

LISTERIA

Recalls of a recall

HALAL FOODS

A growing demand

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Kills again





Recalls of a Recall

A walk down Listeria Lane

Listeria is a gram positive rod, motile and one of the most dangerous food poisoning bacterium known today. It is up there with Salmonella and E.Coli, estimated to directly cause 415 deaths in the USA annually. Indeed, many consider it a much more serious threat than these better known bacteria due to a mortality rate, in susceptible populations, approaching 30% 10 times that of salmonella. Certain permutations of listeriosis deliver a staggering mortality rate of 70%!

Thankfully, infection is somewhat rare. Of interest, food microbiology textbooks from the early 80's hardly mention listeria as a known food born pathogen so much of what we know about the pathogenicity of this bacteria comes from the last 25 years or so of concerted research around the world.

There are 6 known species of listeria of which listeria monocytogenes (known as simply 'mono' in the trade) is the pathogenic variety. Tests for listeria spp may show positives and, when identified, species such as listeria innocua may be typed. But such a result should not provide comfort to a food business as the species regularly co-exist. Rather, a positive for innocua should indicate that conditions are perfect for survival and growth of 'mono'.

Listeria is ubiquitous in nature and commonly isolated from soil, fruit and vegetables and can be transported by any of the common vectors. Most outbreaks have been attributed to listeria in dairy products such as soft cheeses, sliced cold meats and salad components. But this list is not exhaustive....outbreaks and

subsequent recalls have occurred through hard cheese infection, fruit salads and pastry items.

'Ready-to-Eat' meals is the subject of this particular article where a listeria infection in a 'ready-to-eat' meals manufacturing plant caused a product recall earlier this year. The author was directly involved in the process of removing this threat from the operation and some of these experiences might be vital to others in the rapid identification and destruction of a listeria threat inside any plant.

The events commenced when routine testing detected listeria spp in chilled ready-to-eat food. The bacteria was typed as L. innocua and additional testing was ordered for similar products made around the same period. From this second set of samples, Listeria Monocytogenes was isolated in a single product and a trade level recall was initiated. Once the recall committee had set about the task of recovering stock, my attention turned to the cause and source of the infection. As the days passed and additional testing data became available, an interesting pattern became apparent....the fact that there was no pattern! There was no clear link between manufacturing days, time of manufacture, day of the week, product lines, prevailing weather conditions or any other of a dozen criteria which I layered over the top of the infected products matrix.

It did appear that some 6 or so products were affected on different days and these became the core of the 'susceptible' list. We did however find that products manufactured immediately before or after a confirmed positive were often negative. We had what appeared to be a completely random system of events.

In my mind, I imagined a scenario where a week's production was laid out on a desk before tossing a box of confetti into a roof fan. Some of the confetti would land on some of the product and on those 'susceptible' products which would sustain the growth of Listeria, a positive would be detected.

Clearly, the issue was environmental and I decided to attack the problem by identifying and subsequently rectifying problems in three groups or control sectors;

1. INFECTION SOURCE

Like the confetti box, I believed there were some key areas which acted as a bank for large numbers of Listeria. Such areas were not easily sanitized and whilst not a direct threat to product, served to supply secondary sources (which may and probably were routinely sanitized) and infection vectors with a supply of the pathogen.

2. TRANSPORT VECTOR

Like the act of tossing the confetti towards the fan, I suspected there were mechanisms in place to move the listeria from primary and secondary infection sources to a position where the pathogen would be finally delivered into the product or WIP.

3. THE DELIVERY VECTOR

The ceiling fan...final mechanisms which provided direct exposure routes to the product and delivered the contamination.

I felt that if we could totally eliminate just one of these sectors then the potential for outbreak could be significantly reduced. Further, our objective was to eliminate or effectively manage

all three areas which would result in the issue being effectively controlled within the operation.

There was one further area which needed to be controlled and that was reinfection potential from outside the plant. We addressed this immediately by controlling entranceways and openings to the plant. Windows and doors were closed. One formal entranceway was set up including a sealed area, footbath and personal hygiene station. All staff now entered and left through this location which provided significant control over re-infection potential. Additionally we commenced a detailed review of the plant pressurization which indicated whilst the plant was usually positively pressurized overall, there were areas of the plant which were strongly negative.

