

A GUIDE TO

**Newly
Revised!**

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Green Chemistry Experiments for Undergraduate Organic Chemistry Labs

Brought to you by Beyond Benign and My Green Lab through the generous support of MilliporeSigma



Overview of Resource Guide

This guide has been developed as a partnership between Beyond Benign, My Green Lab, and MilliporeSigma, three organizations committed to promoting the adoption of green chemistry into chemistry curricula in higher education. We have collaborated to create this guide with the hope that green chemistry will be adopted into undergraduate organic chemistry laboratories and beyond. The organic chemistry laboratory is an opportunity to give students first-hand experience with reactions and techniques central to organic chemistry, by introducing green chemistry into the curriculum, fundamentals and rigor are maintained while reducing hazards and waste in laboratory courses. It is our hope this will facilitate the widespread adoption of green chemistry in the standard undergraduate curriculum.

As such this guide contains more than experimental procedures, the Green Chemistry: Principles and Lab Practices can serve as both a primer for utilizing this guide and as a resource bank for practicing green chemistry in any laboratory setting to reduce human health and environmental impacts of practicing chemistry. In this guide you will find alternatives to some of the most common undergraduate organic chemistry laboratory experiments. Each experiment begins with a discussion comparing the traditional method and the greener method. Special attention is given to highlighting the reduced health and environmental impacts of the materials used and waste generated by the green chemistry method. The guide utilizes the green chemistry metric, DOZN™ 2.0, which allows for a quantitative method towards recognizing and assessing the risks of hazards in a chemical reaction. In addition, each experiment has a detailed protocol and discussion questions for students that can be incorporated into the lesson that give student practice utilizing green chemistry principles, tools and metrics.

This guide could be used to substitute a single experiment or to design a whole new curriculum. As such, the guide provides multiple pathways for adopting greener labs and points faculty members to options that can be tailored to suit the needs of their own department and courses. We encourage you to use this guide as a starting point and build upon this framework to suit the needs and unique format of your teaching laboratory.

Download Instructions

To download the full resource guide or a specific experiment visit:

www.beyondbenign.org/curr-green-chemistry-organic-resource-guide/

Feedback Wanted!

We would love to hear from you and how you are using the Guide. We would appreciate any feedback. Any future revisions will also include new labs identified by the community, so please contact us with any new innovations or labs that you would like to see analyzed: info@beyondbenign.org.