

GREEN CHEMISTRY RESEARCH AND DEVELOPMENT ACT
OF 2005

MAY 16, 2005.—Committed to the Committee of the Whole House on the State of
the Union and ordered to be printed

Mr. BOEHLERT, from the Committee on Science,
submitted the following

R E P O R T

[To accompany H.R. 1215]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, to whom was referred the bill (H.R. 1215) to provide for the implementation of a Green Chemistry Research and Development Program, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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I. AMENDMENT

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Green Chemistry Research and Development Act of 2005”.

SEC. 2. DEFINITIONS.

In this Act—

(1) the term “green chemistry” means chemistry and chemical engineering to design chemical products and processes that reduce or eliminate the use or generation of hazardous substances while producing high quality products through safe and efficient manufacturing processes;

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

(3) the term “Program” means the Green Chemistry Research and Development Program described in section 3.

SEC. 3. GREEN CHEMISTRY RESEARCH AND DEVELOPMENT PROGRAM.

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

(b) PROGRAM ACTIVITIES.—The activities of the Program shall be designed to—

(1) provide sustained support for green chemistry research, development, demonstration, education, and technology transfer through—

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

(B) grants to fund collaborative research and development partnerships among universities, industry, and nonprofit organizations;

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

(D) to the extent practicable, encouragement of consideration of green chemistry in—

(i) the conduct of Federal chemical science and engineering research and development; and

(ii) the solicitation and evaluation of all proposals for chemical science and engineering research and development;

(2) examine methods by which the Federal Government can create incentives for consideration and use of green chemistry processes and products;

(3) facilitate the adoption of green chemistry innovations;

(4) expand education and training of undergraduate and graduate students, and professional chemists and chemical engineers, including through partnerships with industry, in green chemistry science and engineering;

(5) collect and disseminate information on green chemistry research, development, and technology transfer, including information on—

(A) incentives and impediments to development and commercialization;

(B) accomplishments;

(C) best practices; and

(D) costs and benefits;

(6) provide venues for outreach and dissemination of green chemistry advances such as symposia, forums, conferences, and written materials in collaboration with, as appropriate, industry, academia, scientific and professional societies, and other relevant groups;

(7) support economic, legal, and other appropriate social science research to identify barriers to commercialization and methods to advance commercialization of green chemistry; and

(8) provide for public input and outreach to be integrated into the Program by the convening of public discussions, through mechanisms such as citizen panels, consensus conferences, and educational events, as appropriate.

(c) INTERAGENCY WORKING GROUP.—The President shall establish an Interagency Working Group, which shall include representatives from the National Science Foundation, the National Institute of Standards and Technology, the Department of Energy, the Environmental Protection Agency, and any other agency that the President may designate. The Director of the National Science Foundation and the Assistant Administrator for Research and Development of the Environmental Protection Agency shall serve as co-chairs of the Interagency Working Group. The Inter-

agency Working Group shall oversee the planning, management, and coordination of the Program. The Interagency Working Group shall—

(1) establish goals and priorities for the Program, to the extent practicable in consultation with green chemistry researchers and potential end-users of green chemistry products and processes; and

(2) provide for interagency coordination, including budget coordination, of activities under the Program.

(d) AGENCY BUDGET REQUESTS.—Each Federal agency and department participating in the Program shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report to the Office of Management and Budget which identifies its activities that contribute directly to the Program and states the portion of its request for appropriations that is allocated to those activities. The President shall include in his annual budget request to Congress a statement of the portion of each agency's or department's annual budget request allocated to its activities undertaken pursuant to the Program.

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

(1) a summary of federally funded green chemistry research, development, demonstration, education, and technology transfer activities, including the green chemistry budget for each of these activities; and

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

SEC. 4. MANUFACTURING EXTENSION CENTER GREEN SUPPLIERS NETWORK GRANT PROGRAM.

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

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

(2) by striking the period at the end of paragraph (5) and inserting “; and”; and

(3) by adding at the end the following:

“(6) the enabling of supply chain manufacturers to continuously improve products and processes, increase energy efficiency, identify cost-saving opportunities, and optimize resources and technologies with the aim of reducing or eliminating the use or generation of hazardous substances.”.

SEC. 5. UNDERGRADUATE EDUCATION IN CHEMISTRY AND CHEMICAL ENGINEERING.

(a) PROGRAM AUTHORIZED.—(1) As part of the Program activities under section 3(b)(4), the Director of the National Science Foundation shall carry out a program to award grants to institutions of higher education to support efforts by such institutions to revise their undergraduate curriculum in chemistry and chemical engineering to incorporate green chemistry concepts and strategies.

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

(b) SELECTION PROCESS.—(1) An institution of higher education seeking funding under this section shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include at a minimum—

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

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

(2) In evaluating the applications submitted under paragraph (1), the Director shall consider, at a minimum—

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

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

(c) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts authorized under section 8, from sums otherwise authorized to be appropriated by the National Science Foundation Authorization Act of 2002, there are authorized to be appropriated to the National Science Foundation for carrying out this section \$7,000,000 for fiscal year 2006, \$7,500,000 for fiscal year 2007, and \$8,000,000 for fiscal year 2008.

SEC. 6. STUDY ON COMMERCIALIZATION OF GREEN CHEMISTRY.

(a) **STUDY.**—The Director of the National Science Foundation shall enter into an arrangement with the National Research Council to conduct a study of the factors that constitute barriers to the successful commercial application of promising results from green chemistry research and development.

(b) **CONTENTS.**—The study shall—

(1) examine successful and unsuccessful attempts at commercialization of green chemistry in the United States and abroad; and

(2) recommend research areas and priorities and public policy options that would help to overcome identified barriers to commercialization.

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

SEC. 7. PARTNERSHIPS IN GREEN CHEMISTRY.

(a) **PROGRAM AUTHORIZED.**—(1) The agencies participating in the Program shall carry out a joint, coordinated program to award grants to institutions of higher education to establish partnerships with companies in the chemical industry to retrain chemists and chemical engineers in the use of green chemistry concepts and strategies.

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

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

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

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

(B) publicizing the availability of professional development courses of study in green chemistry and recruiting graduate scientists and engineers to pursue such courses.

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

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

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

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

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

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

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

(2) The evaluation of the applications submitted under paragraph (1) shall be carried out in accordance with procedures developed by the Interagency Working Group and shall consider, at a minimum—

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

(B) the degree to which such activities are likely to prepare chemists and chemical engineers sufficiently to be competent to apply green chemistry concepts and strategies in their work; and

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

SEC. 8. AUTHORIZATION OF APPROPRIATIONS.

(a) **NATIONAL SCIENCE FOUNDATION.**—(1) From sums otherwise authorized to be appropriated by the National Science Foundation Authorization Act of 2002, there are authorized to be appropriated to the National Science Foundation for carrying out this Act—

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

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

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

(2) The sums authorized by paragraph (1) are in addition to any funds the National Science Foundation is spending on green chemistry through its ongoing chemistry and chemical engineering programs.

(b) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.—From sums otherwise authorized to be appropriated, there are authorized to be appropriated to the National Institute of Standards and Technology for carrying out this Act—

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

(c) DEPARTMENT OF ENERGY.—From sums otherwise authorized to be appropriated, there are authorized to be appropriated to the Department of Energy for carrying out this Act—

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

(d) ENVIRONMENTAL PROTECTION AGENCY.—From sums otherwise authorized to be appropriated, there are authorized to be appropriated to the Environmental Protection Agency for carrying out this Act—

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

II. PURPOSE OF THE BILL

The purpose of H.R. 1215, the Green Chemistry Research and Development Act of 2005, is to establish an interagency research and development (R&D) program to promote and coordinate green chemistry research, development, demonstration, education, and technology transfer activities.

III. BACKGROUND AND NEED FOR THE LEGISLATION

GREEN CHEMISTRY

Green chemistry is most commonly defined as chemistry that involves the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. It is sometimes characterized as “benign by design.” Also known as sustainable chemistry or benign chemistry, green chemistry seeks to prevent the creation of hazards, instead of focusing on cleaning up waste after the fact.

Examples of green chemistry include the development of pesticide alternatives that are effective at killing target organisms, but are benign to non-target organisms and do not persist in the environment. Another example is the use of the benign solvent, supercritical carbon dioxide, in dry cleaning processes instead of toxic perchloroethylene.

BENEFITS

In addition to the inherent advantages to human health and the environment, green chemistry can offer economic advantages and improvements to worker safety, public safety, and national security.

Many in the private sector have recognized the potential savings that green chemistry offers. For example, by using benign chemical processes, businesses can avoid the costs associated with treating or cleaning up pollutants. Other savings can come from simply making more efficient use of raw materials (sometimes referred to as “atom economy”) and energy. Dow Chemical Company’s Midland, Michigan facility is an example of the level of savings a company can achieve. In 1996 Dow partnered with the Natural Resources Defense Council to conduct a thorough review of the facility’s processes to identify ways to implement more recycling and

substitute benign materials for hazardous ones. By April 1999, after a one-time investment of \$3.1 million, the facility had reduced emissions of targeted substances by 43 percent and the amount of targeted wastes by 37 percent primarily through green chemistry innovations. The improvements are saving Dow \$5.4 million per year, a 174 percent annual return on investment.¹

Many other inherent advantages come from green chemistry in the areas of worker safety, public safety, and national security. For example, many chemical processes are conducted at extreme temperature and/or pressure, two conditions that present a potential hazard for workers. Also, many processes involve toxic substances. Green chemistry seeks to design processes that can be conducted at or near room temperature and pressure, and that use benign substances. Both of these steps can improve working conditions for employees, and reduce the costs of liability protections for employers.

FEDERAL GOVERNMENT PROGRAMS

The federal government supports activities related to green chemistry through agencies including the National Science Foundation (NSF), the Environmental Protection Agency (EPA), the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST). Some agencies—EPA, for example—run programs that are focused directly on green chemistry. Other agencies, such as DOE, fund green chemistry as byproducts of efforts to achieve other goals, such as improving energy efficiency. Because some green chemistry investments are direct and some are indirect, and because green chemistry is not broken out in agency budgets, it is difficult to determine the precise level of Federal investment in green chemistry.

It is clear, however, that the investment in green chemistry and chemical engineering is small compared to the investment in chemistry and chemical engineering as a whole. In 2000, the four agencies mentioned above spent approximately \$540 million on chemistry and chemical engineering research and development (R&D); investment in green chemistry R&D was probably close to \$40 million. In addition, green chemistry activities are not fully coordinated among the agencies.

The following table (Table 1) indicates what each agency believes it is spending on green chemistry and chemical engineering activities. The table is followed by descriptions of how this money is spent.

TABLE 1
(In millions)

	EPA	NSF	NIST	DOE
FY04 funding	\$7	\$24	\$4	N/A
FY05 funding	3	25	4	N/A
FY06 proposal	4	23	4	N/A
Total Chemistry and Chemical Engineering (2000)	23	186	39	\$292

EPA supports both green chemistry R&D and outreach efforts to promote green chemistry. The R&D is funded through the Office of

¹ Amato, Invan, Fortune, New York: July 24, 2000, vol. 142, issue 3, pg. 270U

Research and Development; the outreach and promotion through the Office of Pollution Prevention and Toxic Substances (OPPTS).

In fiscal year 2004 (FY04), EPA spent approximately \$5 million directly on green chemistry and chemical engineering R&D and approximately \$2 million on other green chemistry activities. The R&D funding was split between internal R&D, conducted at EPA's lab in Cincinnati and external R&D through the Science to Achieve Results (STAR) program. As part of the STAR program, EPA and NSF developed a partnership, the Technologies for a Sustainable Environment (TSE) program, which primarily funded green chemistry and chemical engineering R&D. The other \$2 million in funding for green chemistry activities supported green chemistry outreach programs such as the Presidential Green Chemistry Challenge Award Program.

