000 for fiscal year 2011.

12 (b) NATIONAL INSTITUTE OF STANDARDS AND
13 TECHNOLOGY.—There are authorized to be appropriated
14 to the National Institute of Standards and Technology to
15 carry out the provisions of this Act—

16 (1) \$8,000,000 for fiscal year 2009;

17 (2) \$9,000,000 for fiscal year 2010; and

18 (3) \$10,000,000 for fiscal year 2011.

19 (c) DEPARTMENT OF ENERGY.—There are author-
20 ized to be appropriated to the Department of Energy to
21 carry out the provisions of this Act—

22 (1) \$13,000,000 for fiscal year 2009;

23 (2) \$14,000,000 for fiscal year 2010; and

24 (3) \$15,000,000 for fiscal year 2011.

1 (d) ENVIRONMENTAL PROTECTION AGENCY.—There
2 are authorized to be appropriated to the Environmental
3 Protection Agency to carry out the provisions of this
4 Act—

- 5 (1) \$10,000,000 for fiscal year 2009;
6 (2) \$11,000,000 for fiscal year 2010; and
7 (3) \$12,000,000 for fiscal year 2011.

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