

New York State Pollution Prevention Institute

2nd Annual Student and Faculty Research Program: Green Chemistry and Safer Chemicals in Products & Industry Proposal Guidelines

Introduction:

The New York State Pollution Prevention Institute (NYSP2I) is a statewide technology development, transfer, and assistance center whose mission is to make New York State more sustainable for businesses, workers, the public, the environment, and the economy. NYSP2I is a partnership managed and led by Rochester Institute of Technology (RIT) between RIT, Binghamton University, Clarkson University, Cornell University, Rensselaer Polytechnic Institute (i.e. “the NYSP2I partner universities”), and the New York Manufacturing Extension Partnership. NYSP2I is sponsored and funded by the New York State Department of Environmental Conservation (DEC).

NYSP2I has developed the Student and Faculty Research Program in collaboration with its university partners to enable students to propose, develop, design, and research solutions to real world environmental challenges. The program seeks to fund student-driven research projects, with faculty supervision, focused on sustainability that respond to a defined topic or issue. It is meant to foster creative thinking, problem solving, teamwork and collaboration across disciplines.

Student teams from NYSP2I partner universities are eligible to apply. Project awards will be made via cost-reimbursement subcontract to the awarded student team’s university. All teams must have at least one faculty lead from the university partner applicant who will supervise the student team, although cross-disciplinary projects involving two faculty from multiple departments are encouraged (e.g. chemistry and business). The awarded teams will be provided with a budget to offset project costs incurred as well as travel expenses (limited to within New York State) to participate in the program symposium to be held in September 2024.

This year’s research theme is focused on green chemistry and identifying and/or developing more sustainable chemical products or processes. Chemicals are ubiquitous in our everyday lives, whether they are in the products we use, the food we eat, the water we drink, or even the air we breathe. Historically, chemists have not considered the health and environmental profiles of new chemicals, which has led to a variety of toxic and/or environmentally damaging chemicals entering the market. Green Chemistry seeks to change the historical legacy of toxic chemicals by guiding the design of safe and sustainable chemical processes and products that do not contain hazardous chemicals. The [12 principles of green chemistry](#) can be applied to achieve the goal of benign chemical design, but also focus on minimizing waste formation and the use of hazardous chemical reagents, while striving for safer alternative chemicals and processes to minimize the negative impacts of chemicals.

Topics:

The task set forth is to develop a research project that is guided by the principles of green chemistry to reduce the use of hazardous chemicals in consumer products or industrial processes. A key component of green chemistry is innovation; therefore, interested university partner student teams are encouraged to submit creative proposals that they are personally passionate about.

Current chemical areas of interest of the program include the following:

- Emerging Contaminants: PFAS, 1,4-dioxane, and 6PPD and 6PPDQ
- Chemicals of Concern in Industry: lead, mercury, cadmium, chromium (VI) (and any compounds of these specific metals), toluene and other chlorinated solvents, organohalogen flame retardants, bisphenols, and phthalates
- Compostable plastics and/or plastic alternatives
- Other chemicals will be considered, with sufficient justification

Some example project topics are presented below for guidance, but should not be viewed as limiting in any way:

1. Identifying safer alternatives to toxic chemical ingredients for consumer products - Ideally, projects will identify new potential alternatives; however, a robust review of already available alternatives and current barriers to implementation could be acceptable
2. Creating a Need Statement & Development Criteria for alternative chemical ingredients in consumer products- for example, the organization Change Chemistry, formerly known as the GC3, created a [Need Statement & Development Criteria for New Preservatives for Personal Care & Household Products](#)
3. Proposing new chemical processes to reduce the use of toxic solvents or feed-stocks in an industrial process
4. Demonstrating a chemical reaction(s) that successfully applies at least one of the 12 principles of green chemistry (the chemical reaction should have a practical application, not just proof-of-concept)
5. Identifying a new application for safer, existing chemicals, such as those on the [EPA Safer Chemical Ingredient List \(SCIL\)](#)
6. Evaluating the environmental, health, and safety implications of bio-based and compostable plastics
7. Other related topics suggested by university partner teams (may or may not be accepted by NYSP2I)

Overview & Guidelines:

Team Requirements:

Each student team participating in the 2nd Annual Student and Faculty Research Program: Green Chemistry and Safer Chemicals in Products & Industry will be required to:

- Identify at least one university partner faculty member who will be the project Principal Investigator (PI) who will sign on to be responsible for compliance with all partner university sponsored research office requirements for the proposal and resulting subcontract, as well as the overall technical and financial requirements of the project, and to be responsible for supervising the student team
- Identify all student members of the team; there must be at least 2 students named on the team (may be from the same or different departments/colleges within the university)
- Define one or more research topic(s) (see examples above)