The TSE program was the external R&D program most focused on green chemistry in the Federal government. EPA and NSF put out a joint request for proposals, and then each agency awarded grants based on its own mission. NSF funded more basic green chemistry R&D, while EPA funded more applied R&D. TSE was initiated in 1995 and awarded 204 grants totaling just over \$56 million between 1995 and 2004.

However, in FY05, the Administration successfully proposed to eliminate EPA's funding for TSE, and in FY06 it has not requested any funding for this program. The result has been a large decrease in the amount of funding EPA spends on green chemistry activities. In FY05, EPA's green chemistry activities are funded at approximately \$1 million for internal R&D and \$2 million for outreach programs. The President's FY06 proposal would likely fund R&D at \$1 million and outreach programs at \$3 million.

Because EPA discontinued funding for the TSE program, NSF has also virtually eliminated specific funding under the TSE program which was NSF's only explicit green chemistry funding opportunity. While NSF does not put out specific solicitations for green chemistry R&D, NSF funds a wide range of investigator-driven green chemistry R&D. While NSF does not have a specific line item in the budget for green chemistry activities, NSF estimates that in FY04 it spent approximately \$10.8 million on green chemistry activities in the Division of Chemistry and \$13 million on green chemistry activities in the Division of Chemical Transport Systems. In FY05 and FY06, NSF estimates that this funding will not change dramatically, but may be lower due to the discontinuation of the TSE program. It is difficult to determine the precise level of investment because much of this funding may be used for "multi-purpose" fundamental research that has implications for green chemistry and other research areas.

DOE does not track spending on green chemistry activities, and does not conduct activities that it specifically identifies as green chemistry. However, DOE conducts R&D that has many green chemistry applications. DOE's fundamental research efforts in chemistry are focused on attaining an atomic and molecular level understanding of processes involved in the generation, storage, and use of energy.

NIST has no programs specifically focused on green chemistry but conducts R&D with implications for, and application to, green chemistry. For example, the Chemical Science and Technology Lab-

oratory produces more accurate measurement methods and standards to enable the development and implementation of green technologies and assess their impact.

H.R. 1215

H.R. 1215 is designed to focus and integrate the federal government's green chemistry R&D activities, and to make them a higher priority. H.R. 1215 is also designed to increase education and training in green chemistry.

One impediment to the application of green chemistry is the lack of a chemistry workforce that is skilled in green chemistry techniques. The Act would support undergraduate and graduate education in green chemistry. This should help create a new generation of chemists and chemical engineers who are familiar with green chemistry and its advantages, and can bring those skills to bear in the workplace. The Act would also support continuing education for professional chemists and chemical engineers so that the large existing workforce can be trained in green chemistry techniques.

The coordinated R&D program would also support R&D and demonstration projects at universities, industry and federal labs. This includes industry-university partnerships to facilitate the transfer of new ideas to industry.

In addition, the Act makes information about green chemistry activities readily available through a green chemistry database of accomplishments and best practices. This should aid interested companies in learning about, overcoming barriers to, and implementing green chemistry alternatives.

IV. SUMMARY OF HEARINGS

March 17, 2004—Hearing on the Green Chemistry Research and Development Act of 2004

On March 17, 2004, the Committee on Science held a hearing to receive testimony on federal and private sector green chemistry R&D activities, and on H.R. 3970, the Green Chemistry Research and Development Act of 2004.

The Committee heard from: (1) Dr. Arden Bement, Acting Director, National Science Foundation; (2) Dr. Paul Gilman, Assistant Administrator for Research and Development, Environmental Protection Agency; (3) Dr. Berkeley Cue, Vice President for Pharmaceutical Sciences, Pfizer Global Research and Development; (4) Mr. Steven Bradfield, Vice President of Environmental Development, Shaw Industries, Inc.; and (5) Dr. Edward Woodhouse, Associate Professor of Political Science, Department of Science & Technology Studies, Rensselaer Polytechnic Institute.

Dr. Cue, Mr. Bradfield, and Dr. Woodhouse all expressed their support for the legislation. Dr. Cue stated that Pfizer has difficulty finding chemists and chemical engineers who are already trained in green chemistry. He said that this legislation would help alleviate that problem. Mr. Bradfield stated that the Carpet and Rug Institute supports the legislation. He also said he believed that green chemistry could keep U.S. chemical jobs from moving overseas. Dr. Woodhouse congratulated the Committee for its farsightedness in taking up the legislation.

Both Administration witnesses said they supported the intent of the legislation, and looked forward to working with the Committee on this issue, but argued that the bill was unnecessary.

Dr. Bement testified that NSF already funds a great deal of green chemistry R&D. He stated that NSF currently spends \$13 million through the Division of Chemical and Transport Systems and \$11 million through the Division of Chemistry on green chemistry activities. These monies support individual investigators, teams of investigators, and research centers, he said. Bement said that NSF currently partners with EPA, DOE and NIST to leverage its green chemistry investments. NSF supports green chemistry research in chemical synthesis, catalysis, separations research, and environmental research, he said.

Dr. Gilman testified that "green chemistry and engineering represent the kind of science on which EPA is focusing to move to the next level of environmental and human health protection." He added that EPA is building interest in green chemistry and engineering in future generations through programs like the P3 Award competition, and is launching a new web portal to organize its programs. In addition, the joint NSF/EPA TSE program has resulted in 347 articles, 25 book chapters, six patents, and one Nobel Prize for Chemistry from the first 64 TSE grants alone, he said. Finally, Dr. Gilman testified that EPA is implementing a new research framework that includes green chemistry and engineering. EPA is releasing solicitations in the area of "Collaborative Science and Technology Network for Sustainability," and will be partnering with states, local governments, and industry to address high-priority challenges.

Dr. Cue described green chemistry as a win-win for Pfizer's goal of achieving economic, environmental, and social sustainability. He stated that Pfizer has achieved tremendous gains in efficiency through application of green chemistry in the production of pharmaceuticals. Pfizer has seen a five- to 10-fold decrease in the amount of waste produced per kilogram of pharmaceutical product (from 25 to 100 kg to 5 to 10 kg). He underscored that few students graduating with chemistry majors are trained in, or even exposed to green chemistry. Thus, Pfizer must invest a huge amount of energy to educate its scientists about the green chemistry principles and how they apply to daily R&D efforts, he said. Dr. Cue testified that H.R. 3970 would help overcome this lack of familiarity with green chemistry.

Mr. Bradfield testified that customer demand and profitability are the ultimate drivers of green chemistry adoption in industry, and that applying green chemistry processes in the carpet industry will keep U.S. jobs from going overseas. He also made recommendations for improving the federal green chemistry effort, including rewarding those that use green chemistry products and processes with tax credits. He also stated that the proposed Inter-agency Working Group should work closely with industry to establish R&D priorities.

Dr. Woodhouse stated that economic and professional inertia are the main barriers to adoption of green chemistry. For example, he said small price increases prevent industry from selling green chemistry products, and universities are not updating their chemistry curricula to reflect green chemistry. Dr. Woodhouse also

agreed with Dr. Cue that much more needs to be done to train future generations of chemists and chemical engineers in green chemistry.

V. COMMITTEE ACTIONS

109TH CONGRESS

On March 10, 2005, Mr. Gingrey introduced H.R. 1215, the Green Chemistry Research and Development Act of 2005, along with Mr. Marshall, Mr. Ehlers, Mr. Boehlert, Mr. Filner, Mr. Rohrabacher, Mr. McHugh, Mr. Hastings and Mr. Simmons. H.R. 1215, as introduced, was substantively the same as H.R. 3970, the Green Chemistry Research and Development Act of 2004, as it was approved by the House of Representatives in the 108th Congress. As is Committee practice with bills that cut across the jurisdiction of most of the Subcommittees, the bill was held at full Committee.

On April 13, 2005, the Committee on Science met to consider H.R. 1215. The Committee considered the following amendments to the bill:

1. Mr. Gordon offered an amendment to require a report on federal procurement preference for environmentally preferable products. The amendment was withdrawn.

2. Mr. Bartlett offered an amendment to require a report on the current rates of oil consumption. The amendment was withdrawn.

3. Mr. Wu offered an amendment to establish academic-industry partnerships to retrain chemists and chemical engineers in green chemistry. The amendment was approved by voice vote.

4. Ms. Woolsey offered an amendment to establish a voluntary labeling program for environmentally preferable products. The amendment was withdrawn.

5. Ms. Jackson-Lee offered two amendments en-bloc. The first would have established priorities for green chemistry research to reduce vulnerabilities to terrorism. The second would have established a grant program to provide communities with technical assistance on green chemistry. The en-bloc amendments were withdrawn.

The legislation was agreed to by a voice vote. Mr. Gordon moved that the Committee favorably report the bill, H.R. 1215, as amended, to the House with the recommendation that the bill, as amended, do pass, and that the staff be instructed to make technical and conforming changes to the bill, as amended, and prepare the legislative report, and that the Chairman take all necessary steps to bring the bill before the House for consideration. With a quorum present, the motion was agreed to by a voice vote.

108TH CONGRESS

During the 108th Congress, Mr. Gingrey introduced H.R. 3970, the Green Chemistry Research and Development Act of 2004 on March 16, 2004 along with Ms. Johnson (TX) and Mr. Ehlers. The introduction was the culmination of almost five months of bipartisan staff briefings on the issue from agencies, industry, and other relevant groups. The Committee convened to receive testimony on the bill at a hearing on March 17, 2004.

On March 31, 2004, the Committee on Science met to consider H.R. 3970. After consideration of several amendments, the Com-

mittee recessed and resumed consideration on April 1, 2004. The Committee considered the following amendments to the bill:

1. Mr. Boehlert offered a technical amendment to stagger the date on which two biennial NSF reports are due. This amendment was adopted by a voice vote.

2. Mr. Gordon offered an amendment that would have established a program on green chemistry within NIST's Manufacturing Extension Program. Mr. Gingrey offered a substitute amendment that would instead explicitly list green chemistry activities as allowable activities for Manufacturing Extension Partnership centers. Mr. Gingrey's substitute was adopted by a voice vote.

3. Mr. Gordon offered an amendment to require NSF to award grants to develop green chemistry curricula. Mr. Gingrey offered a substitute amendment. Both amendments were withdrawn.

4. Ms. Johnson offered an amendment to make clear that non-profits with experience in green chemistry were eligible to participate in activities under the Act. Mr. Gingrey offered a substitute amendment that removed the requirement that non-profits already have experience in green chemistry. Mr. Gingrey's substitute amendment was adopted by a voice vote.

5. Mr. Wu offered an amendment that would have established partnerships to retrain chemists and chemical engineers in green chemistry. Mr. Gingrey offered a substitute amendment that made such partnerships a program activity. Mr. Gingrey's substitute, as amended by unanimous consent, was adopted by a voice vote.

6. Mr. Gordon offered an amendment that would have mandated federal procurement of green chemistry products. The amendment was defeated by a rollcall vote (Y-14; N-19).

7. Ms. Johnson offered an amendment that would have required a National Research Council study on barriers to the successful commercialization of green chemistry. The amendment was defeated by a voice vote.

8. Ms. Johnson offered an amendment that would have increased the NSF authorization amounts. The amendment was defeated by a rollcall vote (Y-15; N-18).

9. Mr. Honda offered an amendment that would have provided for research on ethical, legal, environmental, and other appropriate societal concerns. The amendment was withdrawn.

10. Ms. Jackson-Lee offered an amendment that would have established a community green chemistry grant program. The amendment was defeated by a voice vote.

11. Ms. Jackson-Lee offered an amendment that would have deleted references to "sums otherwise authorized to be appropriated." The amendment was defeated by a voice vote.

12. Mr. Baird offered an amendment that would have added supporting efforts to fight invasive species to the list of program activities. The amendment was withdrawn.

13. Ms. Lofgren offered an amendment that would have required the development of a report listing substances of concern as high priority categories for replacement with green chemistry alternatives for homeland security purposes. The amendment was defeated by a rollcall vote (Y-15; N-15).

