

UK *Salmonella* outbreak sourced to chocolate bars

Chocolate products manufactured in England have been implicated as the most likely source of an outbreak of *Salmonella* Montevideo that affected 37 people in the UK from February to June 2006.

A leaking pipe was discovered by the manufacturer at one of their plants in January. Waste water had been dripping into a milk chocolate crumb mix, a base ingredient in several chocolate bar varieties. Tests subsequently performed by the company revealed the presence of the rarely found *Salmonella* strain in some products, but the company failed to report these findings to food regulators or to instigate a recall. It was not until the UK Food Standards Agency (FSA) published the results of their own outbreak investigation in June that the company disclosed their findings and withdrew seven products (1 million chocolate bars) from the UK market.

The manufacturer stated in an official media release that the reason they did not initially report their contamination findings was because the low levels of microorganisms found did not warrant such an action. A report released in July by the Advisory Committee on Microbiological Safety of Food (ACMSF), an expert committee that advises the FSA, responded with the statement that "the presence of *Salmonella* in ready-to-eat foods such as chocolate is unacceptable at any level". The company implicated in the outbreak have since released a further statement declaring that they have changed their protocols and that any products showing traces of *Salmonella*, regardless of how low the levels are, will be destroyed.

The potential hazards associated with *Salmonella* and chocolate confectionery have long been known (Journal of Food Protection 1977. 40, 718-727). The specific hazards are: the low moisture and high sugar content in chocolate increase thermal resistance of bacteria; and the high fat content provides protection for *Salmonella* against stomach acid resulting in the low infective dose of the microorganism when consumed in chocolate. Heat treatments used during chocolate processing (e.g. conching) have been shown to be ineffective at inactivating salmonellae in high fat products, one study found that even at 90°C it took more than 1 hour to

Food Safety: the essential ingredient

What's inside

UK *Salmonella* outbreak sourced to chocolate bars

Packaged meat voluntary recall – worker diagnosed with Hepatitis A

Levels of bacteria found on money too low for concern

Food Standards Australia New Zealand News

Recently implemented national strategies

The Australian Food Safety Centre of Excellence News

inactivate 90 percent of *Salmonella* Typhimurium in molten chocolate (Journal of Food Protection 2000. 63, 779-795). *Salmonella* outbreak investigations involving high fat products have shown that as few as 1–2 cells per gram are sufficient to cause illness. In a 1985 outbreak associated with *Salmonella* Nima in chocolate the infective dose was reported to be as low as 0.005–0.025 cells/g (Journal of Food Protection 1989. 52, 51-54). Investigations into a 1996 *Salmonella* Mbandaka in peanut butter outbreak revealed that illness may have been caused by as little as 3 cells/g (Journal of Applied Microbiology 2000. 89, 472-477).

The July 2006 ACMSF report also stated that the company had failed to follow new European Union-wide guidelines and implement a Hazard Analysis Critical Control Point (HACCP) program. Cordier (Food Control 1994. 5, 3, 171-175) uses the HACCP program approach to outline the microbiological hazards associated with chocolate manufacturing. The areas discussed include the quality of raw materials, the risk of water or air contamination, validation of thermal processes and the potential for post-process contamination. This 2006 UK outbreak highlights the potential issues associated with the layout of production plants if exposed ingredients are situated in the vicinity of waste water pipes.

The benefit of having an effective HACCP program is that the focus is on the prevention of microbial contamination in the finished product, rather than on detection. This is particularly important in products such as chocolate where underestimation of numbers or even failure to detect microorganisms can result from a lack of sample heterogeneity and limitations in testing procedures.

Packaged meat voluntary recall – worker diagnosed with Hepatitis A

An Australian smallgoods manufacturer took appropriate precautionary measures when they voluntarily recalled ready-to-eat packaged meat on July 18, 2006. The manufacturer had learned that an employee had contracted Hepatitis A. The staff member works on the packing line for a range of shaved meats (ham, turkey, pastrami and chicken) at the company's Queensland factory. Although there was no contamination of food reported, the recall and subsequent publicity raised awareness of the potential risk and alerted doctors to keep watch for symptoms.



