

109TH CONGRESS
1ST SESSION

S. 1270

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

IN THE SENATE OF THE UNITED STATES

JUNE 20, 2005

Ms. SNOWE (for herself and Mr. ROCKEFELLER) 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 2005”.

6 **SEC. 2. DEFINITIONS.**

7 In this Act—

8 (1) the term “green chemistry” means chem-
9 istry and chemical engineering to design chemical
10 products and processes that reduce or eliminate the

1 use or generation of hazardous substances while pro-
2 ducing high quality products through safe and effi-
3 cient manufacturing processes;

4 (2) the term “Interagency Working Group”
5 means the interagency working group established
6 under section 3(c); and

7 (3) the term “Program” means the Green
8 Chemistry Research and Development Program de-
9 scribed in section 3.

10 **SEC. 3. GREEN CHEMISTRY RESEARCH AND DEVELOPMENT**
11 **PROGRAM.**

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

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

19 (1) provide sustained support for green chem-
20 istry research, development, demonstration, edu-
21 cation, and technology transfer through—

22 (A) merit-reviewed competitive grants to
23 individual investigators and teams of investiga-
24 tors, including, to the extent practicable, young
25 investigators, for research and development;

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

4 (C) green chemistry research, development,
5 demonstration, and technology transfer con-
6 ducted at Federal laboratories; and

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

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

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

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

18 (3) facilitate the adoption of green chemistry
19 innovations;

20 (4) expand education and training of under-
21 graduate and graduate students, and professional
22 chemists and chemical engineers, including through
23 partnerships with industry, in green chemistry
24 science and engineering;

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

4 (A) incentives and impediments to develop-
5 ment and commercialization;

6 (B) accomplishments;

7 (C) best practices; and

8 (D) costs and benefits;

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

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

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

24 (c) INTERAGENCY WORKING GROUP.—The President
25 shall establish an Interagency Working Group, which shall

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

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

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

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

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

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

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

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

20 **SEC. 4. MANUFACTURING EXTENSION CENTER GREEN SUP-**
21 **PLIERS NETWORK GRANT PROGRAM.**

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

24 (1) by striking “and” at the end of paragraph
25 (4);

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

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

4 “(6) the enabling of supply chain manufactur-
5 ers to continuously improve products and processes,
6 increase energy efficiency, identify cost-saving oppor-
7 tunities, and optimize resources and technologies
8 with the aim of reducing or eliminating the use or
9 generation of hazardous substances.”.

10 **SEC. 5. UNDERGRADUATE EDUCATION IN CHEMISTRY AND**
11 **CHEMICAL ENGINEERING.**

12 (a) PROGRAM AUTHORIZED.—(1) As part of the Pro-
13 gram activities under section 3(b)(4), the Director of the
14 National Science Foundation shall carry out a program
15 to award grants to institutions of higher education to sup-
16 port efforts by such institutions to revise their under-
17 graduate curriculum in chemistry and chemical engineer-
18 ing to incorporate green chemistry concepts and strate-
19 gies.

20 (2) Grants shall be awarded under this section on a
21 competitive, merit-reviewed basis and shall require cost
22 sharing in cash from non-Federal sources, to match the
23 Federal funding.

24 (b) SELECTION PROCESS.—(1) An institution of
25 higher education seeking funding under this section shall

1 submit an application to the Director at such time, in such
2 manner, and containing such information as the Director
3 may require. The application shall include at a min-
4 imum—

5 (A) a description of the content and schedule
6 for adoption of the proposed curricular revisions to
7 the courses of study offered by the applicant in
8 chemistry and chemical engineering; and

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

11 (2) In evaluating the applications submitted under
12 paragraph (1), the Director shall consider, at a min-
13 imum—

14 (A) the level of commitment demonstrated by
15 the applicant in carrying out and sustaining lasting
16 curriculum changes in accordance with subsection
17 (a)(1); and

18 (B) the amount of cost sharing to be provided.

19 (c) AUTHORIZATION OF APPROPRIATIONS.—In addi-
20 tion to amounts authorized under section 8, from sums
21 otherwise authorized to be appropriated by the National
22 Science Foundation Authorization Act of 2002, there are
23 authorized to be appropriated to the National Science
24 Foundation for carrying out this section \$7,000,000 for

1 fiscal year 2006, \$7,500,000 for fiscal year 2007, and
2 \$8,000,000 for fiscal year 2008.

3 **SEC. 6. STUDY ON COMMERCIALIZATION OF GREEN CHEM-**
4 **ISTRY.**

5 (a) **STUDY.**—The Director of the National Science
6 Foundation shall enter into an arrangement with the Na-
7 tional Research Council to conduct a study of the factors
8 that constitute barriers to the successful commercial appli-
9 cation of promising results from green chemistry research
10 and development.