Clearly the issue was environmental and I decided to attack the problem by identifying and subsequently rectifying problems in three groups or control sectors

Furthermore, when air conditioning was not utilized (due to cold mornings etc), the entire plant was potentially negative. This of course resulted in a constant air flow from outside the plant to inside....clearly not the best way to be set up



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for controlling infection of any kind. Consequently we had to commence working on a system to ensure the plant was uniformly and constantly, positively pressurized.

As we moved to address each of the three key control sectors, the product portfolio was divided in susceptible and non-susceptible categories. The division was based upon results of the extensive testing conducted and on product characteristics including presence or not of kill steps and ingredients which were likely to support the growth of listeria. Products in the susceptible group were subjected to a positive release system whereby they were not released for sale until such time as a representative sample had been cleared through a confirmed lab result.

Our identification of the various control sector issues was made with the assistance of a swabbing programme and good, 'old fashioned' observation and investigation techniques. At times, staff would notice me, arms crossed and staring at inanimate objects in the plant as I imagined bacteria being transferred along the chain of control sectors. I would routinely awaken from this trance-like state with another idea to be tested through our process of verification. One by one, we identified and eliminated the hazard.

A summary of our findings in the key control sectors is as follows;

Infection Source

a. **Ramps.** Heavy steel checker-plate had been used to form low ramps in the facility in locations such as oven entrances

and where height differences in floors left small steps. This was to facilitate movement of wheeled trolleys through the facility. Sealing around these ramps was poor and an accumulation of damp 'muck' had built up under them which upon testing was positive for Listeria. These were removed and replaced with solid concrete alternatives.

b. **Coolroom floor.** Heavy aluminum checker-plate had been used to form the floor in the main coolroom. Like the ramps, sealing was impossible and listeria positive material had built up under this surface. The entire coolroom was re-floored in concrete as a result.



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c. **Damaged floors.** Certain areas of the plant did not drain and resulted in wet patches in hard to clean areas. Other areas of the floor were in poor condition with cracked and missing tiles and damaged concrete. Again, testing positive for listeria, the floor was resurfaced.

d. **Rusty Shelves.** Shelves in finishing areas and for storage of raw materials in the coolroom had surface rust where listeria was detected. Such areas were refinished.

Transport Vectors

a. **Human sources.** The movement of people through the facility was difficult to control however, the entrance procedures assisted with some of the associated issues. An education programme greatly assisted in increasing staff awareness of the issues.

b. **Cleaning rags.** Cleaning rags were used through the plant and were a strong transport vector from source areas to finished product areas. Improved controls were implemented to reduce this risk.

c. **Trolleys.** Movement of trolleys through the facility was found to be an issue as was the condition of some of the trolleys themselves. Improved cleaning, movement controls and refinishing of rusty surfaces assisted in lowering this risk factor.

d. **Tubs.** Large tubs were used to transport and store cleaned utensils and other items through the facility. The tubs themselves were often unclean and served to re-infect clean surfaces of the utensils. Operational practices were altered to assist in this area including improved cleaning and sanitation.

CONTINUED ON PAGE 9



Demand for **HALAL FOODS** is growing fast

The potential of the global halal food market needs to be considered more seriously by exporters.

By Alyson Warnock

The global Halal market is evolving, but it is already emerging as a potentially lucrative market. It is estimated that the global halal food trade will be more than US\$150 billion in 2007.

One of the strengths of the market is its size; current estimates of the world's Muslim population range from 1.20 billion to 1.79 billion and there is a significant Muslim population round the globe that requires halal food as a basic lifestyle need in accordance with the Koran.

Many of the countries with a high Muslim population are our neighbours, such as Indonesia (88% Muslim population) and Malaysia (59% Muslim population). The Muslim population is also high in some countries that have good trade relations with Australia, such as the United Arab Emirates (96% Muslim population). The ease of trade with these countries gives Australian producers an advantage over foreign competitors.