- Be able to start and complete all work on the project during the period of May 13, 2024 – August 16, 2024
- Provide a final report by August 16, 2024 summarizing the project, methods, results and conclusions, expected to be no more than 10 single-spaced pages, not including appendices or references. Additional information regarding guidelines for the report will be provided if selected for award
- Participate in monthly calls with the NYSP21 Program Manager and all student teams to provide status updates on progress and learn about research being conducted by other teams
- Submit a final poster detailing project outcomes for use at the program symposium
- Participate in the program symposium currently scheduled for September 20, 2024 in the Albany, New York area. The project team will be required to present a 30-minute presentation of project poster to symposium attendees summarizing project methods, results, and conclusions. Additional information regarding guidelines for the poster and presentation will be provided prior to the symposium.

Eligibility Information:

Teams of undergraduate and/or graduate students enrolled at partner universities, Binghamton University, Clarkson University, Cornell University, Rensselaer Polytechnic Institute, and Rochester Institute of Technology are eligible to participate so long as each team is led by a faculty PI. Students who have graduated are not permitted to participate. Multi-institute teams are allowable. However, one institute must be named as the lead that will be responsible for receiving the subcontract.

Teams must be comprised of at least two (2) student members. All team members must be current students for the entire duration of the project. At least one faculty member is required to be listed as the PI for the team, who will offer their guidance, support, and technical expertise. NYSP21 must be notified of any change of team members. New/replacement team members must be approved by the team's PI and by NYSP21 *prior* to them working on the project. All team members must take an active role in developing and executing the project. Members may not be added for the presentations only. If a student member leaves the team prior to the symposium, the team leader should notify NYSP21 in writing and include the team PI in the communication.

NYSP21 expects to award five (5) projects under this program. A program goal is to award one eligible project from each university partner. Additional proposals from each university partner may be accepted depending on the budget available, number of proposals submitted, and number of topics selected.

Funding Information:

Award Amount

The maximum amount of funding available for each of the awarded projects is \$40,000. No Cost Share is required or should be noted on any submitted proposal.

Project Expenses

Each team must submit a detailed project budget as part of their proposal. Project budget guidelines are as follows:

- The project budget must be submitted per team per project (the project may include more than one topic area).
- The project budget must be reviewed and approved by the university partner sponsored research office, consistent with their proposal review process, prior to submission. The budget should include a cost breakdown for faculty labor cost, any fringe costs, student labor cost, supplies, travel, and indirect costs, which cannot exceed 30.5% as mandated by the NYSP21 DEC contract

funding terms. Any proposal not reviewed and approved by the university partner sponsored research office will be returned and not considered for award.

- The faculty PI must have actual effort for this summer project charged to this NYSP2I award (and not any other source) during the May 13 – August 16 2024 period of performance.
- The faculty effort direct charges may not exceed 15% of the \$40,000 project budget.
- The majority of the project budget should be allocated to the students' effort.
- Include a budget justification explaining every item and expense listed in the project budget, including specific item costs, description of any supplies that may be required, and explanation of any re-charge center costs.
- No equipment may be purchased with an acquisition cost of more than \$1,000 per unit.
- Expenses must be reasonable and necessary to conduct the project and develop the visual representation of the project for the symposium.
- All expenses, other than travel to the symposium (noted below), must be incurred between May 13, 2024 and August 16, 2024.
- Universities may elect to submit invoices monthly as expenses occur, or they may submit one final invoice at the end of the project. Any invoice requesting reimbursement of travel expenses must include full receipts and back-up for all travel expenses.

Symposium Travel Expenses

Each team participating in this 2nd Annual Student and Faculty Research Program is expected to participate in a poster exhibition and give an oral presentation of their project at the NYSP2I Student Packaging Research Symposium on September 20, 2024 at **a location to be determined** in Albany, NY. Breakfast and lunch will be provided to all teams the day of the event by NYSP2I.

Teams may request reimbursement for travel expenses (one-night of hotel expense, mileage, food, tolls, etc.) for travel to and from the symposium. If your team will be requesting travel reimbursement, an estimate of travel expenses should be included in the proposal budget. (For budgeting purposes, use NYSDEC address (625 Broadway, Albany, NY 12233) as the symposium location to calculate your travel expenses. Once the location is determined, budgets may be modified as needed.) Team members should keep all receipts for reimbursement and follow their university travel and reimbursement policies. Full travel expense back-up will be required for the final invoice.