Australian Food Safety
Centre of Excellence

Food Safety: the essential ingredient

The Australian Food Safety Centre of Excellence News

Centre Staff

Mark Tamplin, formerly of the United States Department of Agriculture, Agriculture Research Services, arrived in Australia in August to join the Australian Food Safety Centre of Excellence as Director and Professor of Food Microbiology with the Centre's consortium partner, the University of Tasmania. **Kari Gobius**, a senior scientist with the Centre's consortium partner, Food Science Australia, has taken over the role of Science Program Manager from **Patricia Desmarchelier**. In addition, alongside with **Tom Ross** (the Centre's Advanced Food Safety Education Program Manager), Kari has been designated as a Co-Director for the Centre. The immediate past Co-Directors, Patricia Desmarchelier and **Tom McMeekin**, will continue as members of the Centre Advisory Board. In September, **Greg Caire** will join the Centre as Business Development Manager. Greg previously worked in research and development and business development with a number of Australian companies.

Australian Food Safety Centre Fourth Annual Industry Forum

Brisbane:	15 November 2006
Melbourne:	16 November 2006

To receive an email alert with the program, please register your interest at:

forum2006@foodsafetycentre.com.au

or visit the Centre Industry Forum website:

www.foodsafetycentre.com.au/forum.htm

for program and venue updates.

The symptoms of Hepatitis A include fever, fatigue, jaundice, loss of appetite, nausea and vomiting. The illness rarely causes death but complications can occur for those with pre-existing liver damage, including people with Hepatitis C or people over 50 years of age. Hepatitis A is generally transmitted through the faecal-oral route and is present in faeces at high levels during the asymptomatic incubation period (approximately 30 days). Upon the onset of symptoms the virus is shed in lower numbers for about two weeks. In one experimental study, Hepatitis A suspended in a faecal solution was able to be transferred from fingertips to a hard surface four hours after the initial contamination (Journal of Clinical Microbiology 1999, 30,4,757-763). It is these transmission issues that make this virus of particular concern for food manufacturers and highlight the need for strict personal hygiene standards as part of a comprehensive food safety plan.

The recall is estimated to have cost the company up to \$500,000. Jenny Young, Queensland Health Chief Health Officer said while it was highly unlikely any consumer would contract Hepatitis A from meat products, it was best to err on the side of caution. The company president stated that even though their employees follow strict hygiene practices (including hand sanitation and double-layer gloves), the company wanted to eliminate any possibility of consumer illness.

Standard 3.2.2 of the Australian Food Standards Code, *Food Safety Practices and General Requirements*, outlines specific requirements and responsibilities for food handlers and food businesses in the area of health and hygiene.

Food handlers must:

- Inform their supervisor if they have symptoms of or have been diagnosed with a foodborne illness;
- Avoid unnecessary contact with ready-to-eat foods;
- Wash and dry hands thoroughly before starting or restarting work, after using the toilet, after sneezing or blowing the nose, after handling raw food, after touching any potentially contaminated surfaces (including their own body); and
- Change gloves routinely (eg. when changing tasks).

Food businesses must:

- Ensure that any employees known to be suffering from a foodborne illness are excluded from food handling activities;
- Provide easily accessible hand-washing facilities; and
- Ensure employees are informed of their health and hygiene responsibilities.

It is recommended that an employee infected with Hepatitis A stays at home until a doctor declares him/her fit to return to work. Other workers in the factory should be made aware of the issue and be monitored for the development of symptoms.

This recall of meat products highlights the importance of comprehensive food safety plans incorporating not only HACCP systems but underlying support programs. The Codex Alimentarius *Recommended International Code of Practice-General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 4- 2003) identifies the essential principles of food hygiene applicable throughout the food chain.

Levels of bacteria found on money too low for concern

Suspensions have long been held by consumers that staff handling money and then food can lead to contamination of the food that is served in food outlets.