WHAT IS HALAL?

Halal is an Islamic Arabic term that literally translates to 'permissible'. Globally, in the food industry, halal is used to refer to food that is permissible under Islamic law, similar to the use of the Jewish term 'kosher'. Foods that are not halal include pork, blood, carrion, carnivorous animals with the exception

of most fish and sea animals, and all intoxicants – specifically alcohol. Forbidden foods are referred to as haraam and suspect foods as shuba.

To be halal, all animals, excluding fish and most sea life, must be slaughtered according to the Islamic method: 'Dhabiha'. This method involves cutting through the large arteries in the neck along with the oesophagus and trachea with one swipe of a non-serrated blade, without damaging the spinal cord. The animal must then be left, unhandled, until all blood and impurities have drained. All animals must be facing Mecca during this process and be slaughtered in the name of God.

The driving force behind halal is that foods must be 'tayyib:' wholesome and natural. This means animals must be fed natural products free of hormones or other animal products such as gelatine, offal and tallow. Genetically modified foods are not accepted as halal.

THE OPPORTUNITIES

As the halal industry evolves, products are becoming more mainstream and entering supermarkets. The market is also becoming more affluent with increasing numbers of consumers and higher spending on value-added products. As a result, the fastest growing halal categories are frozen meat and shelf-stable, ready-to-eat meals.

As halal becomes a global products, there are also opportunities for logistics and distribution companies. Halal products become haraam if they come into contact with non-halal products.

Producers and consumers are demanding halal standards across the entire transport, handling and storage process to protect product integrity – the ‘farm to fork’ concept.

Logistics companies that can offer distribution in containers that are used only for halal products, or halal-only warehousing, are in high demand. Large ports such as the Port of Rotterdam are already taking steps to provide containers, warehousing and transport that meet these halal standards and are seeking partners.

The large demand in Muslim countries is an obvious opportunity, but as people travel around the world, the demand for halal also travels to traditionally non-Muslim countries. While the traditional base for halal food remains in Asia and the Middle East, the halal market in the US and Europe has grown significantly in the past three years. Muslims living in non-Muslim countries face major problems:

- The absence or scarcity of restaurants and supermarkets that offer halal food, especially meat;
- The abundance of pork products used in Western cooking. Cross contamination, where the same knife or cooking pan is used for all meats, and the use of pork gelatine in many desserts;
- The frequent use of alcohol in cooking sauces and cakes; and
- The confusion around food additives such as monosodium glutamate (MSG) that might use pig fat in the production process, and the lack of declaration of the use of such products.

Providing products that fill these gaps is a large and growing opportunity. Tesco in the UK launched a range of halal products in 2004 and has seen sales increase by 250% in the two years since. Tesco is currently looking to increase its range.

The focus on foods being wholesome also creates a strong opportunity to market halal as a lifestyle choice; the new ‘organic’, especially in the US and Europe where consumers already pay premium prices for organic foods. Many non-Muslim people already choose to eat halal because of the perception that it is a healthy choice. It is expected that in the next five years, consumption of halal will increase among health conscious markets.

THE CHALLENGES

The greatest barrier to entering the global halal market is the lack of consensus around accepted standards. Different interpretations of the Koran and the impact of modern manufacturing methods have created confusion among halal producers. This has resulted in significant differences in standards between countries, as well as frequent and repeated auditing.

Much of the debate centres on the stunning of an animal prior to slaughter. Halal slaughter requires the animal to be conscious and not contaminated by anaesthetics or intoxicating materials. Whether the use of electric, pneumatic or mechanical stunning in modern slaughter methods is allowed currently varies greatly between countries.

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However, there is movement to address this situation. This year, Malaysia hosted the first World Halal Forum. The forum brought together, for the first time, members of the halal community from around the world to discuss the issue of conflicting standards.

Malaysia implemented their standards, MS1500:2004, in 2004. These standards cover production, preparation, handling and storage of halal food products, and are considered among the most rigorous in the world. However, the World Halal Forum highlighted that they are not acceptable for every country and more work must be done to develop international standards.

