

WE'RE AT WAR

But There's No Silver Bullet for Food Safety

BY H. RUSSELL CROSS



It's the American way. We're always looking for the silver bullet to solve our problems.

Look at the never-ending battle of the bulge. Many Americans constantly search for the silver bullet that will make them slim and trim. They see fat substitutes as one of the new end-all, be-all, guilt free ways to keep the scales in check. We see the silver bullet mentality every day across America as people buy lottery tickets— all with the hopes of never having to work again. It used to be the American work ethic people once bragged about, but this seems to have taken a back seat to Lady Luck.

As the former "food chief" at the U.S. Department of Agriculture, I felt constant pressure to find the silver bullet that would make sure our nation's food supply is 100 percent safe. But as a scientist, I know there is no silver bullet for food safety.

The point was made—tragically — about a year ago in the Northwest when a virulent bacteria contaminated some ground beef that ended up in fast-food hamburgers. The bacteria caused severe illnesses and deaths, mostly among children. It was one of the most painful times in my life; I, too, wished for a silver bullet.

The tragedy put the entire meat industry in full gear to determine how to prevent this type of severe food poisoning outbreak from ever occurring again. The meat industry deserves much credit for its accomplishments over the past 50 years to prevent diseased animals from entering the marketplace, for removing physical contaminants from meat and poultry products, and for reducing illegal chemical residues to almost zero. We've come a long way.

Now we've declared war — a war on bacteria, such as the harmful bacteria that contaminated the hamburgers in the Northwest outbreak. All those involved in food production— from farmers and ranchers to meat plants to retailers—must join the fight. Food safety is an issue every step of the way from farm to table. Consumers must also join in because no matter how sterile the meat product is when it is delivered to a retail establishment, it could still cause food poisoning if mishandled during preparation in the home.

HACCP System

The war on bacteria means preventing contamination in the first place, starting on the farm. This approach is the Hazard Analysis and Critical Control Point (HACCP) system. It relies on identifying potential hazards, putting steps in place to monitor



H. Russell Cross

and control the process to prevent such contamination, and verifying that the system is, in fact, producing the safest food possible.

HACCP was first used in the United States in the 1960s by Pillsbury, which produced food for astronauts in the space program. It's a simple, common-sense approach to safe food, and combined with the best ammunition science can give us, provides greater assurances that our food will be as safe as possible.

Many meat plants have already voluntarily implemented HACCP and USDA's Food Safety and Inspection Service plans to mandate HACCP over the next several years in meat and poultry plants. Research is underway to determine how to implement HACCP on the farm, a difficult task since there are still many questions relating to the incidence and prevalence of bacteria and other contaminants.

We need to better understand how bacteria such as *E. coli* 0157:H7 colonize in the bovine gastrointestinal tract and what factors contribute to contamination in an endemic herd. Promising biotechnological tools that can be used to limit or better preclude harmful bacteria from growing in or surviving on animals, and other control strategies, such as using non-pathogenic organisms to exclude the harmful bacteria from being present from birth to slaughter, are areas that need further investigation.


While this research is underway, however, producers can

begin to employ HACCP on the farm and ranch by improving the sanitation of their premises (especially transport vehicles), by monitoring feeds to ensure the absence of chemical residues, and by carefully following all drug withdrawal times to prevent violative residues in livestock shipped to slaughter.

Food Safety War

A farm-to-table food safety war relies on many components, which is what HACCP is all about— not on a single silver bullet. To rely on a single bullet creates a false sense of security.

Some suggest irradiation may be a food safety silver bullet. Irradiation is an effective and safe method of destroying many harmful bacteria, but irradiation can't ensure that consumers will handle the foods properly. Irradiation should be pursued aggressively — but as a component in the overall food safety war on bacteria.

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Tests that quickly identify harmful bacteria on foods have been touted a silver bullet to ensure safe food. While rapid microbial tests are important tools in a mix of food safety strategies, they cannot determine if a food is safe.

USDA recently launched a testing program to look for the harmful bacteria *E coli* 0157:H7 in ground beef. Not only is the testing program statistically inadequate, but it also does not improve the safety of the product and could create a false sense of security among consumers that the tested beef is completely safe.

Furthermore, end-product testing is designed to try and *inspect out* the problem rather than stopping it in the first place.

Rapid tests can play a valuable role, however, to verify that the food manufacturing process is functioning correctly to ensure safe products. A rapid test used within a HACCP program could serve as an important indicator if something has gone awry.

Another tool in the war against bacteria is antibacterial rinsing for carcasses. Scientists at Texas A&M University have found that washing beef carcasses with antibacterial sprays and hot water rinses are effective in destroying harmful bacteria.

When it comes to food safety, we are misguided to look for short-cuts that sound good but provide false promises and assurances. The meat industry is committed to avoiding another food poisoning tragedy— but plans to do so deliberately and with sound science, not silver bullets.

Editor's note: H. Russell Cross is Director of the Institute of Food Science & Engineering at Texas A&M University.