



# 'I Felt Like I Wanted to Die'

The most frequently heard words from victims of food-borne illness  
(and how to protect your crews and passengers from having to utter them)

By *George C. Larson*

**O**n Nov. 21, 1989, a British Airways crew operating a Boeing 747 Classic under the command of Capt. Glen Stewart, a senior pilot with over 30 years' experience, was approaching London Heathrow following a long flight from Bahrain when the autopilot indicated the aircraft had deviated from the approach. During this

trip, several members of the crew had experienced illness that they attributed to tainted food, and as Stewart executed a go-around, he may as well have been flying single-pilot since his copilot was still severely ill with persistent diarrhea. Stewart's 747 narrowly missed a hotel on the airport boundary but finally landed successfully without further incident.

However, a zealous government prosecutor filed charges against Stewart in a case that soon swept the British media, and

despite irregularities during the proceedings, he was convicted by a jury in 1991. Shortly thereafter, Stewart committed suicide.

A recent letter to this magazine from a corporate pilot told of a bout with food poisoning that left him too incapacitated to operate the aircraft. He felt certain that had he not had a second crewmember aboard, he would have lost his life. It's unpleasant when passengers are stricken with acute illness attributable to food handling, but it's downright dangerous when it happens to

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flight or cabin crew members. And ancient religious traditions that prescribe rituals and rules for handling, cooking and mixing various food groups are proof that humankind has been aware of the dangers for millennia. Jewish kosher and Islam's halal laws are among the most well-known examples.

The rules for safe food handling and processing assume that microbes are present in food of all kinds since they're present everywhere, and some are naturally occurring in the digestive tracts of almost all animals, including humans. Often when food-borne disease strikes, particularly on a wide scale, it makes headlines, but only people involved in the surveillance of food safety seem to be aware of the prevalence of this kind of illness. A 1984 incident involving passengers aboard 29 flights into the United States affected 2,747 people, out of which 186 cases were reported. The likely cause was traced to food in the first-class section. In a widely reported case in Washington, D.C., in 1994, 56 hotel dining room patrons who had eaten hollandaise sauce were stricken; hollandaise contains egg yolks. Cases of botulism poisoning, one in New York and another in Italy, were traced to foods packaged in oil. The oil created the anaerobic environment the bacterium needed to produce toxin.

Flight department managers, chief pilots and cabin crew managers may wish to add to their libraries a definitive volume from the U.S. Food and Drug Administration (FDA) Center for Food Safety & Applied Nutrition: *Food-borne Pathogenic Microorganisms and Natural Toxins*, also known as the *Bad Bug Book*, in which the scope of the danger is laid out clearly. (The book is widely available in paperback.) It estimates the number of cases of salmonella alone in the United States each year as ranging between two and four million, of which about 50,000 are reported. That figure is on a par with malaria and some of the most virulent diseases known to man and includes within its range the number of injuries and fatalities each year on U.S. roads.

Yet the numbers are not surprising given that salmonella is everywhere — in water, soil, mammals, insects, animal waste and raw foods, among many other places. Once infected with as few as 15 to 20 cells, the onset of illness takes from six to 48 hours. The direct cause of the symptoms is thought to be the passage of the bacterium into the epithelial wall of the small intestine, which becomes inflamed, and perhaps the production of an enterotoxin, which is a protein toxin that kills the intestinal cells. One branch of the salmonella family produces typhoid and typhoid-like symptoms; typhoid fever has a 10-percent fatality rate, but even survivors suffer acute

symptoms lasting up to two days, including incapacitating nausea, vomiting, cramps and diarrhea. But that's only one bug in a whole catalog of horrors.

Food handlers know their principal means for ensuring food safety is to manage temperature. Visit any quality restaurant or caterer and you'll find people running around wielding probe thermometers. Raw food is cooled for storage, then heated — cooked — to rid it of any microbes, and then cooled again if it is to be served later. Restaurants and caterers differ in one important way, says Monalisa Shaheen, a 17-year career veteran in aviation and director of operations for Rudy's Inflight Catering, a prominent nationwide provider of catering services to business aviation. "Restaurants cook and serve," she says. "In aviation catering, 100 percent of the time it's cook and chill."