Halal is a significant, growing and potentially lucrative market

To reduce the burden of these differences, it is recommended that Australian companies wanting to enter the halal market establish themselves in one country at a time. The choice of country is also important – look for countries with established standards that recognise Australian certifying bodies, such as Malaysia.

Halal is a significant, growing and potentially lucrative market for Australian food and beverage producers, but you must be willing to make the commitment to halal production.

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Viral threat from bivalve molluscs under investigation

FAO and WHO to initiate new work on viruses in foods

Call for experts and data kicks off international meeting

In recent years, viruses have been increasingly recognized as important causes of outbreaks of foodborne disease. While noroviruses and hepatitis A are currently seen as the most important foodborne viruses, a range of other enteric viruses have also been linked to foodborne illness. Implicated foods tend to be those that are minimally processed such as bivalve molluscs and fresh produce rather than industrially processed foods and many of the documented outbreaks of viral foodborne illness have been linked to contamination of the food by an infected food handler.

While in many countries viruses are now considered to be an extremely common cause of foodborne illness, they are rarely diagnosed as the analytical and diagnostic tools for such viruses are not widely available. However, much progress has been made recently in terms of the methodology available for detection and identification of viruses in both food and clinical samples. Such developments should contribute to assessing the actual burden of foodborne disease linked to viruses as well as improving strategies for the prevention and control of viruses in foods and the associated risk.

At the international level, the Codex Alimentarius is considering the types of risk management tools which it can develop to assist countries in their efforts to protect consumer health from foodborne viral illness. To facilitate this work FAO and WHO initiated work on this issue beginning with a review of the current state of knowledge on viruses in food and their impact with the objective of providing advice and guidance on the virus commodity combinations that are of particular concern. Also to be reviewed are facing risk managers and the options available to them.

For further details : www.who.int



RECALLS OF A RECALL
CONTINUED FROM PAGE 5

e. **GMP.** Good manufacturing practice in the facility was lacking in several areas providing for strong transport vectors for listeria. Practises such as storage of materials on floors, uncovered WIP, fruit and veg raw material stored on top of dairy ingredients etc all were addressed through increased awareness and supervision.

f. **Rusty utensil racking.** Several storage racks for utensils were rusty and positive for listeria. These served to re-infect cleaned surfaces and allow the spread of the bacteria prior to them being re-finished and appropriately cleaned.

g. **Poor draining floors (allowing pooling).** Certain areas of the floor, whilst in fair condition, allowed pooling of water during shift operations. These acted as secondary infection sources and provided an excellent platform for further transport of the bacteria.

Delivery Vectors

a. **Hand Hygiene.** The awareness and education programme assisted in improving hand hygiene practices.

b. **Air Con Systems.** Air conditioning systems were found to be poorly located, in some cases dripping into production areas and.....positive for listeria. A key delivery source, such areas were addressed early in the programme through relocation,

sanitation and repair.

c. **Utensils, mixers etc and benches have been implicated in delivering the infection into the final product.** Vastly improved and (almost) continual sanitation has reduced the risk from this area.

Supporting our efforts to overcome the Listeria issue was a renewed programme of staff education. This centered around formal training for supervisors and spot training for all staff in hand hygiene, entrance procedures and infection sources. It was found that by involving staff in the issues, more positive outcomes were forthcoming.

Cleaning and sanitation was clearly an area to address within the plant. Greater staff awareness, improved standards of acceptance and more aggressive methods all assisted in reducing incidence. It was also found that in the early stages of the infection, altering sanitizer chemicals and techniques greatly assisted in the control of listeria. The use of hot water, alternating between chlorine and QUAT and improved contact times of chemical sanitisers were all effective strategies for achieving reduced survival and growth of listeria within the plant.

