**Microbiological Risk Analysis for Confectionery Products**

Microbiological testing is an essential tool in a HACCP program to ensure food safety.

Tim Galloway  
Galloway Company

My first priority as CEO is to protect the company, its customers and its employees from devastating expense and loss of livelihood due to inadequate food-safety measures. Top management uninformed of adverse food-safety events in action is a recipe for disaster. Leadership does not need to know every nuance of microbiology, testing equipment and protocols, and food-safety regulations, but they do need to be acutely aware of the risks and ensure that their team is prepared to prevent them whenever possible, and mitigate them when necessary.

**THE FOOD-PATHOGEN PROBLEM**

In 1997 the Centers for Disease Control reported that there were 76 million cases of food-borne illness the previous year. These required 325,000 hospitalizations and caused more than 5,000 deaths. More than 14 million out of the 76 million cases were attributed to pathogens (Figure 1), with 60,000 hospitalizations and over 1,800 deaths. *Listeria*, *Salmonella* and toxoplasmosis caused the vast majority of those deaths. Since then we have had major scares, illnesses and deaths involving peanut butter, beef, spinach and other foods.

**QUALITY VERSUS SAFETY**

Due to the magnitude of the risk noted above, it is critical to differentiate quality and safety. There are programs that help control each of them—and microbiology is key to both. Quality control traditionally measures to certain parameters and rejects what is out of specification. Those parameters have a relationship to safety but are not the prime focus. Safety control is accomplished by identifying and controlling hazards so as not to introduce those hazards into food and thus a dangerous product into the food system. Traditional quality systems tend to be more reactive while modern safety programs are more proactive. Poor quality will eventually lead to reduced sales and then to business failure. However, poor safety procedures can lead to injured or dead consumers. Some manufacturers will compromise on quality in an effort to increase short-term profit, but compromising on safety can be deadly.

A well-designed overall quality program...