14. Ms. Jackson-Lee offered another amendment that would have deleted references to "sums otherwise authorized to be appro-

priated.” The amendment was defeated by a rollcall vote (Y–16; N–19).

The legislation was agreed to by a voice vote. Mr. Gordon moved that the Committee favorably report the bill, H.R. 3970, as amended, to the House with the recommendation that the bill, as amended, do pass, and that the staff be instructed to make technical and conforming changes to the bill, as amended, and prepare the legislative report, and that the Chairman take all necessary steps to bring the bill before the House for consideration. With a quorum present, the motion was agreed to by a voice vote.

After the bill was reported, Mr. Gingrey amended the bill to address amendments offered in Committee before bringing the bill to the House Floor. These amendments included: (1) a new section authorizing a program to award grants to institutions of higher education to update their curricula to include green chemistry funded at \$22.5 million over three years, (2) a new section requiring the National Academy of Sciences to conduct a study of the barriers to commercial application of green chemistry R&D, (3) a new program activity authorizing economic, legal and other social science research to identify barriers to commercialization of green chemistry, (4) a provision requiring each federal agency and department participating in the Program and the Office of Management and Budget (OMB) to include in budget requests the specific amount being requested for activities under this program, and (5) language to make explicit that the authorization for NSF is intended to be above what NSF already spends on green chemistry and chemical engineering R&D through its ongoing chemical and chemical engineering programs.

On April 21, 2004, H.R. 3970 was considered under suspension by the House of Representatives, and the bill, as amended was agreed to by a vote of 402–14, and the motion to reconsider was laid on the table and agreed to without objection.

On October 8, 2004, S. 2967, the Green Chemistry Research and Development Act of 2004, a companion to H.R. 3970, was introduced in the Senate by Senators Snowe and Rockefeller.

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

The major provisions of the legislation are:

- Establishes an interagency research and development (R&D) program to promote and coordinate federal green chemistry research, development, demonstration, education, and technology transfer activities.
- Establishes an interagency working group composed of representatives from the National Science Foundation (NSF), the National Institute for Standards and Technology (NIST), the Department of Energy (DOE), the Environmental Protection Agency (EPA), and any other agency that the President may designate, to oversee the planning, management, and coordination of all federal green chemistry R&D activities. Designates the Director of NSF and the Assistant Administrator for Research and Development at EPA as co-chairs.
- Requires the interagency working group to report to Congress within two years of enactment, summarizing federally-funded green chemistry research and development activities and progress

made toward the goals and priorities of the program, as established by the working group.

- Amends the National Institute of Standards and Technology Act to make eligible as a Manufacturing Extension Program activity the enabling of supply chain manufacturers to conduct activities with the aim of reducing or eliminating the use or generation of hazardous substances.

- Authorizes a program at NSF to award grants to institutions of higher education to support efforts to revise their undergraduate curriculum in chemistry and chemical engineering to incorporate green chemistry concepts and strategies. This program is authorized at \$22.5 million total over three years, FY06 through FY08.

- Requires the Director of NSF to enter into a contract with the National Research Council to conduct a study of the factors that constitute barriers to the successful commercial application of green chemistry R&D.

- Authorizes a program to award grants to institutions of higher education to establish partnerships with companies in the chemical industry to retrain chemists and chemical engineers in the use of green chemistry concepts and strategies.

- Authorizes appropriations from sums otherwise authorized to be appropriated for NSF, NIST, DOE and EPA. Total authorizations are \$26 million in FY06, \$28 million in FY07 and \$30 million in FY08.

VII. SECTION-BY-SECTION ANALYSIS

Sec. 1. Short title

“Green Chemistry Research and Development Act of 2005”

Sec. 2. Definitions

Defines terms used in the text.

Sec. 3. Green Chemistry Research and Development Program

Establishes an interagency R&D program to promote and coordinate federal green chemistry research, development, demonstration, education, and technology transfer activities. The program will provide sustained support for green chemistry R&D through merit-reviewed competitive grants to researchers, teams of researchers, and R&D partnerships of universities, industry, and nonprofit organizations, and through R&D conducted at federal laboratories.

The program will provide support for, and encouragement of, the application of green chemistry through encouragement of consideration of green chemistry in all federally-funded chemical science and engineering R&D; examination of methods to create incentives for the use of green chemistry; promotion of the education and training of undergraduate and graduate students and professional chemists and chemical engineers in green chemistry; collection and dissemination of information on green chemistry R&D and technology transfer; provision of venues for outreach and dissemination of green chemistry advances such as symposia, forums, conferences, and written materials; support for social science research to identify barriers to adoption of green chemistry; and provision for public input.

Establishes an interagency working group composed of representatives from the National Science Foundation, the National Institute of Standards and Technology, the Department of Energy, the Environmental Protection Agency, and any other agency that the President may designate, to oversee the planning, management, and coordination of all federal green chemistry R&D activities. Names the Director of the National Science Foundation and the Assistant Administrator for R&D at the Environmental Protection Agency as co-chairs and requires the group to establish goals and priorities for the program and provide for interagency coordination, including budget coordination.

Requires that each participating agency submit to the Office of Management and Budget, as part of its annual request for appropriations, a report that identifies all activities that directly relate to the program. Also requires that, as part of the President's budget request, each agency list the portion of their budget that is dedicated to activities carried out under the program.

Requires the group to submit a report to the Committee on Science of the House of Representatives and the Committee on Commerce, Science and Transportation of the Senate within two years that includes a summary of federally-funded green chemistry activities and an analysis of the progress made towards the goals and priorities established for the program, including recommendations for future program activities.

Sec. 4. Manufacturing Extension Center Green Suppliers Network Grant Program

Amends the National Institute of Standards and Technology Act to include as an authorized activity in the Manufacturing Extension Partnership Program the enabling of supply chain manufacturers to reduce the use or generation of hazardous substances.

Sec. 5. Undergraduate education in chemistry and chemical engineering

Creates a grant program at the National Science Foundation to award competitive grants to institutions of higher education for the purpose of revising their undergraduate chemistry and chemical engineering curricula to incorporate green chemistry. Cost sharing in cash is required of all participating institutions of higher education. In addition to the sums authorized in Section 7, the National Science Foundation is authorized from sums already authorized to be appropriated \$7 million, \$7.5 million, and \$8 million in FY06–FY08, respectively.

Sec. 6. Study on commercialization of green chemistry

Requires the Director of the National Science Foundation to enter into an agreement with the National Research Council to conduct a study of the barriers to commercialization of green chemistry products and processes.

Sec. 7. Partnerships in green chemistry

Authorizes a program to award grants to institutions of higher education to establish partnerships with companies in the chemical industry to retrain chemists and chemical engineers in the use of green chemistry concepts and strategies.

Sec. 8. Authorization of appropriations

Authorizes appropriations for green chemistry R&D programs, from sums already authorized to be appropriated, at the National Science Foundation, the National Institute of Standards and Technology, the Department of Energy, and the Environmental Protection Agency.

Agency	FY06 (millions \$)	FY07 (millions \$)	FY08 (millions \$)
NSF	7	7.5	8
NIST	5	5.5	6
DOE	7	7.5	8
EPA	7	7.5	8
Total	26	28	30

Note.—From sums already authorized to be appropriated for each of the agencies.

VIII. COMMITTEE VIEWS

Federal green chemistry efforts

The Committee expects NSF, EPA, DOE and NIST to give more focused attention to green chemistry. That means running programs that are specifically targeted at funding green chemistry R&D, education, and technology transfer, not just funding such work as an afterthought or as a byproduct of other efforts, or if proposals related to green chemistry happen to be submitted by researchers. The Committee is disappointed that the EPA–NSF Technologies for a Sustainable Environment (TSE) program, the government’s only explicit green chemistry R&D program, was not funded in FY05 and was not proposed for funding in FY06. The Committee believes that this program is critical to the promotion of green chemistry and should be continued.

The Committee also expects the agencies to do a better job of coordinating their efforts in green chemistry so that the Federal government has a comprehensive effort in green chemistry that can meet industry’s needs while drawing on the unique strengths and expertise of each agency.

The Committee expects the Interagency Working Group to track Federal expenditures on green chemistry. The legislation requires agencies and OMB to explicitly state the portion of their request that will contribute to the activities authorized by this legislation. The Committee expects this report to reflect an effort to think through what is specifically needed for green chemistry; it should not be a mere cobbling together of disparate budgets submitted by each agency.

The Committee expects that, as part of its coordination efforts, the Interagency Working Group will identify areas in which green chemistry could help achieve Federal, as well as industry needs. Obvious areas include improving homeland security and the development of non-toxic chemicals to combat invasive species. Clear industry needs include the development of benign solvents or solventless processes for a range of chemical processes, and new materials for buildings, such as paints and carpets that have lower toxicity.

One way green chemistry R&D programs can help assure both relevance to, and adoption by, industry is to fund university-indus-

try partnerships, which may also include national laboratories and other non-profit institutions. Not all green chemistry R&D should be funded this way, but it should be an emphasis in the R&D programs. The Committee intends that all R&D grants awarded under this legislation be competitively awarded and merit reviewed.

Beyond operating more specific programs to fund green chemistry activities, the federal agencies should integrate green chemistry techniques in all of their chemistry and chemical engineering R&D activities. The Committee believes that, when soliciting and evaluating all chemistry and chemical engineering R&D grant proposals, the agencies should consider whether the application addresses the toxicity of the proposed chemical process and product.

The Committee considers education and outreach activities as essential parts of a comprehensive green chemistry effort. For this reason, the legislation authorizes two specific education programs—one to update undergraduate chemistry curricula to incorporate green chemistry concepts and strategies and a second to authorize grants for universities that partner with chemical companies to retrain professional chemists and chemical engineers in the use of green chemistry concepts and strategies. The Interagency Working Group should make sure that participating agencies are engaging in these activities, consistent with their overall missions.

Outreach activities should include the creation of an easily accessible one-stop-shop for green chemistry information. Specifically, the Interagency Working Group may want to consider whether it would be useful to maintain a list of chemical products and processes that are benign so that a company looking for a green chemistry solution could have easy access to available green chemistry alternatives.

The Committee believes that there are many barriers to the successful commercialization of green chemistry. For this reason, the Committee believes that the Interagency Working Group should fund research to determine economic, legal and other barriers. This is also why the Committee authorizes a National Research Council study into the barriers to successful commercialization of green chemistry.

In carrying out its responsibilities, the Interagency Working Group should consult regularly with a wide range of researchers and end-users, especially private companies.

The Committee also expects the Interagency Working Group to be able to provide Congress with a clear explanation of the goals and priorities of the green chemistry program, how each agency's activities are contributing to those goals, and how achievement of those goals is being evaluated. An important metric for the program should be whether new green chemistry products and processes are being developed and whether they are being adopted by industry.

Section 8. Authorization of appropriations

It is the Committee's intent that the funds authorized in this Act be used for focused, explicit activities in green chemistry. Any other agency programs—current or future—that may advance green chemistry should be viewed as money over and above the amounts authorized in this Act.

For example, NSF reports that it is currently spending almost \$24 million per year on R&D related to green chemistry and chemical engineering. However, little of this is for efforts actually targeted toward green chemistry in specific requests for proposals. It is the Committee's intent that NSF expend the funds authorized in this Act on explicit green chemistry activities. The Committee expects that doing so would have no adverse effect on existing chemistry programs that happen to have funded about \$24 million on projects related to green chemistry. Those programs should continue. The Committee in no way intends this Act to reduce the total amount of money NSF spends on green chemistry.

Moreover, the Committee believes that all federal chemistry and chemical engineering R&D programs should consciously strive to promote R&D that will result in an improved environment.

IX. COST ESTIMATE

A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act of 1974 has been timely submitted to the Committee on Science prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, April 29, 2005.