The identification and subsequent elimination of the control sectors combined with factors such as controlled entrances, staff education and renewed cleaning vigour has exerted significant control over the Listeria outbreak at this plant. While we have not been completely successful in eliminating the risk, we are at least now managing it to an acceptable level, and getting close to being fully successful in our objective of listeria elimination. ■

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Food companies, and now more commonly, Cosmetic and Pharmaceutical plants and facilities, often have very demanding standards, schedules and reporting requirements that have to be met in order to maintain their food safety or HACCP accreditation.

Cleaning is an important sub-section of all HACCP programmes and a food business's ability to manage procedures, meet measurable standards and document its performance is critical to its maintenance of accreditation. It demands a thorough knowledge of the tasks and commitment to the disciplines in its performance.

While this function has traditionally been carried out by in-house staff in the food and beverage industries, the concept of contracting such services is beginning to become a more common option to industry. Compared to other industries, this has been somewhat rare in the food and beverage sector and understandably so. The reason most cited for this is the difficulty of 'breaking out' this HACCP subsection from the total HACCP or food safety plan and the ability of contractors to meet the required standards and integrate their service with the overall operation of the food safety programme. This is now changing as HACCP and food safety knowledge and experience gradually migrate from in-house providers to contractors and food safety skills, training and systems amongst contract service providers become more prevalent and sophisticated.

It is a complex issue and perhaps points to the need for food and beverage companies, contract cleaners and the management in both sectors to analyse their current operations and to assess

as objectively as possible the success in terms of economies, efficiencies and compliance of their current arrangements.

Providing the service contractors have the ability and the plant management have the monitoring system in place, there is no reason why a qualified contractor cannot handle this. Employing a contractor does not absolve the plant management of any responsibility but might well see many of the operational problems inherent in this function handled by companies for whom such a task is a primary or key function in itself.

HACCP is used in the food industry to identify potential food safety hazards

Food and Beverage plants have another key stand alone HACCP sub section – pest control – handled by contractors. The use of a pest control contractor is now a virtually universal practice and the performance and management of such contractors is generally handled very well by the food industry. The pest



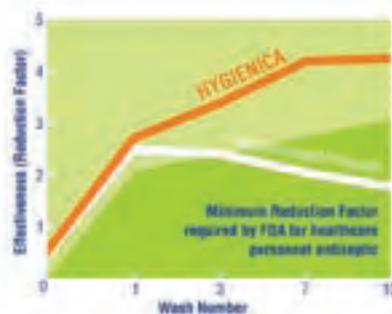
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control system, documentation and effectiveness is audited as part of that a facility's overall food safety audit. It is not divisible because a third party conducts it and no consideration is made in this regard in the audit process. It's all about the performance. The same can very well be applied to the cleaning function.

The really important questions in determining who should undertake the cleaning function in a food plant are:

- Which option provides the most cost effective, HACCP compliant solution?
- Are the management and staff, in either option, capable of fully performing the task to the required standard?

Contract Cleaning companies need to be very aware as to how important this function is in a modern food, cosmetic or pharmaceutical business. The maintenance of standards in terms of frequency and performance is critical to the success of that business. Unless fully qualified, trained and with compliant procedures, tools and materials in place, this market segment is probably best avoided.

That said, it is a very large segment and offers great opportunities in the coming years to cleaning companies who can meet the standards and are prepared for rigorous performance measurement.



Several cleaning companies have recently undergone extensive program development, training and compliance audits and often are now engaged in the process. These companies will undoubtedly be the first to be involved in this new contract era.

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Measuring pH levels of food is an important precaution to maintaining food safety levels.

Not many people realize that the pH level of food or liquids can often yield information about whether the item, for example fruit, is fresh or not, or whether wine will taste sweet or bitter.



The pH value is a direct function of the free hydrogen ions present in that food. Acids present in foods release these hydrogen ions, which give acid foods their distinct sour flavors. Thus, pH is defined as a measure of free acidity. The range of pH is commonly considered to extend from zero to 14. A pH value of 7 is neutral, because pure water has a pH value of exactly 7. Values less than 7 are considered acidic, while those greater than 7 are considered basic or alkaline. A few foods, such as egg whites, sweet corn and some baked goods may be basic. Most foods are naturally acidic, with pH less than 7, but the pH value of a particular food may have a dramatic effect on the type of processing needed to safely preserve it.

