



Botulism from Mishandled Frozen Chili Sold at a Salvage Store

This information is summarized from an article in the *Clinical Infectious Diseases* journal.

This 2001 outbreak was the largest foodborne botulism outbreak in the United States since 1994. Epidemiologists investigated the outbreak of 16 cases of foodborne botulism in Dallas–Fort Worth, Texas. The onset of symptoms occurred during the period August 25th through September 1st 2001. Fifteen of those with botulism had eaten at a church supper. An additional case of botulism occurred in a 17-year-old who was not part of the church supper group. The investigation concluded that chili purchased at a salvage store was the source of the botulinum toxin. There were no deaths.

Who Got Sick? Of 40 people who attended the church supper, there were 15 cases of botulism (40% of those attending). Nine of the patients (60% of the cases) had botulinum toxin detected in their stool specimens. Fifteen of 24 people who ate chili at the church supper developed botulism (63% of chili eaters developed botulism). The sixteenth patient, who had not attended the church supper, had consumed chili purchased from the same store.

Symptoms. Patient symptoms included difficulty in swallowing (69% of patients), blurred vision (56%), slurred speech (50%), and double vision (38%). The gastrointestinal symptoms were abdominal pain (56% of patients), diarrhea (44%), nausea (31%), and vomiting (31%). Ten patients (63%) were hospitalized, 6 (38%) of whom required mechanical breathing assistance. Nine patients (56%) received antitoxin for botulism. Botulinum toxin was detected in the stool specimen of 1 person who exhibited no symptoms. The 17-year-old patient, who was not part of the church supper group, sought treatment at hospital emergency departments 4 times over the course of 3 days with progressive difficulty in swallowing, blurred vision, slurred speech and partial paralysis before botulism was diagnosed. Due to the rarity of botulism, doctors often fail to consider botulism as a cause of symptoms.

Why did the chili cause the outbreak? The investigators determined that chili was the cause of the outbreak based on food recall interviews of those who attended the church supper and with the teen-aged patient and his mother and by subsequently finding botulism toxin in a chili sample.

- **Church supper chili.** On the Saturday afternoon of the church supper, the church member who brought chili to the supper had purchased a 5-lb plastic tub of frozen chili from a salvage store in Fort Worth. (Salvage stores typically sell foods in bulk quantities or, occasionally, foods that are rejected by standard grocery stores, including those that

have passed the expiration date.) It was later determined that the salvage store held the frozen chili in a display bin at room temperature. Prior to the supper, the church member heated the chili in a pot and removed the pot from the stove as soon as the chili began to boil. She drove 5 min to the church kitchen, where she placed the pot on a burner set to low heat.

- **Chili consumed by 17-year-old patient.** One day before the onset of his symptoms, the 17-year-old ate frozen chili, which he had heated but not boiled. The patient reported to his mother that the chili appeared to be spoiled, with a fungus-like appearance in one section of the container. He proceeded to eat the chili despite the indication of spoilage and his mother's advice not to eat it. The chili had been purchased by his mother at the Fort Worth salvage store 1 day before the church member purchased chili at the same store.
- **Salvage store handling of chili.** Investigators noted that the salvage kept some foods requiring refrigeration at room temperature on Saturdays before returning them to the freezer if they did not sell. Such foods could have undergone many cycles of thawing and freezing. On the basis of the gross mishandling of other refrigerated products and the strong epidemiologic link, they conclude that storage of the chili at inappropriate temperatures in the salvage store allowed *Clostridium botulinum* spores to grow and produce of botulinum toxin.

The investigators noted that this was the first outbreak linked to food sold at a salvage store. *C. botulinum* spores are very common in the environment and may have been present in the frozen chili during production at the manufacturing plant. If frozen chili is kept frozen until it is heated for serving, the presence of *C. botulinum* spores does not create a food safety hazard. With a pH of 5.5, the chili was not acidic enough to prevent the germination of *C. botulinum* spores when held at a temperature in the Danger Zone.

The investigators urged more frequent and rigorous inspection of the food handling practices of salvage stores.

Source: Kalluri,P., Crowe, C., Reller, M., Gaul, L., Hayslett, J., Barth, S., Eliasberg, S., Ferreira, J., Holt, K., Bengston, S., Hendricks, K. and Sobel, J. 2003. An Outbreak of Foodborne Botulism Associated with Food Sold at a Salvage Store in Texas, *Clinical Infectious Diseases* 37:1491-5, <http://www.cdc.gov/enterics/publications/429-Kalluri2003.pdf>.