Shaheen says she has experienced two bouts with food-borne illness, both involving restaurants and both while she was safely on the ground. One was traced back to white rice that stood out too long. "Bacteria runs rampant in rice," she says, recalling her resulting trip to an emergency room. The other episode was blamed on under-cooked chicken. "I said, 'I just hope I die,'" she says. "It was excruciating." She knows it has stricken flight crew members, and says, "I used to be crew myself, and I used to do the overseas flights, and I know that when somebody got sick, especially when you're 36,000 feet up in the air, there's really nothing you can do until you can land."

The U.S. Department of Agriculture and the FDA provide procedures, rules and advice on how to avoid food-borne illness,

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and reduced to a minimum, they can be summarized as follows: Buy fresh food only from a known and trusted source, never from a source you don't know; clean the food thoroughly by washing (peeling fruit achieves the same end), and wash hands and food-preparation surfaces frequently; separate foods by preparing them on different surfaces using different implements to prevent cross-contamination; cook the food until it reaches the required temperature as measured by a thermometer; chill the food to at least 40°F in a refrigerator, 0°F in a freezer.

At high temperatures used in cooking food, the complex molecules such as proteins that enable a microbe to multiply and thrive are broken down. But heating food until it's cooked is not the only way to make it safe to eat. Many microbes are also susceptible to denaturing by reducing the pH — adding acid — which is the basis for pickling. Other methods use salt to "cure"

## Unwelcome Leftovers

**A**ircraft entering the United States with food, flowers or other plants of any kind are completely purged of all those materials according to special procedures prescribed by the Department of Agriculture, and the regulations are the strictest in the world.

Accordingly, all leftover materials are to be removed and placed in special marked bags, which, in turn, should be placed in sealed containers for incineration. All locations and vehicles involved in the process are to be equipped to handle any spills and carry bleach to kill any microbes present. Bleach is used by many government health-monitoring organizations to permanently condemn food that presents a danger by simply flooding the food with bleach. If a spill or leakage occurs, the company is required to file a report.

"Sometimes the flight crews think they can wrap up a meal and take it to their hotel," says Monalisa Shaheen of Rudy's Inflight Catering. "Or they think they can give it to the guys at the FBO." No way.

Shaheen says Rudy's is certified by the Department of Agriculture to handle international waste disposal and to cleanse dishes and glassware from international flights using special high-temperature equipment that toasts any bugs.

meats or fish. Salt (and in certain instances, sugar) is thought to pull the water out of microbes, thereby dehydrating and neutralizing them. Food that has been held at 160°F to 165°F for several minutes is generally considered cooked enough to be safe. Once any packaged food has been opened, it should be refrigerated.

Catered food leaves the kitchen for a holding area, usually an FBO, until the crew carries it aboard the aircraft. "It's very crucial that all the rules are followed and no steps are eliminated," says Shaheen. "When food is allowed to get into the [range of] 70°F to 120°F, that's the poisonous range, and if that food gets into that range for more than 15 to 30 minutes, it needs to be discarded." The rules require certified caterers to maintain logs of their food surveillance activities.

Shaheen says that separation of foods is crucial to keep meats apart from vegetables, for example, to prevent cross-contamination, and to foster that, her firm uses different cutting boards coded with different colors. "If you're going to be cutting poultry, for example, you can only use a yellow cutting board, fish can only be on the blue cutting board. If you're going to handle red meat, it has to be on the red board. You can't cut an onion on a green cutting board for vegetables; onions can only be on the white board. It's very intricate," she says. No wood cutting boards are allowed; the preferred boards are made of high-density polyethylene (HDPE) that is non-porous so bacteria have no place to hide. Boards and cutlery are washed in hot soapy water, hot rinsed, soaked in a sanitizing solution, and air-dried.