Micro-organisms, including yeasts, moulds and bacteria are sensitive to a food's pH. Very low or high pH values will prevent microbial growth. As a practical matter, no unprocessed food has a pH value high enough to offer much preservative value but many foods do have values low enough to offer some protection from microbial growth. Very few foods have pH values low enough to completely inhibit the growth of micro-organisms, so food manufacturers have to combine other microbial controls - such as heat processing, refrigeration, freezing or drying - to help preserve the food. The most common of these is heat processing or canning. Canned foods may be defined as any food sold in a hermetically sealed (water or air-tight) container at non refrigerated temperatures.

Some of the most important pieces of information used in a canning operation are processing times and temperatures.

Processing times do not refer to the time needed to cook the food rather, it means the heating times needed for canned food products to reach what is known as "commercial sterility". Commercial sterility may be defined as the point when any harmful micro-organisms capable of growing in the food have been killed.

ACID LEVELS

Examples of low-acid foods (pH value less than 4.6) are meat, poultry and most vegetables. Heating must kill these spores

during the canning process, however these spores are very heat resistant - meaning canned low-acid foods must be pressure cooked at high temperature for long periods of time. Because of the necessity of insuring the proper processing of low-acid foods, there are numbers of detailed regulations governing their production.

Anyone wishing to can low-acid foods must be registered and required to keep extensive records by using calibrated equipments. Examples of high-acid foods include jams and jellies, pickles and most fruits. These foods require much less heating than low-acid foods as they only need to reach pasteurization temperatures. The correct pasteurization temperature is sufficient to kill all micro-organisms except for bacterial spores. Since these spores will not grow because of low pH, the food is considered commercially sterile.

PH METERS

An effective pH meter needs to be easy to use, offer reliable results and have a long life span. New to the market is a compact, low cost pH and temperature measurement unit from Testo that features interchangeable heads. This means it can be used to test liquids, semi-solids, for penetration into meat or poultry, or by using pH electrode it becomes sensitive to hydronium ions. Plus, it features a large volume of gel reference electrodes, guaranteeing a long service life.

Another bonus is that Testo pH meters allow users to read pH and temperature values at the same time. Temperature plays a key role in pH measurement because the pH value may change with the temperature. The unit's measuring tip can be washed under water tap after it is used, therefore preventing contamination.

Testo Australia is a wholly owned subsidiary of testo Germany, manufacturer of food safety instruments renowned for quality, accuracy and reliability. For further information on testo's range of pH instrumentation please contact our dedicated team at Testo Australia on (03) 9800 4677 or email us at info@testo.com.au. ■



In this section are a few food safety and food related news snippets from around the world. Keep up to date with trivia as well as news!

From: USA

CHIQUITA TO PAY \$25M FINE IN TERROR CASE

The Associated Press

Banana company Chiquita Brands International has agreed to a \$25 million (A\$31m) fine after admitting it paid terrorists for protection in a volatile farming region of Colombia.

The settlement resolves a lengthy Justice Department investigation into the company's financial dealings with right-wing paramilitaries and leftist rebels the U.S. government deems terrorist groups.



In court documents, U.S. federal prosecutors said the Cincinnati-based company and several unnamed high-ranking corporate officers had paid about \$1.7 million between 1997 and 2004 to the United Self-Defense Forces of Colombia, known as AUC for its Spanish initials.

The AUC has been responsible for some of the worst massacres in Colombia's civil conflict and for a sizable percentage of the country's cocaine exports. The U.S. government designated the right-wing militia a terrorist organization in September 2001.

The information filed is part of a plea agreement, which we view as a reasoned solution to the dilemma the company faced several years ago.



From: UK

CADBURY CHARGED IN SALMONELLA CONTAMINATION CASE

By staff reporter - FoodQualityNews.com

Cadbury and some of its managers face prosecution for allegedly ignoring a case of salmonella contamination at one of the company's UK plants.