Dr Frank Vriesekoop (Institute of Food and Crop Science, University of Ballarat) presented findings of research in this area at the 2006 AIFST Annual Convention, which was then reported in the *Herald Sun* Newspaper. The research involved screening approximately 400 coins and 350 notes for the presence of bacteria. The money was sourced from small food outlets, such as cafés and bakeries, where staff were likely to handle both food and money.

Not surprisingly, the most common bacteria found was *Staphylococcus aureus*, a microorganism commonly present on the skin and in the nasal passage of about one third of the population. *Escherichia coli* was also found on a high proportion of coins, but *Salmonella* spp. were found on only two coins. A small proportion of the bacteria isolated were found to show varied resistance to the three most commonly prescribed antibiotics.

Although 95 percent of the money tested carried bacteria, the levels found were so low that they were unlikely to cause illness. Dr Vriesekoop said that the bacteria were no different from what could be found on doorknobs or other items commonly handled by the public. He stated, "As long as sensible precautions are made when preparing food and handling money, there is no cause for concern".

To date no outbreaks of foodborne illness have been associated with infection from money. However, evidence for the presence of pathogenic bacteria on currency reinforces the need for strict adherence to hygienic practices among food handlers who also handle money. These practices consist mainly of adequate hand-washing and/or appropriate glove wearing.

Food Standards Australia New Zealand News

Food Standards Australia New Zealand (FSANZ) launched their new look website in August 2006 – www.foodstandards.gov.au/. FSANZ have recently released fact sheets on the potential safety risks of benzene in flavoured beverages and the use of aspartame sweetener. The fact sheets, summarised here, can be found on the FSANZ website: <http://www.foodstandards.gov.au/mediareleasepublications/factsheets/factsheets2006/>.

Benzene in flavoured beverages

The approved food additives ascorbic acid (Vitamin C) and sodium benzoate can produce low levels of benzene when present in the same beverage. This occurs through a chemical reaction involving metals commonly found in water. Exposure to low levels of benzene over an extended period has been linked to the development of aplastic anaemia, which can lead to leukaemia.

The World Health Organisation (WHO) has set the acceptable level of benzene in drinking water at 10 parts per billion (ppb). In early 2006, tests performed on beverages in the USA found levels 2–5 times above this, sparking international concern. In response to this FSANZ conducted a survey on the status of Australian beverages and benzene levels.

Focusing on beverages that were more likely to contain benzene, such as soft drinks and fruit juice, FSANZ sampled 68 beverages sold in retail outlets from March to April 2006. Independent analysis showed that 56 percent of beverages contained trace levels of benzene, ranging from 1 to 40 ppb. Over 90 percent of the 68 beverages screened were below the WHO guideline of 10 ppb.

Benzene is also present in petrol vapours, car exhaust fumes and cigarette smoke; the main way the general population is exposed to it is through environmental exposure. The UK Food Standards Agency has stated that people would need to drink more than 20 litres of a drink containing benzene at 10 ppb to equal the amount of benzene inhaled from city air in a day.

FSANZ advised that the levels of benzene found in the beverages they surveyed do not present any public health concerns because in comparison to the overall exposure levels, the amounts found were very low. To minimise any potential health effects FSANZ still wish to ensure that the levels of benzene in beverages are kept as low as possible; they are working with other government departments and the food industry to achieve this.

Aspartame

Aspartame is a food additive (code 951) that is used as an intense sweetener in foods such as carbonated soft drinks and confectionery.

Two reports released by an Italian research organisation in 2005 and 2006 claimed that rats exposed to a diet containing aspartame showed a significant increase in lymphoma and leukaemia. These reports were thoroughly investigated by the European Food Safety Authority (EFSA) which concluded that the development of cancer in the rats was either not related to the aspartame treatment or was rat specific. Consequently, the Authority confirmed that there was no reason to change the current acceptable daily intake (ADI) for aspartame of 40 mg/kg bodyweight.