Flight crews are cautioned never to eat identical meals, and some pilots even stagger their eating times so any symptoms of illness are less likely to show up in two people simultaneously. Shaheen's advice: "Never eat the same thing, and never shellfish or fish." Undercooked chicken is a persistent problem, along with any meat producing excessive juices, and sushi and sashimi, while popular, are an absolute no-no in the cockpit. Eggs in their shells are the leading cause of salmonella poisoning.

On long trips into exotic locales during which an unexpected layover forces a crew onto the local economy, hotels and restaurants carry the lowest risk; avoid food stands or carts. Fruits and vegetables are the best bet as long you remember to wash them with your own bottled water or peel them. Meats fried in very hot oil, a common practice throughout much of the East, are probably free of microbes at those 400°F-plus temperatures. Pickling and salt curing are centuries-old methods for rendering food microbe free, and they are still a

## How Safe is Canned and Packaged Food?

Most food poisoning outbreaks are traced to fresh food, but on rare occasions when the process of preserving or packaging was not followed properly, botulism has resulted in canned foods as well.

Canning is a process involving cooking food at a high enough temperature to kill any bacteria present, then sealing it in an airtight jar or can while it's still hot. Because botulism is a heat resistant bacteria that is also anaerobic — it can survive without oxygen — it is the microbe most closely associated with food poisoning in canned foods. The canning process must raise the temperature of the food and maintain it for the



*Clostridium bacteria*

Dr. David Phillips

required time or clostridium botulinum becomes a definite risk. The microbe produces in the course of its metabolism a potent neurotoxin that results in symptoms four hours to eight days later. The symptoms — vertigo, double vision, muscle weakness — are not too different from those following exposure to nerve gas. It's the toxin, not the bacterium, that causes illness, and with a high fatality rate.

Irradiation is a method by which microbes are exposed to a dose of nuclear radiation. People who failed to pay attention in high school physics thought the food itself was made radioactive by the process, but that's completely untrue. The ungrounded fears did create a long setback for irradiation, though, which has made a comeback under various euphemisms.

mainstay in many areas of the world.

There is a very broad category of packaged products that require no refrigeration and can be stored for weeks rather than minutes or hours in the baggage hold until needed. A Chicago firm, GoPicnic, has recently been appearing at aviation trade shows with a line of prepared light meals in packages that require no refrigeration and can last for months in moderate temperatures — they're shelf stable, as Julia Stamberger, GoPicnic's president, puts it. "All our meals are processed in large batches and sealed in a sterile environment," she says. She lists Alaska Air and UPS as clients, and says part of the progress in food safety is the advances in packaging technology in the past 10 years. By combining "high barrier film" (it's not your father's cellophane) along with gas flushing in which oxygen in the package is displaced by flooding it with nitrogen, spoilage is reduced by an order of magnitude. They use the term "Tampa ramp standard" for a product's ability to withstand exposure to heat. Chocolate comes in the form of chocolate chip cookies, which don't deform in the heat. GoPicnic uses organic foods in

its meals because the food is higher quality, Stamberger says. Dried fruits, vinegar-based salad dressings and cured meats are standard GoPicnic fare. The menu for their "DeluxePicnic" meal: Salami slices, cheese spread, crackers, pasta-veggie salad, dried apricots, cookies and energy drink mix.

Alternatives for operators to consider when stocking an airplane for long-distance travel include freeze-dried packaged meals available through camping and survival suppliers. Freeze drying is a process in which food is flash frozen and then exposed to a high vacuum, in which all water content in the form of ice sublimates — evaporates as a gas without first returning to the liquid state. Although these tend to be moderately expensive, several lower cost lines of packaged food requiring no refrigeration are available at most large grocery chains, including chicken morsels, tuna and various rice-based meals. Anything in a package that you find on a shelf, not in a chilled storage area, is a safe bet. Bottled water is part of most operators' standard baggage hold travel list, and should be the only source of water used for cooking onboard when overseas. ■