

# Industrial food research — Thwarting bacterial growth

*An industrial research laboratory is investigating the growth of harmful bacteria in meat products. While the risk of factory contamination is low, the consumer should take certain common sense precautions.*

On a hot lazy day, what is better than setting up a barbecue and eating in the cool of the evening? Or possibly loading up the car and driving to a lake for a picnic?

It sounds like a good way to spend the summer — but not if you develop a headache the next day and then begin to feel a little queasy in the stomach.

"It's probably something I ate," is your first reaction, to be followed by, "I've got food poisoning," a few hours later. In the midst of severe stomach pains we have a tendency to blame others — the corner store, that lunch counter we stopped at — and tend to forget our own carelessness.

Each year many thousands of Canadians suffer from Salmonella poisoning — one of the most common types of food poisoning — and the food processing industry is naturally concerned with the cause and prevention of the condition. Dr. Charles Davidson, of Canada Packers' Research Centre in Toronto, outlines the cause of Salmonella poisoning. "Unlike some other types of food poisoning in which an organism secretes poison into the food, with Salmonella you have to ingest the live bug. If the degree of contamination is high enough, then some of the bacteria survive the high acidity of the stomach and pass into the lower intestine where they multiply. After an incubation period of one to two days, the familiar and unpleasant symptoms begin."

Most cases of food poisoning occur when food is left uncovered and unrefrigerated in a kitchen and is then eaten without being cooked — it may simply be "warmed up". While the problem can be solved with simple common sense, the food industry is concerned that it does not contribute to the problem in the packaging of the foods it offers. Dr. Davidson is particularly interested in the microbiology of vacuum packed luncheon meats, sausages and wieners.

"Vacuum packaging retards the growth of microorganisms which cause spoilage but it does not destroy Salmonella," he explains. "It is possible for a consumer to unseal a package which appears and smells perfectly



Bruce Kane, PIB/DIP

**A variety of bacteria is being investigated under the microscope.**

**Examen microscopique d'une variété de bactéries.**

fresh but could be contaminated with Salmonella. While the chance of such contamination in a modern packing plant is rare, we have nevertheless undertaken an investigation of the behavior of Salmonella in vacuum packed products."

The organism is effectively destroyed in the heat treatment which all cooked meats receive, so that if a problem arises it is normally attributed to contamination after processing. While extensive precautions are taken, it is simply not possible to free the factory environment of all bacteria. Some are brought in on animal carcasses or can be carried by otherwise healthy staff. In the rare event that Salmonella contamination occurs during the packaging process, the number of bacteria will be far too low to cause ill effects. A hazard can arise, however, if the packaged meat is mistreated by the consumer before being opened.

"Salmonella does not multiply in meats if they are kept in a good refrigerator," continues Dr. Davidson. "However, if you leave a contaminated

package in a warm room for more than a day or so, then there is a possibility that the bacteria will rise to a dangerous level."

The laboratory has made careful investigations of the multiplication of Salmonella in various meats at different temperatures. In addition, they have studied the inhibiting effect on bacteria growth of various additives and preservatives. But, despite the best precautions which the food industry can take, the final responsibility rests with the consumer.

Food removed from a refrigerator should be cooked or eaten as soon as is convenient. Raw and packaged meats should not be allowed to warm up, on a long car journey to the cottage for example; instead, they should be placed in a cooler. Frozen meats and fish should be defrosted in the refrigerator. Leaving a couple of pounds of frozen hamburger meat in warm water may be a short cut to dinner — but it could be asking for trouble. □

**David Peat**