Hon. SHERWOOD L. BOEHLERT,
Chairman, Committee on Science,
House of Representatives, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 1215, the Green Chemistry Research and Development Act of 2005.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Mike Waters.

Sincerely,

ELIZABETH M. ROBINSON
(For Douglas Holtz-Eakin, Director).

Enclosure.

H.R. 1215—Green Chemistry Research and Development Act of 2005

Summary: H.R. 1215 would authorize appropriations for fiscal years 2006 through 2008 for chemistry and chemical engineering research aimed at reducing or eliminating the use and production of hazardous substances (known as "green chemistry"). It would authorize funding for such green chemistry programs at four agencies: the National Science Foundation (NSF), the Department of Energy (DOE), the National Institute of Standards and Technology (NIST), and the Environmental Protection Agency (EPA). Under this bill, the amounts authorized would be derived from sums otherwise authorized to be appropriated.

Assuming appropriation of the specified amounts, CBO estimates that implementing H.R. 1215 would cost \$102 million over the

2006–2010 period. CBO estimates that enacting this bill would have no effect on direct spending or revenues.

H.R. 1215 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments either as regulators or as owners and operators of chemical facilities.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 1215 is shown in the following table. The costs of this legislation fall within budget functions 250 (general science, space, and technology), 300 (natural resources and environment), and 370 (commerce and housing credit).

	By fiscal year, in millions of dollars—					
	2005	2006	2007	2008	2009	2010
Spending on Green Chemistry Research Under Current Law:						
Budget Authority ¹	32	0	0	0	0	0
Estimated Outlays	31	21	7	2	1	0
Proposed Changes:						
Authorization Level	0	33	36	38	0	0
Estimated Outlays	0	13	27	34	22	7
Spending on Green Chemistry Research Under H.R. 1215:						
Authorization Level ¹	32	33	36	38	0	0
Estimated Outlays	31	33	34	36	23	7

¹ The 2005 level reflects agencies' estimates of the amounts appropriated for that year for activities similar to those that would be authorized by H.R. 1215.

Basis of estimate: For this estimate, CBO assumes that the amounts authorized will be appropriated each year and that outlays will occur at rates similar to those of existing research and development programs. NSF expects to spend around \$25 million in 2005 for green chemistry research. EPA and NIST estimate those agencies will spend \$2 million and \$4 million, respectively, in 2005 on green chemistry research. DOE currently does not conduct research specifically targeted to green chemistry technologies.

Intergovernmental and private-sector impact: H.R. 1215 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no costs on state, local, or tribal governments either as regulators or as owners and operators of chemical facilities.

Estimate prepared by: Federal Costs: Mike Waters. Impact on State, Local, and Tribal Governments: Teri Gullo. Impact on the Private Sector: Craig Cammarata.

Estimate approved by: Peter Fontaine, Deputy Assistant Director for Budget Analysis.

XI. COMPLIANCE WITH PUBLIC LAW 104–4 (UNFUNDED MANDATES)

H.R. 1215 contains no unfunded mandates.

XII. COMMITTEE OVERSIGHT FINDINGS AND RECOMMENDATIONS

The Committee on Science's oversight findings and recommendations are reflected in the body of this report.

XIII. STATEMENT ON GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to rule XIII, clause 3(c)(4) of the House of Representatives the general performance goals and objectives of H.R. 1215 are

to establish an interagency research and development (R&D) program to promote and coordinate federal green chemistry research, development, demonstration, education, and technology transfer activities.

XIV. CONSTITUTIONAL AUTHORITY STATEMENT

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 1215.

XV. FEDERAL ADVISORY COMMITTEE STATEMENT

H.R. 1215 does not establish or authorize the establishment of any advisory committee.

XVI. CONGRESSIONAL ACCOUNTABILITY ACT

The Committee finds that H.R. 1215 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Pub. L. 104–1).

XVII. STATEMENT ON PREEMPTION OF STATE, LOCAL, OR TRIBAL LAW

This bill is not intended to preempt any State, local, or tribal law.

XVIII. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in *italic*, existing law in which no change is proposed is shown in roman):

SECTION 25 OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT

REGIONAL CENTERS FOR THE TRANSFER OF MANUFACTURING TECHNOLOGY

SEC. 25. (a) The Secretary, through the Director and, if appropriate, through other officials, shall provide assistance for the creation and support of Regional Centers for the Transfer of Manufacturing Technology (hereafter in this Act referred to as the “Centers”). Such centers shall be affiliated with any United States-based nonprofit institution or organization, or group thereof, that applies for and is awarded financial assistance under this section in accordance with the description published by the Secretary in the Federal Register under subsection (c)(2). Individual awards shall be decided on the basis of merit review. The objective of the Centers is to enhance productivity and technological performance in United States manufacturing through—

(1) * * *

* * * * *

(4) the active dissemination of scientific, engineering, technical, and management information about manufacturing to in-

dustrial firms, including small- and medium-sized manufacturing companies; **[and]**

(5) the utilization, when appropriate, of the expertise and capability that exists in Federal laboratories other than the Institute~~[.]~~; *and*

(6) *the enabling of supply chain manufacturers to continuously improve products and processes, increase energy efficiency, identify cost-saving opportunities, and optimize resources and technologies with the aim of reducing or eliminating the use or generation of hazardous substances.*

* * * * *

XIX. COMMITTEE RECOMMENDATIONS

On April 13, 2005 a quorum being present, the Committee on Science favorably reported H.R. 1215, Green Chemistry Research and Development Act of 2005 as amended, by a voice vote, and recommended its enactment.

XX. MINORITY VIEW

H.R. 1215's main goal is to help promote and coordinate Federal research, development, demonstration, education, and technology transfer activities related to green chemistry. Along with my amendment to further encourage research institutions and private sector participation, I strongly support the work that is being done by Portland State University, Oregon's urban university in areas related to green chemistry, including but not limited to biocompatible nanomaterials and nanostructured materials for solar energy conversion, atmospheric gasses, and global atmospheric change. Portland State University's mission to address real community needs through research, education, and outreach programs make it an ideal laboratory and educational model where the innovations and discoveries resulting from work in green chemistry can be developed, disseminated, and incorporated into business and government operations. Additionally, PSU is in a unique position to help prepare the next generation of chemists, scientists, and environmental engineers, as well as provide new educational opportunities to those in need of upgrading their skills in order to make contributions in the workplace in this area. Industries and businesses that are developed in response to initiatives related to green chemistry are a key component of the Portland metropolitan region's and Oregon's economic recovery strategies and PSU is integral to recruiting, retaining, and expanding these business opportunities. These developments will be especially important to a state that has been hit hard by high levels of unemployment and changes in its economic base.

DAVID WU.

XXI. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R.
1215, GREEN CHEMISTRY RESEARCH AND DEVELOPMENT ACT OF
2005

WEDNESDAY, APRIL 13, 2005

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE,
Washington, DC.

The Committee met, pursuant to call, at 10:05 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Sherwood L. Boehlert [Chairman of the Committee] presiding.

Chairman BOEHLERT. Good morning. The Committee on Science will come to order.

Pursuant to notice, the Committee on Science meets to consider the following measure: H.R. 1215, *Green Chemistry Research and Development Act of 2005*. I ask unanimous consent for the authority to recess the Committee at any point during consideration of these matters. And without objection, it is so ordered.

We will now proceed with the opening statements, and I will begin.

I want to welcome everyone here today as we belatedly complete our March 17 markup. We have just one bill before us today, and an important one, to create a focused and intensified research program in green chemistry. While we liked the idea of moving green chemistry on St. Patrick's Day, there is no need to have a special day to move forward with this bill. Indeed, the whole point is to make environmentally benign chemistry a part of everyday life.

So let me just say a few words about the bill.

This bill was introduced in the last Congress and in this one by Mr. Gingrey, who is no longer on our committee, but is still deeply interested in this subject. The bill is just common sense. We need to put our scientific expertise to work to solve problems.

Certainly one reason the government funds science is for societal improvement, so we ought to be encouraging the funding of green chemistry, which can result in new products and processes that are better for our environment. This bill has broad support, including the support of leading chemical companies and organizations. We got this bill through the House handily in the last Congress and working with Senators Snowe and Rockefeller, we will get it signed into law this Congress.

Those with long memories may remember that last year we had a contentious markup on this bill. Perhaps it had something to do with the season, on the eve of a presidential election, but that is just a parenthetical thought. But between markup and the Floor, we reached a bipartisan agreement, and that agreement is reflected

in the language before us today. Thus, we have very few amendments this time around.

I urge my colleagues to support this bill. And let me say that it is just as appropriate to pass the bill as we approach income tax day as it was on St. Patrick's Day. Not only are both days associated with green, but this is a bill that will put taxpayers' money to work to solve real and critical problems in an efficient and effective way. I hope to move it swiftly through the House, and I appreciate that there were no groans in that last reference.

The Chair now recognizes Mr. Gordon.

[The prepared statement of Chairman Boehlert follows:]

PREPARED STATEMENT OF CHAIRMAN SHERWOOD L. BOEHLERT

I want to welcome everyone here today as we belatedly complete our March 17 markup. We have just one bill before us today, and an important one, to create a focused and intensified research program in green chemistry.

While we liked the idea of moving green chemistry on St. Patrick's Day, there's no need to have a special day to move forward with this bill. Indeed, the whole point is to make environmentally benign chemistry a part of everyday life. So let me just say a few words about the bill.

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Mr. GORDON. Thank you, Mr. Chairman. I won't be as poetic, but hopefully I will make that up with brevity.

We are pleased to have the opportunity to reconsider the Green Chemistry Research and Development Act this morning. We all support the goal of encouraging more efficient manufacturing of safer products. It makes good economic and environmental sense to avoid past mistakes and costs associated with unnecessary use and misuse of toxic materials. Industry and government have formed effective partnerships, not only in research and development, but also to develop the adoption of new processes that reduce the use and the admission of toxic chemicals in the manufacture of products that are more easily recycled.

H.R. 1215 continues this effort, but despite the improvements to the bill, it still does not go far enough to promote the adoption of green chemistry. Once again, Democratic Members of the Committee will offer amendments today in an effort to expand the impact and importance of this underlying legislation. We hope the Chairman will be able to support these amendments, which will be offered in a constructive spirit.

And I yield back my time.

[The prepared statement of Mr. Gordon follows:]

PREPARED STATEMENT OF REPRESENTATIVE BART GORDON

Mr. Chairman, we are pleased to have the opportunity to reconsider the Green Chemistry Research and Development Act this morning.

We all support the goal of encouraging more efficient manufacturing of safer products.

It makes good economic and environmental sense to avoid past mistakes and costs associated with unnecessary use and misuse of toxic materials.

Industry and government have formed effective partnerships, not only in research and development, but also to encourage the adoption of new processes that reduce the use and the emission of toxic chemicals and the manufacture of products that are more easily recycled.

H.R. 1215 continues this effort, but despite the improvements to the bill, it still does not go far enough to promote the adoption of green chemistry.

Once again, Democratic Members of the Committee will offer amendments today in an effort to expand the impact and importance of the underlying legislation.

We hope that the Chairman will be able to support these amendments, which will be offered in a constructive spirit.

Chairman BOEHLERT. I thank Mr. Gordon for yielding back his time, and reminding me of the constructive spirit that prevails in this committee.

[The prepared statement of Mr. Costello follows:]

PREPARED STATEMENT OF REPRESENTATIVE JERRY F. COSTELLO

Good morning. I am pleased the Science Committee is meeting today to mark up the *Green Chemistry Research and Development Act of 2005*.

Green chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances.

I am pleased the bill will provide support for, and encourages the application of green chemistry by supporting green chemistry in all federally-funded chemical science and engineering research and development, examines methods to create incentives for the use of green chemistry, promotes education and training of undergraduate and graduate students and professional chemists and chemical engineers in green chemistry, supports social science research to identify barriers to adoption of green chemistry, and encourages public input.

