UC SANTA BARBARA

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Lab Work

Meet the condenser, indispensable instrument for scientists in laboratories everywhere. Chemicals enter hot but exit cool, thanks to a constant flow of cold water. A “single-pass” condenser uses, and dumps, about a gallon per minute; so-called “closed-loop” models recirculate the same water indefinitely.

No wonder, then, that when it comes to water conservation, it’s a small device that can make a big difference.

At UC Santa Barbara, closed-loop condensers have replaced their single-pass predecessors in dozens of labs (there are more to come), making a major dent in campus water consumption. The grant-supported push by UCSB’s LabRATS (Laboratory Resources, Advocates and Teamwork for Sustainability) has come to play a key role in the university’s overall efforts to save ever-more water.

“This has been a really big success for our program and we’re really happy, particularly in the California drought situation, to have made a significant contribution,” said Amorette Getty, co-director of the 2005-launched LabRATS, who first got interested in lab sustainability while earning her doctorate in materials at UCSB. “We are seeing momentum among the campus community to really start to make a difference in this area of lab sustainability.”

And that’s not all.

With additional core focus areas in energy and material resources, the group also analyzes lab devices from an energy-efficiency perspective, from how much energy

various devices burn and whether they’re being used in the most efficient way, to more efficient alternatives when replacement is necessary.

Similarly, said Getty, LabRATS seeks to ensure participating labs are “purchasing the most efficient and effective, and minimal, materials as possible, and disposing of them correctly on the back end.”

“We want to make sure, for example, that no batteries are going into the landfill, and that as much that is recyclable gets to the recycling center,” Getty said. “So many types of things are coming into labs: pipettes, plastic, paper materials, metal materials, electronics and consumables of all kinds. Sustainability efforts are common in offices — paper is recycled, as are drink bottles and so on — but labs are frequently overlooked in terms of the amount of waste they produce, and they can be very big waste generators.”

Guidance and assistance in lab waste management are among LabRATS’ many functions, which also include free sustainability assessments of campus labs that want them. In addition, the group facilitates a surplus chemical exchange, part of UCSB Environmental Health & Safety, in its push to reduce chemical waste while saving money on materials.

In all these ways and more — LabRATS is now growing its efforts in sustainable networking and procurement — the program aims to help researchers reduce their environmental impact by adapting recycling, energy management and sustainability best practices to the materials and processes used in laboratories. Also central to its mission: improving safety, streamlining laboratory management and promoting both communication and resource sharing across campus labs.

Much of LabRATS’ work is in fact being led by some of UCSB’s greatest resources: undergraduate students. The program employs a small-but-mighty staff of student interns to coordinate with labs and researchers, and to conduct research themselves on innovations in lab sustainability and potential improvements for labs on campus.

Among them this spring is Daniel Charette, a third-year pharmacology major who has been shepherding the implementation of single-pass condensers and, among other things, investigating efficient incubators for labs that use flies for research. His interest in lab sustainability issues was piqued after a summer internship for a pharmaceutical manufacturing company, where he saw firsthand how badly such efforts are needed.

“You might go into a clean room for 30 seconds to turn a single knob, but you’re in a full gown and respirator that just gets thrown away — it’s pretty incredible, the waste,” said Charette, who was inspired by that experience to pursue a position with LabRATS. “The potential savings to the environment from labs is pretty significant, and I wanted to do something to help. It’s something responsible and it’s research-related. It’s great.”

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.