11 (b) **CONTENTS.**—The study shall—

12 (1) examine successful and unsuccessful at-
13 tempts at commercialization of green chemistry in
14 the United States and abroad; and

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

18 (c) **REPORT.**—The Director shall submit a report to
19 the Committee on Science of the House of Representatives
20 and the Committee on Commerce, Science, and Transpor-
21 tation of the Senate on the findings and recommendations
22 of the study within 18 months after the date of enactment
23 of this Act.

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

2 (a) PROGRAM AUTHORIZED.—(1) The agencies par-
3 ticipating in the Program shall carry out a joint, coordi-
4 nated program to award grants to institutions of higher
5 education to establish partnerships with companies in the
6 chemical industry to retrain chemists and chemical engi-
7 neers in the use of green chemistry concepts and strate-
8 gies.

9 (2) Grants shall be awarded under this section on a
10 competitive, merit-reviewed basis and shall require cost
11 sharing from non-Federal sources by members of the part-
12 nerships.

13 (3) In order to be eligible to receive a grant under
14 this section, an institution of higher education shall enter
15 into a partnership with two or more companies in the
16 chemical industry. Such partnerships may also include
17 other institutions of higher education and professional as-
18 sociations.

19 (4) Grants awarded under this section shall be used
20 for activities to provide retraining for chemists or chemical
21 engineers in green chemistry, including—

22 (A) the development of curricular materials and
23 the designing of undergraduate and graduate level
24 courses; and

25 (B) publicizing the availability of professional
26 development courses of study in green chemistry and

1 recruiting graduate scientists and engineers to pur-
2 sue such courses.

3 Grants may provide stipends for individuals enrolled in
4 courses developed by the partnership.

5 (b) SELECTION PROCESS.—(1) An institution of
6 higher education seeking funding under this section shall
7 submit an application at such time, in such manner, and
8 containing such information as shall be specified by the
9 Interagency Working Group and published in a proposal
10 solicitation for the Program. The application shall include
11 at a minimum—

12 (A) a description of the partnership and the
13 role each member will play in implementing the pro-
14 posal;

15 (B) a description of the courses of study that
16 will be provided;

17 (C) a description of the number and size of sti-
18 pends, if offered;

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

21 (E) a description of the manner in which the
22 partnership will be continued after assistance under
23 this section ends.

24 (2) The evaluation of the applications submitted
25 under paragraph (1) shall be carried out in accordance

1 with procedures developed by the Interagency Working
2 Group and shall consider, at a minimum—

3 (A) the ability of the partnership to carry out
4 effectively the proposed activities;

5 (B) the degree to which such activities are like-
6 ly to prepare chemists and chemical engineers suffi-
7 ciently to be competent to apply green chemistry
8 concepts and strategies in their work; and

9 (C) the amount of cost sharing to be provided.

10 **SEC. 8. AUTHORIZATION OF APPROPRIATIONS.**

11 (a) NATIONAL SCIENCE FOUNDATION.—(1) From
12 sums otherwise authorized to be appropriated by the Na-
13 tional Science Foundation Authorization Act of 2002,
14 there are authorized to be appropriated to the National
15 Science Foundation for carrying out this Act—

16 (A) \$7,000,000 for fiscal year 2006;

17 (B) \$7,500,000 for fiscal year 2007; and

18 (C) \$8,000,000 for fiscal year 2008.

19 (2) The sums authorized by paragraph (1) are in ad-
20 dition to any funds the National Science Foundation is
21 spending on green chemistry through its ongoing chem-
22 istry and chemical engineering programs.

23 (b) NATIONAL INSTITUTE OF STANDARDS AND
24 TECHNOLOGY.—From sums otherwise authorized to be
25 appropriated, there are authorized to be appropriated to

1 the National Institute of Standards and Technology for
2 carrying out this Act—

- 3 (1) \$5,000,000 for fiscal year 2006;
- 4 (2) \$5,500,000 for fiscal year 2007; and
- 5 (3) \$6,000,000 for fiscal year 2008.

6 (c) DEPARTMENT OF ENERGY.—From sums other-
7 wise authorized to be appropriated, there are authorized
8 to be appropriated to the Department of Energy for car-
9 rying out this Act—

- 10 (1) \$7,000,000 for fiscal year 2006;
- 11 (2) \$7,500,000 for fiscal year 2007; and
- 12 (3) \$8,000,000 for fiscal year 2008.

13 (d) ENVIRONMENTAL PROTECTION AGENCY.—From
14 sums otherwise authorized to be appropriated, there are
15 authorized to be appropriated to the Environmental Pro-
16 tection Agency for carrying out this Act—

- 17 (1) \$7,000,000 for fiscal year 2006;
- 18 (2) \$7,500,000 for fiscal year 2007; and
- 19 (3) \$8,000,000 for fiscal year 2008.

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