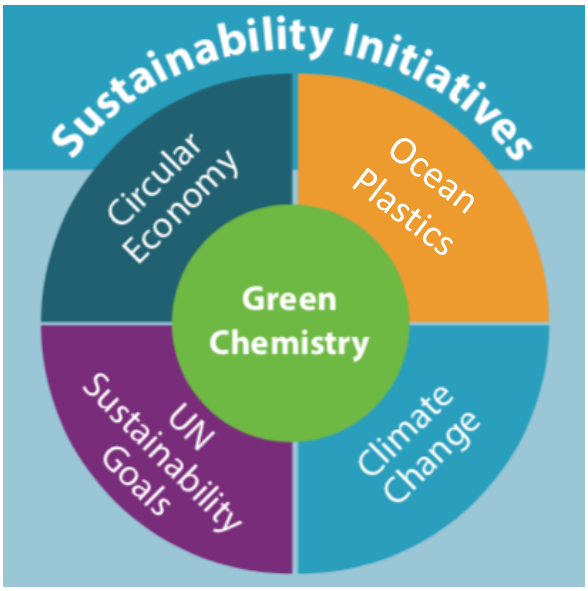
Green chemistry is at the core of a sustainable future

The chemical industry has an opportunity to make a significant impact in addressing a range of sustainability challenges, as chemistry is a central science and consists of the fundamental make-up of all of the products we use and consume. As molecular designers, chemists have tremendous power to utilize green chemistry concepts to create sustainable molecular building blocks for industry use. However, the training ground for chemists, higher educational institutions, often exclude green chemistry education, missing a significant opportunity to train the incoming workforce of chemists to design and invent sustainable solutions to global problems.



Growth

By 2030, the growth of the chemical market is anticipated to increase by **2X**

Demand

81% of global consumers surveyed feel strongly that **companies should help improve the environment**

Chemists, with the *right skills* can **design solutions** for a sustainable future

Beyond Benign's Green Chemistry Commitment

The Green Chemistry Commitment (GCC) is a program for colleges and universities to take leadership roles in preparing the next generation of scientists who will address global sustainability challenges. Through a consortium program, the GCC offers access to a broad and supportive community of chemistry experts and provides a flexible framework for colleges and universities to include green chemistry principles and practice in chemistry courses and programs. GCC signers share resources and experiences to transform chemistry education to help students achieve the following learning objectives:

65 signers globally, including: 60 in North America; 1 in each country: Brazil, Columbia, Thailand, Nigeria, Australia

What's Required? How to Commit?

The Commitment is a voluntary, flexible framework for chemistry departments to progressively adopt green chemistry theory and practice. Recognizing that each institution has different capabilities and resources, the Commitment strives to unite the field around Green Chemistry Student Learning Objectives, which can be integrated through a number of different pathways and timelines.

To sign up, the chemistry department chair, along with one administrator must sign the Pledge Form and at least one faculty member must serve as the primary contact for the institution by submitting the Contact Form.

Contact Natalie O'Neil, Program Manager, Higher Education, Natalie_ONeil@beyondbenign.org for questions or to obtain the Green Chemistry Commitment Pledge and Contact Forms or visit our website https://www.beyondbenign.org/he-green-chemistry-commitment/ for more information.

The Green Chemistry Student Learning Objectives

GCC signers agree that upon graduation, all chemistry majors should be proficient in the following:

Theory: Have a working knowledge of the Twelve Principles of Green Chemistry.

Laboratory Skills: Possess the ability to assess chemical products and processes and design greener alternatives when appropriate.

Toxicology: Have an understanding of the principles of toxicology, the molecular mechanisms of how chemicals affect human health and the environment, and the resources to identify and assess molecular hazards.

Application: Be prepared to serve society in their professional capacity as scientists and professionals through the articulation, evaluation, and employment of methods and chemicals that are benign for human health and the environment.

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Green Chemistry Commitment Benefits to Industry and Academia

Industry

- Showcases corporate support to address sustainability initiatives
- Future employees have the skills to design chemical products with reduced hazards, while maintaining efficacy
- Enhanced safety in the workplace
- Reduction in use and generation of hazardous chemicals, waste and energy
- Future employees assess toxicological effects and environmental impact of chemical products
- Future employees are enabled to design sustainable products that contribute to a circular economy

Academia

- Positions institutions as global leaders in sustainable science education
- Recruitment tool to attract globally minded students who want to contribute to solving sustainability challenges
- Enables instructors to train students to design chemical products with reduced hazards, while maintaining efficacy
- Removes hazards, reduces waste and reduces costs for laboratories, benefiting students, faculty and staff
- Provides the Chemistry Departments a pathway and connection to meet larger Campus Sustainability Initiatives
- Prepares students post-graduation with skills to invent sustainable solutions to global problems

Resources and Opportunities for GCC Signers

- Contribute to Collective Voice
- Track Progress
- Shape the Commitment
- Collaborative Working Groups
- Professional Development
- Green Chemistry Curriculum
- Access GCC Member Benefits
- Networking and Collaborations

What GCC Signers Are Saying

"The Green Chemistry Commitment is helping our Department to formalize an existing commitment and is a way for sharing the work that we are doing." – *Anne Marteel-Parrish, Associate Professor and Creegan Chair in Green Chemistry, Department of Chemistry, Washington College*

"In chemistry, it is essential to consider the consequences of our actions. The Green Chemistry Commitment is helping to bring focus to the importance of understanding these consequences and designing chemistry right from the beginning." – *Dalila Kovacs, Associate Professor, Department of Chemistry, Grand Valley State University*

"Community is important. The GCC helps bring people together through a support network for faculty who are trying to do the right thing." – *Rich Gurney, Professor and Chair, Dept. of Chemistry and Physics, Simmons College*

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