Official Award/Distribution of Funds

An RIT to university partner, cost reimbursement, subcontract will be presented to the sponsored research office of the awarded teams' university for review and signature after award notification. Awarded university partners will invoice RIT pursuant to the terms and conditions of that subcontract to receive reimbursement for the eligible project expenses. RIT and NYSP2I staff will work directly with your university to execute the required paperwork. ***Note: A sponsored research authorized signature from your university is required on the cover page of your proposal. This signature represents that the project budget has been reviewed and approved by the partner university. Budget changes will not be allowed during the project. Proposals cannot be considered unless the cover page includes all the required signatures.***

Reimbursement of Travel Expenses

After the symposium has ended, the partner university may invoice RIT for actual travel expenses incurred, as per the Symposium Travel Expenses section above.

Invoices may be sent to:

Sarah Briggs, Program Manager
New York State Pollution Prevention Institute
Rochester Institute of Technology
111 Lomb Memorial Drive
Rochester, NY 14623
Phone: 585-475-5617
Email: skbgis@rit.edu

Note: Funding is subject to the availability of NYSP2I program funding from the New York State Department of Environmental Conservation to RIT to operate and run NYSP2I.

Timeline:

January 2024	Student and Faculty Research Program Guidelines are provided to partner universities.
March 15, 2024	Research Project proposals due to NYSP2I
March 29, 2024	Award notification sent to teams selected for participation
May 13, 2024 (project start date)	Participating university teams work on projects and prepare for symposium
May 15, June 12, July 10, August 7, and September 11	Monthly calls with NYSP2I Program Manager and all teams
August 16, 2024 (project end date)	Project reports due
September 20, 2024	Student and Faculty Packaging Research Project symposium at <u>a location to be determined</u>

Proposal Instructions:

To participate in the 2nd Annual Student and Faculty Research Program, teams must submit a complete proposal package including:

- Cover Page (must use form provided)
- Project Description
- Detailed Project Budget

Cover Page:

The required cover page form is attached to these guidelines. Please note: ***A signature from an authorized sponsored research representative at your university is required on the cover page of your proposal. The sponsored research representative will want to review the competition terms and conditions, so please allow time for their review prior to the proposal due date.***

Project Description:

Describe the team's project following the outline below.

Project title (should be descriptive of the topic(s) and the approach/concept)

Topic(s) (informed by the topic guidelines above)

1. Project Objective

- Provide a description of the topic(s) that the team will address.
- If intending to address a related topic not listed, include with the topic description how the topic relates to the program goals.
- Describe your proposed concept/design approach and explain how it will address the topic(s).
- Identify the innovative scientific or technical aspects of the team's concept/approach.
- Describe how the objectives/opportunities would reduce the environmental, economic, and social impacts of the topic(s) selected.
- Address the impacts of the project/design on the environment and discuss any environmental tradeoffs (e.g., air, water, land).

2. Project Description/Research Plan

- Describe the team's project plan. Explain any partnerships with businesses, community organizations, etc. the team will form or leverage.
- Provide a brief literature review of relevant and current approaches used to address the challenge.
- Identify the *innovative* scientific or technical aspects of the team's proposed project, why the team's approach was chosen and how the team's concept improves upon existing approaches to address the problem identified.

3. Results, Evaluation and Conclusions

- Identify the expected results of the project that will occur during the project period of performance and describe the team's strategy to measure those results.
- Describe how the team's expected results achieve one (or more) of the goals of green chemistry and may be leveraged to motivate other novel research contributions moving forward in the future beyond the funded project, etc.

4. Project Schedule and Milestones

- Provide a schedule for key milestones and project tasks.
- Indicate anticipated roles and tasks of each team member, including the actual percent contribution of each team member and faculty PI
- Indicate anticipated interactions with any and all partners/collaborators, if applicable.

The Project Description must be no more than 5 single spaced 8.5" x 11" pages (a page equals one side). All references should be cited and can be included as endnotes, which will not be included in the page limit. Pages should be consecutively numbered with 1" margins, and text should be a standard 12-point font.

Project Budget – Provide a project budget using your university’s standard cost reimbursement research budget template. The budget should include all project personnel effort, supplies needed to conduct your project, materials needed to create a visual presentation of your project, travel related to symposium, etc. Please include a budget narrative description of the budget describing how NYSP2I funds will be used. (*Note: Indirect costs cannot exceed 30.5% and equipment and tuition expenses are not allowable.*) The budget will be evaluated to ensure it ties correctly to the proposal submitted. Budgets may require edits by NYSP2I to coincide with program rules and the proposed work and outcomes. The project budget and justification should not exceed two pages, and is not counted toward Project Description 5-page limit.