However, this bill authorizes green chemistry programs to be funded from "such sums as already authorized." Therefore, for NIST, NOAA and the Department of Energy, it is my understanding that this bill authorizes expenditures for these agencies which are consistent with its current funding level. But, who in Congress has been setting those expenditure levels? If appropriation bills that fund NIST, NOAA, and DOE are the only "authorization" that exists, I would like to point out that this is another example of appropriators doing the job of this authorizing committee.

It happened last year when the Manufacturing bill came before the House and I had an amendment to study the affects of off-shoring in eight key areas. As you remember, the Science Committee allowed the Commerce, Justice, State Appropriations committee to fund a \$2 million study without an authorization from this committee. From preliminary discussions on the progress of this report, duplicative information is being gathered and no new information is being examined.

I am hopeful this year the Science Committee will assert its authorizing authority so we can continue aggressive oversight of programs and policies in our jurisdiction, including programs like the *Green Chemistry Research and Development Act of 2005*.

Thank you.

[The prepared statement of Mr. Carnahan follows:]

PREPARED STATEMENT OF REPRESENTATIVE RUSS CARNAHAN

Mr. Chairman and Mr. Ranking Member, thank you for bringing this bill up for consideration today, and I wish to acknowledge Mr. Gingrey for doing the hard work of drafting the legislation.

I am pleased to consider the Green Chemistry Research and Development Act, which will allow us to focus chemical research efforts on environmentally sound

methods, including waste minimization, substitution of less toxic for more toxic ingredients and processing agents, and development of less toxic products.

The Committee is certainly aware that the Department of Defense, the National Science Foundation, the Environmental Protection Agency, the Department of Energy, and the National Institute of Standards and Technology already conduct research projects that are classified as green chemistry. This bill would formally encourage federal agencies to continue green chemistry efforts.

Finally, I believe the bill could be significantly improved by amendment. I also urge my colleagues to support the amendments under consideration, and thus, strengthen the legislation.

I look forward to the long awaited consideration of this bill.

[The prepared statement of Ms. Jackson Lee follows:]

PREPARED STATEMENT OF REPRESENTATIVE SHEILA JACKSON LEE

I rise in support of this bill that will again encourage "green chemistry" and define the federal investment in that important subject. I commend my colleague from Georgia, Dr. Gingrey, for again authoring this legislation that may help focus some of our attention on the need to encourage our schools, and labs, and industries to work toward protecting and preserving our environment.

I assume that everyone in this chamber is "for" green chemistry. It only makes sense that if there are two ways to do something—a harmful way and a non-harmful way—we would all want to choose the non-harmful way. And assuming we agree that it is a responsibility of the Federal Government to stimulate research and investment in areas that could have a beneficial impact on our nation, I believe we would all agree that we should focus some of the Nation's research energies on green chemistry.

The main question is: how much of our resources should be allocated to program? This is an especially tough question in a budget environment like the one we have today. Massive tax cuts for the rich and an expensive foreign policy have left us with little money left to fund critical programs such as those for green chemistry.

The President's latest budget has slashed dozens of research and education programs. I have been very pleased with the bold leadership of the Chairman and Ranking Member of this Science Committee, pointing out that under-investing in science and technology is a grave error. It could jeopardize our position at the front of the world economy, and cost us jobs galore. I feel we need to find money to make investments in growth industries, and green chemistry certainly qualifies.

I am concerned, however, that the bill we are discussing, although well-intentioned, may not make the necessary improvement of investment in the field. Because the bill only draws from funds that have been previously authorized, existing programs will have to be cannibalized, or simply renamed to fit the "green chemistry" label. As important as green chemistry is, I would hate to see it come at the expense of programs at NIST or DOE that we have been fighting for for years. Some of the programs that are to be incorporated into the green chemistry initiative have not even been re-authorized in years, further confusing the matter of funding.

Again, I am a firm supporter of green chemistry. It holds great promise for allowing our economy and standard of living to grow, while protecting our environment. However, I hope that we can work together to ensure that it is funded appropriately.

Also, I have offered an amendment to this legislation that will encourage volunteer industry-community partnerships that can lead to reduced use and emission of toxic chemicals in the community, better relations between communities and their local industrial facilities, and cost savings for the facility. The amendment is modeled after programs that have proven successful in Michigan and Texas.

I will support this bill because it takes a step in the right direction; however, I feel it does not do enough to address the barriers to adoption of green chemistry practices.

Chairman BOEHLERT. We will now consider H.R. 1215, *Green Chemistry Research and Development Act of 2005*. I ask unanimous consent that the bill is considered as read and open to amendment at any point and that Members proceed with the amendments in the order of the roster. Without objection, so ordered.

The first amendment on the roster is offered by Mr. Gordon.

Are you ready to proceed?

Mr. GORDON. Yes, sir.

Chairman BOEHLERT. The Clerk will report the amendment.

Ms. TESSIERI. Amendment to H.R. 1215 offered by Mr. Gordon of Tennessee.

Chairman BOEHLERT. The gentleman is recognized for five minutes.

Mr. GORDON. Mr. Chairman, I guess it was back in the Clinton days, there was an Executive Order 13101 that later was reinstated by President Bush that encourages the various government agencies to purchase recycled products, to buy greener products, and to practice waste prevention measures. The problem is we don't know what they are doing. There has been no reporting. There has been no way to monitor this. So we have already on the books really good—I mean, a good vehicle to try to have the Federal Government be a leader in recycling as well as purchasing green products.

I recognize that you have a concern that to try to have a reporting procedure with these various federal agencies would bring about a joint jurisdiction somewhere, and I will have to say that in major joint jurisdiction matters, I can understand not wanting to slow down a bill. But in these types of matters, I think we are really dumbing down good bills with small issues that have joint jurisdiction that really could be worked out with letters of exchange, which we have done many times before. But again, I say that as a general principle, and hopefully that as we continue the legislative process, that we can maybe see that as a principle later on.

But I understand your situation here. For that reason, I am going to withdraw this amendment. I know that our staffs have talked, and I think that you agree that it makes sense that we have some kind of reporting from these agencies that hopefully the Senate, with wider jurisdictional concerns, can deal with this. And if it comes to conference, then we will have a chance to accept it.

Chairman BOEHLERT. Thank you, Mr. Gordon.

I agree wholeheartedly with the purpose of the amendment, as you well know. In fact, as part of the farm bill a few years back, we fought vehemently and successfully to create a preference for the purchase of byproducts. I would note that our antagonists on the issues sneaked a repeal of that provision at last year's energy bill.

My problem with this amendment, as you have made reference to, is that it would refer this bill to another committee and probably sink the bill. But I certainly support the language, and if it were added later in the process in a way that would not kill the bill, you have my pledge of support. Again, I am not willing to lose this important bill over this issue. But if adding the language at a later point would not hurt this bill, then I am all for it. And as I have said before, I would also be willing to work with you on language as a free-standing bill. We have got a good relationship, and I want to maintain it.

Are there any others who seek comments? Without objection, the gentleman's request to withdraw the amendment.

The next amendment on the roster is amendment number two, and that is offered by Mr. Bartlett.

Are you ready, Mr. Bartlett?

Mr. BARTLETT. Yes.

Chairman BOEHLERT. The Clerk will report the amendment.

Ms. TESSIERI. Amendment to H.R. 1215 offered by Mr. Bartlett of Maryland.

Chairman BOEHLERT. Okay. The Clerk will dispense with the reading. Without objection, so ordered.

The gentleman is recognized for five minutes.

Mr. BARTLETT. Thank you, Mr. Chairman.

In the '40s and '50s, a geologist scientist worked for Shell Oil Company by the name of M. King Hubbard. He watched the discovery, the pumping, and the exhaustion of oil fields in this country. And he noted that they pretty much always followed a bell curve: slow at first and then increasing production and finally reaching a peak, after which production fell off. He noted that when that peak was reached that approximately half of the oil had been pumped from the field. He theorized correctly that if he knew how many oil fields there were in the United States and if they all behaved the way those that he had observed behaved, then he could then predict when the United States would reach its peak ability to produce oil. He made that prediction in 1956, and he predicted it would be about 1970. As a matter of fact, it was 1970. And the actual production points fall remarkably close to the bell curve that M. King Hubbard predicted in 1956.

In 1973, using these analysis techniques, he predicted that world oil production would peak at about 2000. Now it didn't peak in 2000, because he couldn't have known that there would be an Arab oil embargo, that there would be the oil price spikes, that there would be a world-wide recession as a result of that, which delayed the peak oil production. Up until the Carter years, every 10 years we used as much oil as had been used in all of previous history. When you understand the exponential growth curve that is not so hard to understand, because that only takes seven percent growth, and in the heyday of our industrial revolution when we were using oil, we really grew, at least the oil use grew, at seven percent a year, and that means you double your use every 10 years, which means that when half of the oil was gone, there would only be 10 years of oil left in the world. Now we have slowed down since then because of efficiency and so forth.

There are a number of people who believe that M. King Hubbard was right, that we are now on the verge and may be there at peak oil production. Oil prices are now over \$50 a barrel. Goldman-Sachs says that they will go to at least \$105 a barrel, that Americans won't change their driving habits until gas reaches \$4 a gallon.

Now if this is true, the United States, which has only two percent of the known reserves of oil in the world and uses 25 percent of the world's oil and imports about $\frac{2}{3}$ of what we use, faces particularly great challenges. And yet there are entities in our government who believe, apparently, that oil is forever, because the Energy Information Agency has straight line curves that just predict the consumption of oil and the production of oil going up and up and up.

And what our amendment to your bill would do, sir, is to ask the GAO to initiate a study of oil production and consumption in this country. A couple of Congresses ago, I chaired the Energy Sub-

committee on this committee, and one of the first things we tried to do was to determine the magnitude of the problem, the dimensions of the problem. So we had experts from all over the world here. And there was pretty consistent agreement among them that we had about 1,000 gigabarrels of known reserves that we had not yet pumped. That sounds like a lot of oil, but when you divide the 80-some million barrels a day that the world uses, we use 20-some million of that, by the way, one person out of 22 used $\frac{1}{4}$ of all of the oil in the world, that lasts only 40 years. That is not a straight line, 40 years, because if it follows M. King Hubbard's curve, we will plateau for a while and then start down the slope and then slide very abruptly down that slope.

Sir, I will ask unanimous consent to withdraw this amendment, because you have promised that you will write a letter to GAO, which would accomplish exactly what this amendment would have accomplished, and that is to require them to do a study of the reserves in this country and in the world, the consumption in this country and in the world, and what the future looks like. And I thank you very much for your cooperation.

I ask unanimous consent to withdraw the amendment.

Ms. WOOLSEY. Mr. Chairman.

Chairman BOEHLERT. Yes. Who seeks recognition?

Ms. Woolsey.

Ms. WOOLSEY. I would like to sign on to that letter, if you would allow that.

Chairman BOEHLERT. By all means, and others will be given the opportunity to sign on.

And Dr. Ehlers wishes to address this amendment before we accept your unanimous consent to withdraw it.

Dr. Ehlers.

Mr. EHLERS. Just very briefly before we allow it to withdraw.

I support everything that my colleague from Maryland has said. I first encountered the Hubbard curve many years ago, and the co-author of a book that used that curve and other issues regarding energy. This book was published in 1978. And his predictions are pretty much in line with what M. King Hubbard predicted. You can't argue with facts, even though people continue to try to do it. If you do a simple scientific and mathematical analysis, the point is energy is a finite resource. In addition, you have to remember two special things about energy compared to all of the other resources. First of all, it is most important, because without energy, we can not use our other natural resources. So that makes it the most important. Secondly, energy is the only non-recyclable resource. You use it, it is gone. It eventually becomes heat, which radiates into space. And those two factors mean energy has to be treated totally differently from all of the other resources, and I appreciate the gentleman offering this amendment and bringing that to our attention.

And if you are taking co-signers on the letter to GAO, I would be happy to join in, also.

