

The spread of salmonella in peanut butter – again

Salmonella is not a contaminant you would normally expect in peanut butter but once again it has been identified as the cause of a major national outbreak of salmonellosis in the USA.

Since September 2008 at least 500 people have been affected across 43 states and into Canada of which over 100 ended up in hospital and eight are thought to have died as a result. Half of those taken ill have been under the age of 16, with 21% under five.

The King Nut brand of peanut butter was withdrawn on 10th January 2009 because previously opened jars were found to contain *Salmonella typhimurium*. Later tests on unopened containers found other strains.

On 27th January the FDA reported that the plant that produced the King Nut brand had been identified as the source. The Peanut Corporation of America (PCA) facility in Blakely, Georgia had been the subject of a major inspection that started on the 9th January.

Deficiencies identified

A number of good manufacturing deficiencies associated with the firm's manufacturing process were identified including 12 instances in 2007 and 2008 where the firm, as part of their own internal testing program, identified some type of salmonella and released a product after it was retested.

The inspection also identified a number of deficiencies related to the firm's cleaning programs and procedures for their manufacturing equipment as well as failure to take steps to mitigate salmonella contamination or crop contamination in the facility. Finally, the inspection revealed environmental samples that were collected during the inspection that tested positive for salmonella.

Two years ago the Great Value and Peter Pan brands of peanut butter were withdrawn when at least 627 *Salmonella* Tennessee cases occurred in 47 states between August 2006 and early 2007.

In early 2007, ConAgra was forced to recall Peter Pan and Great Value branded peanut butter products linked to its contaminated manufacturing facility in Georgia. The CDC then linked about 628 cases of salmonella illness across 47 states to the con-



sumption of the ConAgra product. At the time surprise was expressed because of the 'unexpected' association of this bacterium with peanut butter. It had taken the US authorities six months to identify the product. However, it was not the first such event in the world because a similar outbreak had happened in Australia in April 1996. In that episode about 500 people in Australia became ill from peanut butter contaminated with *Salmonella mbandaka*.

Contaminated equipment

In both the 1996 and the 2006/7 outbreaks the suspected route of the contamination was via faulty or contaminated equipment/buildings. The Australian event is believed to have been caused when equipment used to handle the roast peanuts destined to be used in the manufacture of the peanut butter was contaminated by mouse droppings and the machine was not thoroughly cleaned and sanitised before use. This equipment had been stored out of doors and used only intermittently for handling the roasted peanuts.

It has been reported that the 2006/7 outbreak in the USA is suspected to have been

caused by contaminated water getting into the process via a faulty sprinkler system or a roof which leaked during an August 2006 rainstorm.

Further reports have stated that the plant in question had a history of contamination problems with peanut butter and in February 2005, the FDA inspected the plant, to investigate an anonymous claim of insect infestation, poor in-plant sanitation, equipment maintenance and quality control.

The plant was found to be compliant with applicable codes, but the plant managers informed the inspector that there had been a 'micro hold' in October 2004, in which some of the plant's peanut butter was destroyed following the result of laboratory tests.

The reported procedure in 2005 was that samples of each day's production (one jar per line per hour) were tested in-house for salmonella and coliforms prior to release.

The inspector noted that it was reported that the failed batch was subsequently destroyed.

By 2007 the company was reporting that it randomly tests 60-80 jars of peanut butter that come off the line each day and stated that they had 'not had any positive hits going

Continued on page 24

Continued from page 23
back for years'. A month after the initial 2007 recall, Con-Agra and the FDA issued press releases announcing that the recall would be backdated to October 2004.

Low risk process

The production of peanut butter has been considered a low risk process. The nuts are blanched, roasted, and ground up at temperatures high enough to kill any salmonella bacteria under normal circumstances.

However, there are a number of factors to be considered. The nature and consistency of peanut butter offers bacteria a potential degree of protection and, like chocolate, the fat/oil content can protect the contaminant in transit through the gut into the small intestine.

Post processing there would be no Critical Control Point through to packing the product in the jars or tubs. Studies have shown that salmonella can survive for many months in peanut butter once it is present, and should it have been carried there by water contamination the presence of the extra water would help it to survive.

Post processing sterilising has not been successful – even at a temperature as high as 90°C for 10 minutes only a 3.2-log reduction was achieved. It is also thought that the use of the necessary heat for the necessary

time denatures the product. The use of irradiation has been discussed but there is doubt about the impact on the taste of the peanut butter and the consumer's resistance to the use of such methods.

The PCA makes the product sold under the King Nut brand for use in catering /food service outlets. Clusters of infections in several states have been reported in schools, long term care facilities and hospitals.

The products involved with this outbreak serve to illustrate the complex nature of the food chain. The company did not distribute the products in the form of millions of jars for the consumer, but in bulk packs to be used anonymously by catering/food service providers or food products manufacturers as ingredients in finished product.

The output was in the form of peanut butter sold by PCA in bulk containers of between 5lb and 1,700lb. The company also sold peanut paste in 35lb packs up to tanker loads.

Many products recalled

The FDA/CDC stated that they had identified and visited nearly 1000 PCA customers and there has been a flood of products containing peanut as an ingredient withdrawn from the market. More than 400 products have so far been recalled by dozens of companies, including Kellogg's, Ralcorp Frozen

Baker and Hy-Vee, as well as pet food manufacturers. Questions are being asked about the nature of the FDA's contact and oversight of the PCA. It has been claimed that the company had been operating without the necessary licence and yet had been inspected in the years before this event by both federal and state officials.

The company appears to have followed a process of retesting of positive samples looking for a negative result from a food source that presents a considerable testing challenge.

With recalls costing tens of millions of dollars and the potential litigation costs even greater it is absolutely essential that the production environment is maintained to protect the food being produced within.

Secondly, when externally stored equipment is being re-installed for food production it has to be treated as being grossly contaminated. A good clean is not enough and a thorough sterilisation/sanitisation process is needed.

Thirdly, for the technical manager carrying out the risk assessment of ingredients and for the epidemiologist trying to find an outbreak vector, never assume that if it has not happened before you will not be facing the first example.

For those buying ingredients from sources beyond their control it is 'buyer beware' in the absence of a credible accredited inspection service. ■