

## XploSafe

### XploSafe expands research efforts into environmental, water safety

A sample mixer rotates slowly in a tiny laboratory at Stillwater's XploSafe LLC, turning small vials filled with novel materials that are part of ongoing research and development. It's the latest iteration of some amazing Oklahoma innovation.

Launched less than a decade ago as a concept to provide explosive detection technology for homeland security and military applications, the company markets 14 critical safety products worldwide.

Users include police departments, fire departments, first responders, bomb squads, pharmaceutical manufacturing personnel, industry safety personnel, chemical manufacturers, hospitals and the military.

Supported by multiple state and federal research grants and contracts, XploSafe recently expanded its R&D focus to include environmental monitoring and wastewater remediation.

Founded by an Oklahoma State University MBA student and two chemistry professors, XploSafe also is preparing to build a 6,000-square-foot facility to house its growing operation. The company currently operates out of a 1960s-era building in an industrial park on Stillwater's northeast side.

"We bootstrapped our company from an ambitious student-faculty startup with two professors and me to a sustainable business now with 12 employees," Shoaib Shaikh told me during a recent interview. "It's been a very challenging and rewarding journey."

Shaikh is XploSafe's financial operations manager. He was a graduate student at OSU's Spears School of Business when the company was founded in 2009.

XploSafe has its roots in the research of OSU chemistry professors and co-founders Allen Aplett, Ph.D., and Nick Materer, Ph.D., who developed compounds that reacted to the presence of certain substances that are used in explosives. Shaikh worked on the business plan while he was an OSU student, and the three co-founded XploSafe.

Today, Aplett serves as XploSafe's president, Materer its chief scientific officer.

In the beginning, the company pursued development of explosive detection technology with a business plan that Shaikh pitched in the Donald W. Reynolds Governor's Cup competition for Oklahoma college students.

XploSafe's growth along its journey was supported by multiple research grants from the Oklahoma Center for the Advancement of Science and Technology (OCAST), as well as from federal agencies.

"OCAST has been a tremendous partner to XploSafe from the onset," Shaikh said. "The funding that Dr. Materer and Dr. Aplett received to build the explosive detection product line was from an OCAST applied research program. And then we were fortunate to receive grants from the ONAP, Oklahoma Nanotechnology



Applications Program, as well as the OCAST Intern program. These are directly supporting and funding the research that we do and the products that we make. We have established R&D and commercial scale manufacturing in Stillwater; and have a very skilled and highly motivated team that is addressing some of the most critical chemical safety challenges.”

XploSafe also received a federal Small Business Innovation Research (SBIR) contact through the Department of Defense to develop dosimeters for measuring chemical vapors in potentially hazardous environments.

“They are basically clipped on you,” Materer said of the dosimeters. “And as you walk around during the day and you pick up things; they pick up the vapor and exposure and then log it. Once you collect those materials, you have to analyze them, and that’s actually a real difficult part. Our materials work really well for that.”

In 2017, the company won another \$300,000 SBIR from the Environmental Protection Agency to develop technology that removes essential plant nutrients from wastewater and converts them into commercial fertilizers.

“The specific problem is the release of plant nutrients into lakes, rivers and other areas where they cause algae to grow and bloom,” Apblett said. “You get so much algae that they use up all the oxygen. So now your water is smelly, horrible and there is no oxygen, so all the other plants and animals are dying, as well. That’s what we prevent by removing the nutrients from water.

“And of course, pollutants tend to be actual useful materials in the wrong place. So we take these nutrients and put them into fertilizer. In Phase 1, we showed that our technology works and recently were awarded Phase 2 funds to bring the technology to household and commercial use.”

On the horizon is the new 6,000-square-foot facility that should be open by 2020.

“We will have some of the best state-of-the-art equipment and resources in this new building,” Shaikh said. “We will be able to do a lot of exclusive, high-technology research and development to serve our customers.”

More iterations. More Oklahoma innovation.

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