Chairman BOEHLERT. Thank you, Dr. Ehlers, for agreeing with Dr. Bartlett. That is the scientific corner of the Committee.

Mr. Rohrabacher.

Mr. ROHRABACHER. I would just like to point out that we are lucky to have two Ph.D.s to tell us all about these things. And Mr. Ehlers and Mr. Bartlett contribute a great deal to this committee. Thank you.

Chairman BOEHLERT. I couldn't agree more with that observation. But let me point out, they are not the only Ph.D.s on this committee. We have a number of Ph.D.s. Even on the staff, we have a number of Ph.D.s who are scholars in their various disciplines who add immeasurably to the quality of the work product of this committee. And Mr. Gordon and I rely very heavily on their judgment. We don't always agree with it, but we rely very heavily on their judgment.

The gentleman has a unanimous consent request that he be permitted to withdraw the amendment. Without objection, so ordered.

The next amendment is amendment number three offered by Mr. Wu.

Mr. Wu, are you prepared to proceed?

Mr. WU. Yes, I am, Mr. Chairman. I have an amendment at the desk, but first I want to agree with you. It is my observation in my first term here in Congress that you don't have to be a rocket scientist to be on this committee, but you do have to be a rocket scientist to staff this committee.

Chairman BOEHLERT. And thank you very much for that intervention.

The Clerk will report the amendment.

Ms. TESSIERI. Amendment to H.R. 1215 offered by Mr. Wu of Oregon.

Chairman BOEHLERT. The gentleman is recognized.

Mr. WU. I ask unanimous consent that the amendment be considered as read.

Chairman BOEHLERT. Without objection, so ordered.

Mr. WU. My amendment establishes a program to create partnerships between private companies in the chemical industry and colleges and universities to provide professional development training to practicing chemists and chemical engineers in the use of green chemistry concepts and strategies.

Now we all agree on this bill that green chemistry is very, very important, but if you are like my age or older, when you were trained in undergraduate or even graduate chemistry, you know, some of us were taught to just dump the reactants down the drain after we were through with it, and some retraining is in order for middle-aged chemists or above.

The motivation for this amendment is to address this problem, which is discussed by witnesses on the Committee's recent hearing on the bill that too few professionals in these fields are exposed to green chemistry in their undergraduate and graduate courses. This lack of training becomes an important barrier to the adoption and use of green chemistry in industrial products and processes. Specifically, the amendment tasks the agencies that carry out the coordinated Green Chemistry Research and Development Program authorized by this bill to establish a program to award grants to institutions of higher education to develop curricular materials and to design courses to provide appropriate retraining for chemists and chemical engineers.

To be eligible for a merit-based, competitive grant under the new program, a college or university must first enter into a partnership with at least two companies in the chemical industry. The program allows for multiple colleges and universities to participate in the partnerships along with professional societies in the chemical or chemical engineering fields. The idea of the partnerships is to forge a close relationship between the academic and industrial partners to this process to ensure that courses of study are available to put in place practices that are immediately relevant to industry and that are designed to provide practicing chemists and chemical engineers with the skills and knowledge that they will need to employ green chemistry concepts in their current work. The requirement for cost sharing helps to reinforce the engagement and commitment of private companies to this program.

I urge adoption of the amendment by all Members.

Chairman BOEHLERT. Thank you, Mr. Wu.

Mr. WU. I yield back the balance of my time.

Chairman BOEHLERT. Since most of us on the Committee are your age or older, we can identify with your observations. I think it is a wonderful amendment, and I am pleased to embrace it. I wish I thought of it.

Anyone else seek recognition? The vote is on the Wu amendment. All in favor, say aye. Opposed, no. The ayes have it, and the amendment is passed.

The fourth amendment on the roster is offered by Ms. Woolsey.

Ms. Woolsey, are you ready to proceed?

Ms. WOOLSEY. I am, Mr. Chairman.

Chairman BOEHLERT. The Clerk will read the amendment.

Ms. WOOLSEY. Mr. Chairman, I ask that my amendment be—unanimous consent that we consider my amendment as read.

Chairman BOEHLERT. Okay. Without objection, so ordered.

Ms. WOOLSEY. This amendment—

Chairman BOEHLERT. Wait, wait, wait, wait, wait.

Ms. WOOLSEY. Sorry.

Chairman BOEHLERT. I am told by counsel the Clerk has to report the amendment.

Ms. TESSIERI. Amendment to H.R. 1215 offered by Ms. Woolsey of California.

Chairman BOEHLERT. Now we can dispense with the reading, and now the gentlelady is recognized.

Ms. WOOLSEY. Thank you, Mr. Chairman.

My amendment would establish a voluntary labeling program for chemical products that are created in an environmentally-friendly manner and result in an environmentally-preferred product. This program would simply require that the EPA Administrator establish criteria for determining which products would be eligible to utilize a green label. This label would inform consumers that a chemical product was developed in an environmentally-friendly way and results in an environmentally-preferred product.

As it stands, because there are few defined criteria for green products, much of the information on product labels can be very confusing to consumers. Make no mistake, Mr. Chairman, consumers would greatly benefit from the creation of a voluntary labeling program for chemical products and at very little expense to

the Federal Government. And such a program would be voluntary, not mandatory. Only those companies that wish to participate would do so. But if you ask me, there is very little reason why a given company wouldn't participate. There is a growing demand for all things green, and consumers would be glad to purchase this kind of product if they could count on the labeling.

Some Members believe that the creation of a green label program is not within the jurisdiction of the Science Committee, but I think that this is the very place to discuss such a program. We would be remiss in marking up a green chemistry bill if we didn't try to promote green chemical products in the process.

What we need to do is get support from Congress, but I understand we don't have that support, not really from Congress alone, that in a stand-alone bill it would not come—have the jurisdiction of the Science Committee, so I ask unanimous consent to withdraw my amendment, but with the idea that we would support it if it ever comes along.

Mr. GORDON. Ms. Woolsey, would you yield before you ask—

Ms. WOOLSEY. Yes, I will.

Mr. GORDON. Let me just suggest that I think there are a number of good amendments, and yours is certainly one of those. We will be trying to get those together and contact the Senate sponsors, give them the background, and I think that we will have good cooperation from the majority, also, if they come forward with these types of good additions to their bill in conference.

Ms. WOOLSEY. I appreciate that very much.

Chairman BOEHLERT. Thank you. And—

Mr. ROHRABACHER. Mr. Chairman.

Chairman BOEHLERT. Dr. Ehlers.

Mr. Rohrabacher.

Mr. ROHRABACHER. I think that Ms. Woolsey has a good idea, and if I could just recommend to her a course of action that might really bring this about, because I think it is fundamentally a good idea to label things and give the public choices. We need some R&D, I think, on establishing what standards to use on those labels. And that would go through this committee. And it seems to me that we should maybe focus on that and try to come up with an idea of what type of research is necessary to establish the standards of what would be green technology and what would not. And that is just a thought.

Ms. WOOLSEY. I thank you.

Chairman BOEHLERT. A valuable intervention, thank you very much.

And I like the concept, so we will continue to work together, as Mr. Gordon had indicated, which is the habit of this committee. On occasion, we break the rule, but it is a habit.

The gentlelady asked unanimous consent that she be permitted to withdraw her amendment. Without objection, so ordered.

The fifth amendment on the roster is offered by Ms. Jackson Lee. Are you ready to proceed?

Ms. JACKSON LEE. I am. I would like to offer both of my amendments en bloc, please. I have amendments pending in the Judiciary Committee, and I need to move this as quickly as I can.

Chairman BOEHLERT. Yes. The gentlelady shall be permitted to do so. And without objection, so ordered.

Ms. JACKSON LEE. Thank you, Mr. Chairman.

Chairman BOEHLERT. The Clerk will report the amendments. Excuse me, Ms. Jackson Lee. Both amendments.

Ms. TESSIERI. Amendments to H.R. 1215 offered by Ms. Jackson Lee of Texas.

Chairman BOEHLERT. Okay. Those two are combined into one, but we are not going to give you double the time.

Ms. JACKSON LEE. I ask unanimous consent that the amendments be considered as read.

Let me, first of all, suggest to the Ranking Member that I hope maybe my amendments likewise can be considered, because I think that they—we have given this considerable thought, and I would hope that there is room for a thoughtful amendment that is, I think, in addition to this particular legislation.

I just want to refer my colleagues very briefly to a large news item that occurred just about two weeks ago in my Congressional area of a large chemical plant that had an enormous explosion and caused the loss of life of 15 individuals.

My first amendment directs federal resources for green chemistry research and development to the vital task of reducing security risks to our country as well. I hope my colleagues on the other side of the aisle can support this amendment. My amendment calls on EPA, in consultation with the Department of Homeland Security, to produce a list of the most hazardous chemicals from the perspective of homeland security. Within a year of passage of this act, EPA is to report to Congress and the Interagency Working Group on which dangerous substances do not have a green chemistry option. That information can then be used as a factor by the Interagency Working Group as a producer plan for green chemistry research. That plan is due two years after passage. So the EPA report can effectively be integrated into the plan.

Just as an example, the GAO's January 2005 report on the implementation of the national strategy for homeland security stated although the chemical industry has undertaken a number of voluntary initiatives to address security concerns at chemical facilities, the extent of participation in the voluntary initiatives is unclear. The chemical industry faces significant challenges in preparing its facilities against a terrorist act. That list can go a long way in contributing to that knowledge.

And that is the first amendment.

The second amendment is a community assistance grant amendment to H.R. 1215. This amendment authorizes the EPA to establish a grant program to support voluntary partnerships between community groups and industrial facilities to encourage green chemistry and pollution prevention measures, a wonderful partnership that could exist between your local community and refineries. Evidenced by the tragedy that occurred in my community, I would think that perspective that amendment would be very useful as this community tries to heal itself and go forward, living with the chemical facility along with the close-by neighborhood. Successful partnerships will lead to reduced use and emission of toxic chemicals in the community, better relations between communities and

their local industrial facilities, and cost savings for the facility. The amendment is modeled after programs that are proving successful in Michigan and Texas.

With that, I ask my colleagues to support both amendments, amendments now I believe 5 and 6.

I yield back.

[The prepared statement of Ms. Jackson Lee follows:]

PREPARED STATEMENT OF REPRESENTATIVE SHEILA JACKSON LEE

Mr. Chairman,

We are in agreement on both sides of the aisle that green chemistry can reduce the environmental costs and improve the safety of products and the methods used to manufacture them.

My amendment directs federal resources for green chemistry research and development to the vital task of reducing security risks to our country as well. I hope my colleagues on the other side of the aisle can support my amendment.

My amendment calls on EPA, in consultation with the Department of Homeland Security, to produce a list of the most hazardous chemicals from the perspective of homeland security.

Then, within a year of passage of this act, EPA is to report to Congress and the Interagency Working Group on which dangerous substances do not have a green chemistry option.

That information can then be used as a factor by the Interagency Working Group as they produce their plan for a green chemistry research program—that plan is due two years after passage, so the EPA report can effectively be integrated into that plan.

Within the last few months, we have heard from GAO, the President's former Deputy Homeland Security Advisor, and a union representing workers in the chemical industry on our progress addressing the risks associated with chemical facilities. The news is not encouraging.

GAO's January 2005 report on the implementation of the National Strategy for Homeland Security stated:

"Although the chemical industry has undertaken a number of voluntary initiatives to address security concerns at chemical facilities, the extent of participation in voluntary initiatives is unclear. The chemical industry faces significant challenges in preparing its facilities against terrorist attack, . . ."

In his January testimony before the Senate, Richard Falkenrath, former advisor to the President on Homeland Security included "Hazardous Chemical Security and Protection" among the five highest priority items that remain to be addressed.

The report released by the Paper, Allied-Industrial Chemical and Energy Workers International Union last October found that:

" . . . preventative actions, that could directly reduce the likelihood of a catastrophic event, were reportedly taken with the least frequency, . . ."