Birmingham City Council said today it would bring three charges against Cadbury Schweppes relating to allegations the company put contaminated chocolate products on the market in early 2006.

The court case could prove to be more costly to Cadbury than the £30m (A\$75m) the company estimated it spent in recalling the affected chocolate in June 2006. The cost does not take into account the loss of consumer confidence in the brand.

Cadbury's alleged failure to follow its HACCP Program, serves as a warning to other processors who may also have been tardy in making sure the system is in place at all their plants.

The court action targets the company's alleged failure to report to food regulators that its private testing in January last year had found a rare Salmonella strain in the chocolate products.

The products were on the market until June, when the Food Standards Agency revealed some people had fallen sick from the chocolates. Cadbury then withdrew the seven chocolate products from the UK market.

Each of the three offences carries a maximum penalty of an unlimited fine and up to two years of imprisonment for managers identified as causing the problem, the council said.



From: UAE

CHARLES SUGGESTS MCDONALD'S BAN

The Prince of Wales entered the debate on childhood obesity by appearing to call for a ban on McDonald's.

During a tour of the United Arab Emirates, the Prince told a nutritionist that the "key" to remedying childhood obesity was getting McDonalds "banned".

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INNOVATION 2007

His comments came during a tour of the Imperial College London Diabetes Centre in Abu Dhabi, where he was told about initiatives to improve the nation's diet and fitness levels.

The Prince, who visited the centre with the Duchess of Cornwall, advocates organic food and runs a farm on his Highgrove Estate that does not use artificial pesticides or fertilisers.

The Prince was chatting to Nadine Tayara, from the centre, when he asked her: "Have you got anywhere with McDonald's? Have you tried getting it banned? That's the key."

A McDonald's spokeswoman said the Prince's remark was "disappointing". Other members of his family had visited the chain and "have probably got a more up-to-date picture of us," she said. "This appears to be an off-the-cuff remark, in our opinion. It does not reflect our menu or where we are as a business."



From: CANADA

STUDY WARNS BARBECUE LOVERS ABOUT TOXIN

CTV.ca News Staff

While Canadians are getting excited about the start of their barbecue season, a new study is suggesting that grilling food over an open flame may not be the healthiest cooking method.

Grilled, broiling or frying meats seems to create a class of toxins called "advanced glycation end products" (AGEs). As well, foods that have been pasteurized, such as cheeses, have AGEs which form when fats or protein in the food react with sugars.

Over the years, AGEs build up in the body, causing oxidative stress -- damage by rogue oxygen molecules.

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AGEs also increase the likelihood of inflammation, which leads to a range of conditions from arthritis to heart disease.

The new study at Mount Sinai School of Medicine reveals that AGE levels are generally elevated in older individuals than in younger people. But much to the researchers' surprise, the study also showed that AGE levels could be very high in young healthy people who consumed a lot of AGEs in their diet.



"AGEs are quite deceptive, since they also give our food desirable tastes and smells," says the study's author Dr. Helen Vlassara, the director of the Division of Experimental Diabetes and Aging at Mount Sinai School of Medicine.

From: WHO

ETHYL CARBAMATE IN FOOD, DRINK AS DANGEROUS AS DIESEL

By staff reporter

The attention of product developers is turning towards health risks posed by ethyl carbamate, a naturally occurring substance in fermented food and beverage products that is now classed as dangerous as acrylamide and diesel fuel.



The World Health Organisation (WHO) has officially labelled ethyl carbamate, a compound produced during yeast fermentation, as a Group 2A carcinogen, ranking it alongside other substances likely to cause cancer in humans.

Ethyl carbamate is a compound that can naturally occur in fermented foods and beverages, such as spirits, wine, beer, bread, soy sauce and yoghurt. The compound is formed during the fermentation process, distillation or during storage.

Now, because of this compound's new-found fame for all the wrong reasons, suppliers to food and drink manufacturers are increasingly examining ways to cut ethyl carbamate out of products.

Concern among regulatory authorities is also growing. The European Food Safety Authority in November called on member state regulators to send in any data on levels of ethyl carbamate, and also cyanides, in foods and beverages.

