

Back to the future: Low-tech food-safety trainings still best for some audiences

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The curriculum, which contains strategies that take into account specific characteristics of small and very small dairy farms, includes lessons designed to provide workers with the knowledge, skills and a comprehensive explanation of the food-safety rules that they need to follow at work. The first lesson in the training describes the four steps for cleaning and sanitizing and why they are needed, and the basics of cross-contamination and how it can be avoided. Credit: Penn State Extension

While current training for food safety and sanitation usually incorporates high-technology presentations, such as videos and slide shows, there is still a need for low-tech approaches, according to Penn State researchers.

For unique audiences, such as employees of small-scale dairies that produce artisan cheeses, old-school teaching strategies that do not require electricity may work best. Workers in this sector need to be better trained because of the inherent food-safety risks associated with producing specialty cheeses—mostly from raw milk.

"Investigating and proposing solutions to improve food safety in this sector is important, given that dairy farm and processing environments may be responsible for foodborne pathogens that can contaminate raw milk, cheese and other dairy products," said Catherine Cutter, professor of food science, College of Agricultural Sciences. "Little is known about the food-safety and sanitation knowledge, behavior, attitude and skills of farmstead cheese-makers in the U.S."

Cutter, assistant director of food safety programs for Penn State Extension, noted that after performing a two-year assessment of farmstead cheese-makers in Pennsylvania, her research group developed alternative training materials such as customized, richly illustrated, color flipcharts to train workers.

"These presentations can be given on a picnic table, in a barn or on a front porch," she said. "We saw a need to think outside-the-box for training this audience and developed a method to help them, building on previous work done by colleagues in our department. And while we were working with small-scale cheese-makers in Pennsylvania, what we came up with could be adapted for other similar audiences across the country."



Researchers gave workers the low-tech food-safety training and documented how they altered their behavior later. Afterward, they measured to see if the newly trained cheesemakers' actions improved conditions at their plants. Researchers discovered that they had. Credit: Penn State Extension

Lead researcher Robson Machado, now a faculty member at the University of Maine who was a doctoral student in [food science](#) at Penn State when he conducted the research, assessed the sanitation, [personal hygiene](#) and food-safety practices of 17 small-scale cheese-making operations. He administered pre- and post-tests to workers that addressed food-safety knowledge, attitude and behavior, as well as an

evaluation of hand-washing skills. He also tested environmental samples from the processing plants to see what microorganisms were present and where they could be found.

Then, he gave workers the low-tech food-safety training and documented how they altered their behavior later. Afterward, Machado measured to see if the newly trained cheese-makers' actions improved conditions at their plants. He discovered that they had.

The curriculum Machado and Cutter developed for the training contains strategies that consider specific characteristics of small and very small dairy farms. It includes two lessons designed to provide workers on dairy farms with the knowledge, skills and a comprehensive explanation of the food-safety rules that they need to follow at work.

The first lesson in the training describes the four steps for cleaning and sanitizing and why they are needed, and the basics of cross-contamination and how it can be avoided.

The second lesson describes the importance of good personal hygiene practices and shows the correct procedure for hand washing, the correct use of gloves and other personal habits.



Investigating and proposing solutions to improve food safety in the artisan cheesemaker sector is important, given that dairy farm and processing environments may be responsible for foodborne pathogens that can contaminate raw milk, cheese and other dairy products. Credit: Penn State Extension

"Not only did the [training](#) have an impact on the food handlers themselves, but we also assessed the environment to see if we could see a reduction in microbes," Machado said. "We saw an improvement in certain microbial populations, such as a reduction in E. coli and other indicators of hygiene."

One troubling aspect of the research that was published today (July 2) in *Food Protection Trends* was that participating small-scale cheese-makers did not seem to know they were not following sound [food](#)-safety

principles before being trained, Cutter pointed out.

"What we found is that the processors think that they are doing a great job when the reality is they're not," she said. "The research that Robson did in this study indicated that sanitation and personal hygiene are problems."

In a sort of epilogue to this research, other [food safety](#) specialists in Penn State Extension are now developing flip chart-focused lessons to train Amish growers to comply with produce standards in the federal Food Safety Modernization Act.

Provided by Pennsylvania State University

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