One of the preventative actions identified was reducing the volumes of hazardous substances at these facilities.

Green chemistry—the development of less toxic alternatives—could certainly help to us to make chemical facilities safer places to live near and to work in.

This bill authorizes no new funding for green chemistry research. Therefore, it is crucial that we focus the existing federal resources to address the most pressing issues. Clearly, reducing vulnerabilities and risk at chemical facilities across the country is something we must address as soon as possible.

Surely, we can all agree that this modest, non-regulatory approach to addressing risks at chemical facilities is the least we should do to ensure that federal research and development efforts in green chemistry are invested wisely and where they can deliver the greatest benefits to all our citizens.

I urge my colleagues to support my amendment.

Chairman BOEHLERT. Mr. Gordon, do you wish—

Mr. GORDON. Yes. Ms. Jackson Lee, you have been a leader in safety both on the Earth and in space, and I think this is just one more example of that. I want to assure you that we will include these amendments when we make a presentation to the Senate

sponsors of the bill and we are hopeful that they will accept them and that we can get this into a conference.

Chairman BOEHLERT. Reluctantly—both deal with good ideas, but reluctantly, the Chair will oppose the en bloc amendment. So let me take them one at a time.

I think what they do is shift focus away from green chemistry R&D, which I think this legislation needs to remain focused on. The first part of the amendment would require Homeland Security and EPA to develop a report identifying the chemicals that pose the greatest threat to national security and green chemistry alternatives. And that is something that we should probably do in a separate measure or a letter requesting that action. But this would automatically trigger reference to another Committee, and we get away from the basic focus we are trying to maintain on green chemistry R&D.

And the second part of the amendment would require the Administrator of EPA to establish a grant program for communities entering into cooperative agreements with local chemical facilities to determine ways to reduce the use of—the release of toxic chemicals, and boy, I like the idea of those communities entering into cooperative agreements. But once again, here is something else that would establish a new grant program, and it would automatically trigger a referral to another committee, which would, I think, damage progress on this bill.

So for both of those reasons, I am opposing the en bloc amendment, part A and part B, with the acknowledgment that you have, as you usually do, very good ideas. It is something that we should address, and I like the idea of Mr. Gordon talking to some of his friends, some people have friends, on the other side of the Capital.

Ms. JACKSON LEE. If the Chairman would yield for a moment, please.

Chairman BOEHLERT. I would be glad to yield to the gentlelady.

Ms. JACKSON LEE. I appreciate the Chairman's rebuttal of the amendments. I happen to think in this very collegiate Congress that cross jurisdiction is not a problem. And I think if you read the Houston Chronicle on, I believe, yesterday, you will see that there is a maze of confusion dealing with reporting entities with the chemical industry. So there needs to be some consistency.

I would ask unanimous consent to allow my amendments to be withdrawn. I would like to work with the Ranking Member, because I believe these have a very important basis to them, and I would like to see them move forward. And I see a colleague on the other side of the aisle. I would like to share them with him and see how he views them as having merit. And let us see if we can work together. I know that it triggers, maybe, Homeland Security, but in fact, I think that that is a committee that is very collegiate as well, and we could work together with the Science Committee.

So I ask unanimous consent to allow me to withdraw these amendments, and I look forward to working with the Committee.

Chairman BOEHLERT. What was the unanimous consent request?

Ms. JACKSON LEE. To withdraw the amendments at this time and look forward to working with the Committee, working with the Ranking Member, and working with the Chairman on what I think are important amendments.

Chairman BOEHLERT. Without objection, so ordered.

But just let me—I am just wondering if we are serving in the same Congress. You are talking about the very collegiate Congress. Boy——

Ms. JACKSON LEE. Committee.

Chairman BOEHLERT. Oh, Committee. Good. Good, good, because the Committee is very collegiate, but boy, oh boy, I am still looking for any hint of it in the full Congress.

All right. Are there any other amendments? Hearing none, the vote is on the bill H.R. 1215, *Green Chemistry Research and Development Act of 2005*. All of those in favor will say aye. Opposed, no. In the opinion of the Chair, the ayes have it.

Mr. Gordon, for a motion.

Mr. GORDON. Mr. Chairman, I move that the Committee favorably report H.R. 1215, as amended, to the House with the recommendation that the bill, as amended, do pass. Furthermore, I move that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes, and that the Chair take the necessary steps to bring the bill before the House for consideration.

Chairman BOEHLERT. The question is on the bill to report the bill favorably. Those in favor of the motion will signify by saying aye. Opposed, no. The ayes have it, and the bill is favorably reported.

Without objection, the motion to reconsider is laid upon the table.

I move that Members have two subsequent calendar days in which to submit supplemental, minority, or additional views on the measure. I move pursuant to Clause 1 of Rule 22 of the Rules of the House of Representatives that the Committee authorizes the Chairman to offer such motions as may be necessary in the House to adopt and pass H.R. 1215, *Green Chemistry Research and Development Act of 2005*. Without objection, so ordered.

I want to thank the Members for their attendance at this collegial session. The Committee is adjourned.

[Whereupon, at 10:35 a.m., the Committee was adjourned.]

A P P E N D I X

H.R. 1215, SECTION-BY-SECTION ANALYSIS, AMENDMENT ROSTER

109TH CONGRESS
1ST SESSION

H. R. 1215

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

IN THE HOUSE OF REPRESENTATIVES

MARCH 10, 2005

Mr. GINGREY (for himself, Mr. MARSHALL, Mr. EHLERS, Mr. BOEHLERT, Mr. FILNER, Mr. ROHRBACHER, Mr. MCHUGH, Mr. HASTINGS of Washington, and Mr. SIMMONS) introduced the following bill; which was referred to the Committee on Science

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

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

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

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

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

13 (a) IN GENERAL.—The President shall establish a
14 Green Chemistry Research and Development Program to
15 promote and coordinate Federal green chemistry research,
16 development, demonstration, education, and technology
17 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, demonstration, edu-
22 cation, and technology 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 demonstration, and technology transfer con-
8 ducted at Federal 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 of the House of Representatives and the Com-
12 mittee on Commerce, Science, and Transportation of the
13 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, identify cost-saving oppor-
9 tunities, and optimize resources and technologies
10 with the aim of reducing or eliminating the use or
11 generation of hazardous substances.”.

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

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

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

1 (b) SELECTION PROCESS.—(1) An institution of
2 higher education seeking funding under this section shall
3 submit an application to the Director at such time, in such
4 manner, and containing such information as the Director
5 may require. The application shall include at a min-
6 imum—

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

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

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

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

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

21 (c) AUTHORIZATION OF APPROPRIATIONS.—In addi-
22 tion to amounts authorized under section 8, from sums
23 otherwise authorized to be appropriated by the National
24 Science Foundation Authorization Act of 2002, there are
25 authorized to be appropriated to the National Science

1 Foundation for carrying out this section \$7,000,000 for
2 fiscal year 2006, \$7,500,000 for fiscal year 2007, and
3 \$8,000,000 for fiscal year 2008.

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

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

12 (b) CONTENTS.—The study shall—

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

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

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

1 **SEC. 7. AUTHORIZATION OF APPROPRIATIONS.**

2 (a) NATIONAL SCIENCE FOUNDATION.—(1) From
3 sums otherwise authorized to be appropriated by the Na-
4 tional Science Foundation Authorization Act of 2002,
5 there are authorized to be appropriated to the National
6 Science Foundation for carrying out this Act—

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

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

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

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

14 (b) NATIONAL INSTITUTE OF STANDARDS AND
15 TECHNOLOGY.—From sums otherwise authorized to be
16 appropriated, there are authorized to be appropriated to
17 the National Institute of Standards and Technology for
18 carrying out this Act—

19 (1) \$5,000,000 for fiscal year 2006;

20 (2) \$5,500,000 for fiscal year 2007; and

21 (3) \$6,000,000 for fiscal year 2008.

22 (c) DEPARTMENT OF ENERGY.—From sums other-
23 wise authorized to be appropriated, there are authorized
24 to be appropriated to the Department of Energy for car-
25 rying out this Act—

26 (1) \$7,000,000 for fiscal year 2006;

1 (2) \$7,500,000 for fiscal year 2007; and

2 (3) \$8,000,000 for fiscal year 2008.

3 (d) ENVIRONMENTAL PROTECTION AGENCY.—From
4 sums otherwise authorized to be appropriated, there are
5 authorized to be appropriated to the Environmental Pro-
6 tection Agency for carrying out this Act—

7 (1) \$7,000,000 for fiscal year 2006;

8 (2) \$7,500,000 for fiscal year 2007; and

9 (3) \$8,000,000 for fiscal year 2008.

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SECTION-BY-SECTION ANALYSIS OF H.R. 1215,
GREEN CHEMISTRY RESEARCH AND DEVELOPMENT ACT OF 2005

Sec. 1. Short Title

“Green Chemistry Research and Development Act of 2005”

Sec. 2. Definitions

Defines terms used in the text.

Sec. 3. Green Chemistry Research and Development Program

Establishes an interagency research and development (R&D) program to promote and coordinate federal green chemistry research, development, demonstration, education, and technology transfer activities. The program will provide sustained support for green chemistry R&D through merit-reviewed competitive grants to researchers, teams of researchers, and R&D partnerships of universities, industry, and nonprofit organizations, and through R&D conducted at federal laboratories.

The program will provide support for, and encouragement of, the application of green chemistry through encouragement of consideration of green chemistry in all federally-funded chemical science and engineering R&D; examination of methods to create incentives for the use of green chemistry; promotion of the education and training of undergraduate and graduate students and professional chemists and chemical engineers in green chemistry; collection and dissemination of information on green chemistry R&D and technology transfer; provision of venues for outreach and dissemination of green chemistry advances such as symposia, forums, conferences, and written materials; support for social science research to identify barriers to adoption of green chemistry; and provision for public input.

Establishes an interagency working group composed of representatives from the National Science Foundation, the National Institute for Standards and Technology, the Department of Energy, the Environmental Protection Agency, and any other agency that the President may designate, to oversee the planning, management, and coordination of all federal green chemistry R&D activities. Names the Director of the National Science Foundation and the Assistant Administrator for R&D at the Environmental Protection Agency as co-chairs and requires the group to establish goals and priorities for the program and provide for interagency coordination, including budget coordination.

Requires that each participating agency submit to the Office of Management and Budget, as part of its annual request for appropriations, a report that identifies all activities that directly relate to the program. Also requires that, as part of the President’s budget request, each agency list the portion of their budget that is dedicated to activities carried out under the program.

Requires the group to submit a report to the Committee on Science of the House of Representatives and the Committee on Commerce, Science and Transportation of the Senate within two years that includes a summary of federally-funded green chemistry activities and an analysis of the progress made towards the goals and priorities established for the program, including recommendations for future program activities.

Sec. 4. Manufacturing Extension Center Green Suppliers Network Grant Program

Amends the National Institute of Standards and Technology Act to include as an authorized activity in the manufacturing extension program the enabling of supply chain manufacturers to reduce the use or generation of hazardous substances.

Sec. 5. Undergraduate Education in Chemistry and Chemical Engineering

Creates a grant program at the National Science Foundation to award competitive grants to institutions of higher education for the purpose of revising their undergraduate chemistry and chemical engineering curricula to incorporate green chemistry. Cost sharing in cash is required of all participating institutions of higher education. In addition to the sums authorized in Section 7, the National Science Foundation is authorized from sums already authorized to be appropriated 87,000,000, 57,500,000, and \$8,000,000 in FY06–FY08, respectively.

Sec. 6. Study on Commercialization of Green Chemistry

Requires the Director of the National Science Foundation to enter into an agreement with the National Research Council to conduct a study of the barriers to commercialization of green chemistry products and processes.

