

Sandia tests distillery's hand sanitizer developed to address severe shortage

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Sandia National Laboratories chemist Jessica Kruichak worked with Wayward Sons Craft-Distillery in Santa Fe through the New Mexico Small Business Assistance program. She tested hand sanitizer for the company to make sure it meets standards set by the World Health Organization and the U.S. Food and Drug Administration. Credit: Lonnie Anderson

Distillery-developed hand sanitizer is leaving a New Mexico warehouse as quickly as it disappeared from grocery stores after Sandia National Laboratories helped confirm the product meets all federal requirements for distribution.

In response to the severe, widespread shortage during the COVID-19 pandemic, Wayward Sons Craft-Distillery in Santa Fe, New Mexico, reconfigured its operations to produce a [hand sanitizer](#) they named Elbow Bump, and worked with Sandia to test and confirm that it meets standards set by the World Health Organization and the U.S. Food and Drug Administration.

"They needed someone with a technical background to help them figure out how to make this product and test its effectiveness," said Sandia chemist Jessica Kruichak, who worked with the

company. "Because there has been a shortage, it's humbling that I was able to help them with that."

Sandia worked with Wayward Sons through the New Mexico Small Businesses Assistance program that pairs Sandia and Los Alamos National Laboratory with small businesses facing technical challenges. The program provides access to the labs' expertise and capabilities at no cost to the company.

Kruichak and Sandia analytical chemist Curtis Mowry provided technical consulting and resources to help the company determine correct quantities of materials for the hand sanitizer and whether manufacturing of the product could be scaled up while maintaining its effectiveness.

Even though the WHO and the FDA distributed guidelines for making the sanitizer, Kruichak said producing it wasn't a simple, straightforward process. She, Mowry and Wayward Sons co-owner Byron Rudolph researched materials and differing alcohol proofs to make sure the combination would work. Kruichak said she also studied how to denature alcohol, which involves adding one or more chemicals that make it unfit for human consumption. Kruichak said the guidelines also presented the hand sanitizer recipe in volume measurements, but Wayward Son's commercial scales measure by mass.

"When you go from volume to mass, it changes things. You have to look at density, the proof of the alcohol, initial ingredient percentages and avoid diluting it too much," Kruichak said. "Even with the guidance, it's not as easy to make hand sanitizer as you might think."

In doing research on how to make the product, Rudolph talked to other distilleries that used different tools.

"It was a matter of deciding what tools work best for

Wayward Sons, and the ability to test the product helped us make that decision," Kruichak said.

In addition to research and testing, Mowry said another challenge was the turnaround time because product demand was already high. He provided lab time and expertise by conducting gas chromatography on the materials. That process involves vaporizing a small sample in an instrument that separates and measures each ingredient. This was important in making sure the final product had the right percentages of alcohol to kill the virus, Kruichak said.

"Having the quality-control testing and analysis was phenomenal," Rudolph said. "We appreciated having minds and equipment that could help make sure everything was going the way it was supposed to."

Rudolph said the distillery already had the equipment to make Elbow Bump; the same pumps, hoses and tanks are used to make the company's craft coffee spirits. Wayward Sons co-owner Tom Wolinski said hand sanitizer production not only benefits the public, it also helps provide [work hours](#) for office and delivery staff that package and distribute the distillery products.

"When bars and liquor stores shut down, most deliveries weren't taking place," Wolinski said. "Not only has the whole process been truly inspiring, it also enabled our company to provide many extra hours to the warehouse and delivery personnel as they have stepped in for bottling and packaging. Without the hand sanitizer, that wouldn't be happening."

Substantial donations of Elbow Bump have already been made to food banks, shelters and medical organizations, and more are planned, Rudolph said.

"It's very rewarding to feel that we have the ability to contribute in some way to the medical front liners and consumers who can't get hand [sanitizer](#)," he said.

Sales have exceeded the distillery's expectations, Wolinski said, with stores in New Mexico, Colorado,

Utah, Kansas, Texas and Missouri placing orders.

"Every market able to purchase seems to be doing so," Wolinski said.

Jackie Kerby Moore, manager of Technology and Economic Development at Sandia, said it has been gratifying to see the NMSBA program address issues associated with the COVID-19 pandemic.

"We are proud that Sandia helped a local company create a new product line and retain employees," she said.

Provided by Sandia National Laboratories

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