

Extending food safety training to other countries could save lives

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Catherine Cutter, professor of food science and assistant director of food safety and quality programs for Penn State Extension, talks to Armenien students. She believes internationalization of the state university extension system, which has been vital to establishing food safety in the United States, would greatly benefit the world. Credit: Penn State

Food safety practices that Americans take for granted—washing hands with soap, refrigeration, and not cutting raw meat and vegetables on the same surface without disinfection—are not widely practiced in other places around the world, and researchers in Penn State's College of Agricultural Sciences want to change that.

The World Health Organization estimates that every year, 600 million people, almost one in every 10 people in the world, get sick after eating contaminated food every year. As a result, 420,000 die annually from [foodborne illness](#). The lack of general [food-safety](#) knowledge and poor food-handling practices result in the deaths of approximately 125,000 children under the age of five every year, the international group estimates.

Foodborne illness is a global health challenge, where some diseases are controlled and others evolve as new threats. This danger is especially significant with the increase in international trade of food and food-related commodities.

Food [safety](#) has become a global concern that is no longer an isolated threat, according to Catherine Cutter, professor of [food science](#) and assistant director of food safety and quality programs for Penn State Extension. She believes internationalization of the state university [extension](#) system, which has been vital to establishing food safety in the United States, would greatly benefit the world.

As a first step, Cutter's Penn State research group in 2016 offered a Food Safety System Management curriculum at the Agribusiness Teaching Center of the National Agrarian University in Yerevan, Armenia—and then studied its effectiveness. The training, which was based on a Penn State Extension food-safety certificate program, was part of the wider Innovation for Agricultural Training and Education program, a joint venture of Penn State, Virginia Tech, Tuskegee

University and the University of Florida.

"Internationalization of extension programs not only benefits the targeted audience but also provides extension specialists and educators with opportunities to incorporate international perspectives into their programs," she said. "Increasingly, diverse clientele would benefit from global extension programs and help to promote a safer food supply."

Researchers presented the food safety system management curriculum to fourth-year agribusiness students. Prior to beginning the program, demographic data was collected and a pretest was administered to gauge the food-safety knowledge, behavior and attitude of participants.



At the end of the program, students' food safety attitudes, skills, knowledge and

behavior were judged to have improved significantly, and a follow-up survey of food safety attitude and behavior done three months later suggested the training had made a lasting difference. Credit: Penn State

The participants' hand-washing techniques were videotaped and scored before the program commenced. Immediately after completion of the entire curriculum, a post-test with identical questions for food-safety knowledge, behavior and attitude was administered, and hand-washing skills were again assessed. Throughout the program, students also were given tours of food businesses that employ food safety best practices.

At the end of the program, students' food-safety attitudes, hand-washing skills, knowledge and behavior were judged to have improved significantly, and a follow-up survey of food-safety attitude and behavior done three months later was consistent with the post-test survey results. These results suggest that the training is making a lasting impression.

Information from the study, which was recently published in the Journal of Food Science Education, will be of interest to education experts, extension professionals, food-industry personnel and regulatory agencies as they develop and disseminate an international food-safety program, Cutter pointed out.

While the research findings may seem obvious to many Americans—who take for granted food-safety techniques uniformly required and practiced in this country—food handlers in some countries need rudimentary training, explained lead researcher Siroj Pokharel, a postdoctoral scholar in Cutter's research group.

"There are places where people do not have that basic knowledge of how to prepare food in a safe way and prevent foodborne illness, and there

was a low level of food-safety knowledge initially among the students we worked with in Armenia," Pokharel said.

"But at the end of the training we measured a significant improvement in the students' knowledge, behavior and attitude toward food safety," he added. "This was the Food Science Department's first attempt to launch an extension food-safety program internationally, and we believe it was a success."

Cutter has plans to replicate the program in Ukraine next year and in Africa and Latin America after that. "The bottom line is that food safety is a global issue and Penn State can make a big difference in the world," she said. "We are talking to a number of different countries about extending extension [food](#)-safety programs."

Provided by Pennsylvania State University

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