Submission: Proposal package must be submitted in a single PDF file electronically via email to: nysp2i@rit.edu with subject line: Student and Faculty Research Program Green Chemistry Project Proposal.

The proposal deadline is: **Friday, March 15, 2024 11:59pm EST.**

An email notification of receipt will be sent to the submitter.

Other important information:

Reporting – For participating teams, a report summarizing the project, methods, results, and conclusions will be due on **August 16, 2024**. Reporting guidelines will be provided.

Monthly Calls – All participating teams must have at least one team member participate in monthly calls with the NYSP2I Program Manager and participating teams. The monthly call is an opportunity for the Program Manager to be provided an update on the project status. In addition, the meeting is an opportunity for each team to network and learn about the work being done by other teams.

Publicity – By submitting a proposal, teams agree to allow NYSP2I to utilize team and team member names, images, project information including proposal and reporting content, project metrics and results for NYSP2I to provide a summary report to the NYSDEC and for promotional and informational purposes. The Symposium will be open to the public, and the press, including television and other video recording. By submitting a proposal, teams grant their right and permission to RIT and NYSP2I to use and publish any photographs, video or media images of themselves and/or their project materials.

Intellectual Property – Please refer to the RIT NYSP2I subcontract to review the specific intellectual property terms. University partner awardees (subcontractors) may own all intellectual property created during the conduct of this Subcontract. However, NYS and NYSP2I shall have a license to use all copyrighted materials developed, for NYS and NYSP2I purposes.

Program Contact Information:

Sarah Briggs, Program Manager
New York State Pollution Prevention Institute
Rochester Institute of Technology
111 Lomb Memorial Drive
Rochester, NY 14623
Phone: 585-475-5617
Email: skbgis@rit.edu

Administrative Contact Information:

Kimberly Burley, Sr. Program Administrator
New York State Pollution Prevention Institute
Rochester Institute of Technology
111 Lomb Memorial Drive
Rochester, NY 14623
Phone: 585-475-6235

Email: kjbgis@rit.edu

Proposal Selection Criteria

Proposals meeting eligibility requirements will be reviewed and selected by NYSP2I based on the following criteria:

- The proposed project is scientifically sound, feasible, and appropriate to address the selected topic(s).
- Contribution to furthering knowledge, understanding, and application of this year's theme on pollution prevention/sustainability and society.
- The novel research and/or development aspects of the project are clearly identified, and supported by a literature review.
- A qualitative and/or quantitative evaluation method is proposed and is reasonable to assess the projected environmental, economic, and social benefits of the project if implemented.
- The scope of the project and its goals and objectives are clearly stated and appropriate for the timeline.
- The proposed budget is reasonable and appropriate for the project.
- Collaboration and multidisciplinary approach will be considered favorably.

Note: A project may be awarded as proposed without discussion, or the NYSP2I Program Manager may discuss and negotiate topics with awarded teams to avoid duplication and ensure proposed related topic relevance.

To learn more about NYSP2I visit: <http://www.nysp2i.rit.edu>
Or contact us at: nysp2i@rit.edu



**New York State Pollution Prevention Institute
Inaugural Student and Faculty Research Program: Green Chemistry and Safer Chemicals in
Products & Industry**



Proposal Cover Page

Project Title: _____

Faculty PI: _____

Faculty PI Telephone: (____) _____ **Faculty PI Email:** _____

School Name: _____

School Address: _____ **City:** _____ **Zip Code:** _____

Student (#1) Team Lead: _____ **Major:** _____ Grad Undergrad

Student Lead Telephone: (____) _____ **Student Lead Email:** _____

	Student Team Member #2	Student Team Member #3	Student Team Member #4
Program Level	<input type="checkbox"/> Grad <input type="checkbox"/> Undergrad	<input type="checkbox"/> Grad <input type="checkbox"/> Undergrad	<input type="checkbox"/> Grad <input type="checkbox"/> Undergrad
Name			
University			
Major			

Faculty PI agrees that all students have the technical competency to perform research for this NYSP21 packaging project.

Student Team Leader Signature Date

Faculty PI Signature Date

Sponsored Research Office Authorized Signature (approving project budget) Date

Name and Title (please print)

Email Address Phone

Finance Contact Name and Title Phone

Address Email