Sec. 7. Authorization of Appropriations

Authorizes appropriations for green chemistry R&D programs, from sums already authorized to be appropriated, at the National Science Foundation, the National Institute of Standards and Technology, the Department of Energy, and the Environmental Protection Agency.

Agency	FY06 (millions \$)	FY07 (millions \$)	FY08 (millions \$)
NSF	7	7.5	8
NIST	5	5.5	6
DOE	7	7.5	8
EPA	7	7.5	8
Total	26	28	30

From sums already authorized to be appropriated for each of the agencies.

**COMMITTEE ON SCIENCE
FULL COMMITTEE MARKUP
April 13, 2005
AMENDMENT ROSTER**

H.R. 1215, Green Chemistry Research and Development Act of 2005

--Motion to adopt the bill, as amended: agreed to by a voice vote.

--Motion to report the bill, as amended: agreed to by a voice vote.

No.	Sponsor	Description	Results
1.	Mr. Gordon	Amendment to require a report on federal procurement preference for environmentally preferable products.	--Unanimous consent to withdraw the amendment: agreed to by a voice vote.
2.	Mr. Bartlett	Amendment to require a report on the current rates of oil consumption.	--Unanimous consent to withdraw the amendment: agreed to by a voice vote.
3.	Mr. Wu	Amendment to establish academic-industry partnerships to retrain chemists and chemical engineers in green chemistry.	--Adopted by a voice vote.
4.	Ms. Woolsey	Amendment to establish a voluntary labeling program for environmentally preferable products.	--Unanimous consent to withdraw the amendment: agreed to by a voice vote.
5.	Ms. Jackson-Lee	Amendment to establish priorities for green chemistry research to reduce vulnerabilities to terrorism.	--Unanimous consent to consider amendments 5 and 6 en bloc: agreed to by a voice vote. --Unanimous consent to withdraw the amendment: agreed to by a voice vote.
6.	Ms. Jackson-Lee	Amendment to establish a grant program to provide communities with technical assistance on green chemistry.	

AMENDMENT TO H.R. 1215
OFFERED BY MR. GORDON OF TENNESSEE

Page 10, line 1, redesignate section 7 as section 8.

Page 9, after line 24, insert the following new section:

1 SEC. 7. REPORT ON PROCUREMENT OF ENVIRON-
2 MENTALLY PREFERABLE PRODUCTS.

3 Not later than 1 year after the date of enactment
 4 of this Act, the Administrator of the Environmental Protection Agency shall transmit to Congress a report on the
 5 status of the implementation of Executive Order 13101,
 6 entitled “Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition”, with respect
 7 to the procurement of environmentally preferable products. The report shall include—

8 (1) a description of the status of the Environmental Protection Agency’s effort to define and
 9 identify environmentally preferable products for Federal procurement;

10 (2) a list of environmentally preferable products purchased by Federal agencies since 2003;



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- 1 (3) a description of the efforts to inform Fed-
- 2 eral vendors of the environmentally preferable prod-
- 3 uct procurement preference; and
- 4 (4) a description of the methods agencies use to
- 5 track environmentally preferable product purchases.



AMENDMENT TO H.R. 1215
OFFERED BY MR. BARTLETT OF MARYLAND

Page 10, line 1, redesignate section 7 as section 8.

Page 9, after line 24, insert the following new section:

1 SEC. 7. PEAK OIL REPORT.

2 (a) REPORT.—Not later than 6 months after the date
3 of enactment of this Act, the Comptroller General shall
4 transmit to Congress a report that includes—

5 (1) current rates of oil consumption both in the
6 United States and worldwide, and a projection of the
7 growth of those rates;

8 (2) a description of the recent history of aggregate world oil production and United States oil production, and a projection of trends in such production over the next 10 years;

12 (3) a projected timeline for increasing domestic
13 oil production capacity if oil production is pursued
14 in untapped oil reserves;

15 (4) an identification of evidence that is available to enable prediction of when world oil production



1 tion is likely to peak, along with a prediction of
2 when that is likely to happen;

3 (5) an estimate of total worldwide conventional
4 oil reserves;

5 (6) an assessment of the current average En-
6 ergy Profit Ratio for domestic oil production for var-
7 ious categories of oil wells; and

8 (7) any other information that would assist
9 United States and international policymakers in de-
10 termining appropriate strategies for addressing fu-
11 ture oil production decreases and oil consumption in-
12 creases.

13 (b) DEFINITION.—For purposes of this section, the
14 term “Energy Profit Ratio” means the yield of energy for
15 domestic oil production, expressed as barrels of oil per
16 barrel of oil-equivalent energy used to produce such oil.



AMENDMENT TO H.R. 1215
OFFERED BY MR. WU OF OREGON

Page 10, line 1, redesignate section 7 as section 8.

Page 9, after line 24, insert the following new section:

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

1 other institutions of higher education and professional as-
2 sociations.

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

6 (A) the development of curricular materials and
7 the designing of undergraduate and graduate level
8 courses; and

9 (B) publicizing the availability of professional
10 development courses of study in green chemistry and
11 recruiting graduate scientists and engineers to pur-
12 sue such courses.

13 Grants may provide stipends for individuals enrolled in
14 courses developed by the partnership.

15 (b) SELECTION PROCESS.—(1) An institution of
16 higher education seeking funding under this section shall
17 submit an application at such time, in such manner, and
18 containing such information as shall be specified by the
19 Interagency Working Group and published in a proposal
20 solicitation for the Program. The application shall include
21 at a minimum—

22 (A) a description of the partnership and the
23 role each member will play in implementing the pro-
24 posal;



1 (B) a description of the courses of study that
2 will be provided;

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

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

7 (E) a description of the manner in which the
8 partnership will be continued after assistance under
9 this section ends.

10 (2) The evaluation of the applications submitted
11 under paragraph (1) shall be carried out in accordance
12 with procedures developed by the Interagency Working
13 Group and shall consider, at a minimum—

14 (A) the ability of the partnership to carry out
15 effectively the proposed activities;

16 (B) the degree to which such activities are like-
17 ly to prepare chemists and chemical engineers suffi-
18 ciently to be competent to apply green chemistry
19 concepts and strategies in their work; and

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



AMENDMENT TO H.R. 1215
OFFERED BY MS. JACKSON-LEE OF TEXAS

Page 5, line 6, insert “the Department of Homeland Security,” after “Environmental Protection Agency,”.

Page 10, line 1, redesignate section 7 as section 8.

Page 9, after line 24, insert the following new section:

1 SEC. 7. USING GREEN CHEMISTRY TO REDUCE
2 VULNERABILITIES TO TERRORISM.

3 (a) REPORT.—Not later than one year after the date
4 of enactment of this Act, the Administrator of the Envi-
5 ronmental Protection Agency, in consultation with the
6 Secretary of Homeland Security and State and local agen-
7 cies responsible for planning for and responding to unau-
8 thorized releases and providing emergency health care,
9 shall produce a report that—

10 (1) identifies certain chemical substances of
11 concern as high priority categories for replacement
12 with green chemistry alternatives, based on the se-
13 verity of the threat posed by an unauthorized release
14 of such substances;



1 (2) identifies those chemical substances identi-
2 fied under paragraph (1) for which a green chem-
3 istry replacement is currently available; and

4 (3) identifies those chemical substances identi-
5 fied under paragraph (1) for which a green chem-
6 istry substitute is not available, with an indication of
7 where research might most fruitfully be directed to-
8 wards developing substitutes.

9 (b) FACTORS TO BE CONSIDERED.—In developing
10 the report under subsection (a), the Administrator shall
11 consider the following factors for prioritizing chemical
12 sources and substances of concern:

13 (1) The severity of the harm that could be
14 caused by unauthorized release.

15 (2) The proximity to population centers.

16 (3) The threats to national security.

17 (4) The threats to critical infrastructure.

18 (5) Threshold quantities of substances of con-
19 cern that pose a serious threat.

20 (6) Such other safety or security factors as the
21 Administrator, in consultation with the Secretary of
22 Homeland Security, determines to be appropriate.

23 (c) DELIVERY OF REPORT.—The report shall be
24 transmitted to Congress and to the Interagency Working
25 Group. The Interagency Working Group shall include the



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1 security considerations contained in the report in estab-
2 lishing goals and priorities for the Program, and shall di-
3 rectly address this issue in the report they transmit to
4 Congress under section 3(e).



AMENDMENT TO H.R. 1215
OFFERED BY MS. JACKSON-LEE OF TEXAS

Page 10, line 1, redesignate section 7 as section 8.

Page 9, after line 24, insert the following new section:

1 SEC. 7. COMMUNITY GREEN CHEMISTRY GRANT PROGRAM.

2 (a) ESTABLISHMENT.—The Administrator of the En-
3 vironmental Protection Agency shall establish a grant pro-
4 gram to provide technical assistance to communities enter-
5 ing into a cooperative agreement with a local chemical fa-
6 cility for the purposes of identifying opportunities to re-
7 duce the use and release of toxic chemicals.

8 (b) GRANTS FOR TECHNICAL ASSISTANCE.—The Ad-
9 ministrator shall make grants available to any group of
10 individuals which may be affected by the use or release
11 of toxic chemicals associated with a manufacturing facil-
12 ity. Such grants may be used to obtain technical assist-
13 ance in interpreting information with regard to the identi-
14 fication of use and waste reduction opportunities for the
15 facility and the feasibility of implementing changes in
16 manufacturing processes. Grants shall be made only to
17 groups of individuals who have entered into a voluntary



1 cooperative agreement with a local facility. Not more than
2 one grant may be made under this subsection with respect
3 to a single facility.

4 (e) AMOUNTS.—The amount of any grant under this
5 section may not exceed \$100,000 for any grant recipient.
6 The Administrator may waive the limitation in any case
7 where the waiver is necessary to carry out the purposes
8 of this section.

9 (d) COST SHARE.—Each grant recipient shall be re-
10 quired to contribute 20 percent of the total costs of the
11 technical assistance for which such grant is made. The Ad-
12 ministrator may waive the 20 percent contribution re-
13 quirement if the grant recipient demonstrates financial
14 need.



AMENDMENT TO H.R. 1215
OFFERED BY MS. WOOLSEY OF CALIFORNIA

Page 10, line 1, redesignate section 7 as section 8.

Page 9, after line 24, insert the following new section:

1 SECTION 7. VOLUNTARY LABELING OF ENVIRONMENTALLY

2 PREFERABLE PRODUCTS.

3 (a) DEFINITIONS.—For purposes of this section—

4 (1) ADMINISTRATOR.—The term “Adminis-
 5 trator” means the Administrator of the Environ-
 6 mental Protection Agency.

7 (2) ENVIRONMENTALLY PREFERABLE PROD-
 8 UCT.—The term “environmentally preferable prod-
 9 uct” means a commercial or industrial product that
 10 has a lesser or reduced adverse effect on human
 11 health and the environment when compared with
 12 competing products that serve the same purpose.
 13 This comparison may consider factors such as raw
 14 materials acquisition, production, manufacturing,
 15 packaging, distribution, reuse, operation, mainte-
 16 nance, or disposal of the product.

17 (b) LABELING.—



1 (1) IN GENERAL.—The Administrator shall es-
2 tablish a voluntary program under which the Admin-
3 istrator authorizes producers of environmentally
4 preferable products to use the label “EPA Certified
5 Environmentally Preferable Product”.

6 (2) ELIGIBILITY CRITERIA.—Within one year
7 after the date of enactment of this Act, the Adminis-
8 trator shall issue criteria for determining which
9 products may qualify to receive the label under para-
10 graph (1). The criteria shall encourage the purchase
11 of environmentally preferable products.

12 (3) USE OF THE LABEL.—The Administrator
13 shall ensure that the label referred to in paragraph
14 (1) is used only on products that meet the criteria
15 issued pursuant to paragraph (2).

16 (4) RECOGNITION.—The Administrator shall es-
17 tablish a voluntary program to recognize Federal
18 agencies and private entities that use a substantial
19 amount of environmentally preferable products.