In a detailed study conducted in 2003, FSANZ assessed the levels of aspartame consumed by the Australian public. They found that even the group classified as high consumers consumed only 15 percent of the ADI. This led to the conclusion that aspartame consumption levels in Australia are well below those which may cause adverse health effects.

The recent EFSA decision has given FSANZ renewed confidence that their evaluation into the safety of aspartame and approval for its use in a range of products is sound.

Recently implemented national strategies

National Food Safety Auditor Certification Scheme

In February 2006, The Hon Sussan Ley (Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry) launched the *National Food Safety Auditor Certification Scheme*, developed through the government's Food Safety and Quality Systems Initiative which is part of the National Food Industry Strategy.

The auditing of food safety plans has previously been handled by a variety of state departments and third party certifying auditors, leading to an overly complicated and uncoordinated approach. The National Scheme will result in the alignment of training and certification of food safety auditors to a single consistent system. Ms Ley said although Australia is already recognised for producing safe, high quality food the scheme will provide industry and regulators with increased confidence in the audit process and outcome. "The scheme outlines the assessment and monitoring criteria, including peer review, recognition of current competence and monitoring the overall performance of auditors," says Ms Ley.

Auditors will be categorised into four different levels and will only be able to audit businesses/processes in the category matching their competency level. For example, Level 1 auditors are used when there is already an approved food safety program in place; while Level 4 auditors can conduct full system audits on businesses/processes that potentially pose a high food safety risk to consumers.

To complement the new competency based system, national food safety auditing training standards have been developed through the national vocational education and training framework.

More information about the scheme and training packages can be found on the Department of Agriculture, Fisheries and Forestry's website: <http://www.affa.gov.au/index.cfm>.

Enhancing the safety and security of our food supply

The Attorney-General's Department and the Australian Food and Grocery Council (AFGC) released statements in May 2006 announcing the launch of the Food Chain Assurance Advisory Groups National Food Chain Safety and Security Strategy, *Enhancing the Safety and Security of Our Food Supply*.

The Attorney-General, Mr Philip Ruddock said the "...Strategy recognises that in addition to the traditional threats of natural disaster, disease and contamination, our security could be challenged by those who quite maliciously disrupt our food supply."

The Food Chain Assurance Advisory Group was formed in 2003 after Australia's food industry was recognised as a critical part of our national infrastructure. Over the past three years the Group have undertaken a strategic assessment of the existing food safety and security arrangements in Australia. The Strategy was then developed to cover key potential gaps and vulnerabilities identified by the assessment.

The Strategy, outlining the actions necessary to enhance the security of our food supply chain, is being distributed to the owners and operators of businesses in the food industry in Australia.

More information on the Strategy can be obtained by contacting the AFGC (Rosie Schmedding 02 6273 1466 or 0437 379 818).

National Guidelines for dairy producers

The Australian New Zealand Dairy Authorities Committee's *Guidelines for Food Safety: Dairy Farms* were launched at the United Dairy Farmers of Victoria Annual Conference in May, 2006. The initiative, led by Dairy Food Safety Victoria (DFS), was funded by the Geoffrey Gardiner Dairy Foundation.

The guidelines are designed to assist dairy farmers to develop a food safety program that covers the following criteria: control and prevention of microbial, chemical and physical contamination; and effective identification and traceability. The food safety program requirements were based on a risk assessment of general dairy farm operations using HACCP principles.

A copy of the Guidelines may be accessed through the DFSV website: http://www.dairysafe.vic.gov.au/pdf/Guidelines_Food_Safety_Dairy_Farms.pdf.

Food Safety & Hygiene is prepared by
Keith Richardson, Catherine Moir and
Katherine Scurrah

Australian Food Safety Centre of Excellence

PO Box 52, North Ryde NSW 1670

Telephone +61 2 9490 8333

Fax +61 2 9490 8499

Web <http://www.foodsafetycentre.com.au>

An initiative of:



Supported by:



Partner Organisations:



A joint venture of CSIRO & the Victorian Government

Australian Government

**Department of Agriculture,
Fisheries and Forestry**