



SEFA Student Design Competition

Rules and Guidelines

- ◆ Entry / Abstract Deadline April 15, 2015 ◆
- ◆ Design Submission Deadline May 29, 2015 ◆

The Scientific Equipment and Furniture Association (SEFA) was organized in 1988 to meet the needs of lab designers and manufacturers in the laboratory furniture industry. SEFA members work closely with laboratory owners, architects, contractors and others to advance the goal of creating a safe lab environment.

Scholarship Awards

1st Place \$6,000 ◆ 2nd Place \$3,000 ◆ 3rd Place \$1,500

Task—Objective

Lab safety is one of SEFA's primary concerns — SEFA spells safe.® SEFA members manufacture a range of exhaust devices for use within the laboratory environment. These include chemical fume hoods, snorkels, backdraft tables, downdraft tables, and others. However, these devices do not always match ideally with the safety needs or ergonomic requirements of particular applications. Furthermore, with more facilities offering "Green Chemistry" programs, Lab Planners and Owners are looking for new energy-efficient exhaust solutions.

In light of the smaller amounts of hazardous chemicals being used in some applications, the standard fume hood which operates at a high volume of energy consumption, may often be more than what is required. On the other hand, snorkels do not always provide the best capture. While students and researchers are using smaller/micro amounts of chemicals in some applications they are, nonetheless, using hazardous substances which require an appropriate element of protection.

The objective of SEFA's 2015 Student Design Competition is to design a chemical fume containment system or device that will provide ample safety for the student/researcher while allowing them to comfortably work with their experiment in a more energy-efficient environment.

- **The solution can be a permanent set-up or removal;**
- **Solution allows students to work solo or in groups of two;**
- **Experiment area may contain items such as cupsinks, water fixtures, gas fixtures, distillation racks (monkey bars), and access to electrical power as appropriate for the types of experiments for which the design is proposed;**
- **Entries should include a description of the intended airflow patterns and capture - illustrated with diagrams, CFD models, animation, or other similar means.**

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—Competition Rules—

1. Student participants must be enrolled as a full-time student in an under-graduate or graduate program at a College or University located in the U.S.
2. Students can work individually or as part of a team of no more than three participants.
3. **DEADLINES — Entry / Abstract - April 15, 2015 - Design Submission – May 29, 2015.**
4. Entry Forms will be accompanied by a brief abstract, consisting of no more than 250 words explain proposed design and how it will be used to enhance the Green Chemistry Lab environment.
5. Design submissions will be emailed to: info@sefalabs.com in electronic format of no more than five (5) minutes. The video will display a digital 3-D rendering of the exhaust system or device, the actual constructed piece or a prototype. You may view past winners on You Tube at [SEFA1917](#).
6. All Entries will be posted simultaneously on You-Tube on May 18, 2015.
7. Winners will be announced on or before August 17, 2015.
8. All SEFA members, their employees, and immediate family members of those employees are not eligible to participate.
9. Awards will be paid directly to the College or University that the winning contestants are currently attending, will be attending or to any financial institution which holds an outstanding student loan with the winning contestants.

What is Green Chemistry?

The American Chemical Society Defines Green Chemistry as follows:

Sustainable and green chemistry in very simple terms is just a different way of thinking about how chemistry and chemical engineering can be done. Over the years different principles have been proposed that can be used when thinking about the design, development and implementation of chemical products and processes. These principles enable scientists and engineers to protect and benefit the economy, people and the planet by finding creative and innovative ways to reduce waste, conserve energy, and discover replacements for hazardous substances.

It's important to note that the scope of these of green chemistry and engineering principles go beyond concerns over hazards from chemical toxicity and include energy conservation, waste reduction, and life cycle considerations such as the use of more sustainable or renewable feed-stocks and designing for end of life or the final disposition of the product.

Green chemistry can also be defined through the use of metrics. While a unified set of metrics has not been established, many ways to quantify greener processes and products have been proposed. These metrics include ones for mass, energy, hazardous substance reduction or elimination, and life cycle environmental impacts.