First Venture, which specialises in yeast products, said it had conducted trials on a new method of minimising and even eliminating ethyl carbamate from wine.

Its yeast reduced levels of the substance in red wine by up to 89 per cent, according to a study published in the American Journal of Enology and Viticulture last year. Tests in First Venture's own lab also found the yeast cut ethyl carbamate in bread by up to 54 per cent.



Quick Serve Restaurant Roundtable agrees to work on reducing trans fats

A Roundtable of Australian Quick Serve Restaurant industry representatives agreed today to a September timetable to draft plans to remove artificial trans fats from their products.

Regular readers might recall the article written in the last edition of the HACCP Australia Food Safety Bulletin relating to the levels of trans fats in the Australian diet and in QSR food in particular. Since then, the Assistant Minister for Health and Ageing, Christopher Pyne, has convened a roundtable, and stated how delighted he that the QSR industry was willing to act on this important public health initiative.

“There is a scientific link between the consumption of trans fats and the risk factors for heart disease,” Mr Pyne said. “Trans fats not only increase bad cholesterol in our blood, a key indicator for heart disease, they may also decrease good cholesterol.

“Unlike many other countries, Australians consume a low level of trans fats, with only 0.6 per cent of their daily kilojoules coming from trans fats. And the situation is similar in New Zealand, with 0.7 per cent of daily kilojoules coming from trans fats. This is

well below the World Health Organization recommendation to consume no more than 1 per cent of your daily kilojoules from trans fats.

“However, we can reduce these intakes even further through continuing the good collaborative work that has already been done by the National Heart Foundation, the Dietitians

Association of Australia, major food manufacturers and some of the Quick Serve Restaurant industry.

“It is important, when we reduce trans fats in our food supply, that we do it in the context of a balanced diet. For example, we don’t wish to decrease trans fats by returning to the use of saturated fats such as palm oil, tallow or lard.

“There is a scientific link between the consumption of trans fats and the risk factors for heart disease,” Mr Pyne said.

“The Australia New Zealand Collaboration on Trans fats, which consists of Food Standards Australia New Zealand, the National Heart Foundations of Australia and New Zealand, the Dietitians

Association of Australia, the Australian Food and Grocery Council, the New Zealand Food and Grocery Council and the New Zealand Food Safety Authority, was formed in October 2006 with the important role of reducing damaging trans fats in the food supply.

The Assistant Minister for Health and Ageing, Christopher Pyne, was delighted that the Quick Serve Restaurant industry was willing to act on this important public health initiative.

"The Quick Serve Restaurant industry will be working with the Australia New Zealand Collaboration on Trans fats to reduce levels of trans fats in the food supply.

"In addition to the Collaboration, Food Standards Australia New Zealand is conducting a formal scientific review of trans fats in the food supply. They will be reporting back to the Australia and New Zealand Food Regulation Ministerial Council, which I chair, by May this year," Mr Pyne said.

The roundtable was attended by the Baking Industry Association, Coffee Club, Domino's Pizza, Eagle Boys Pizza, Hungry Jacks, KFC, Krispy Kreme, McDonalds, Pizza Hut, Pizza Haven, La Porchetta, Oporto, Red Rooster, Michel's Patisserie and Subway.

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DEATH AT BROUGHTON HALL

TIME TO ACT.

In April, Australia witnessed a particularly shocking outbreak of food poisoning that attacked and killed elderly people living in a Victorian residential complex.

It seems that there might be many possible reasons for such an outbreak but when or if the reason or culprit eventually comes to light, there will be no surprises at all. After all, we do know all the causes and how to prevent such incidents. The cause will undoubtedly be the mishandling of foodstuffs or a breakdown in food safety procedures either by a supplier or the operator.

With blame being such a heavy burden in these modern litigious times, the operators, food handlers and suppliers will all be understandably anxious as to the outcome of any investigation. While the "blame game" will no doubt consume most of the energy surrounding this issue, it is more important that steps are taken by all in industry to avoid repetition and, if the truth be known, that doesn't require much. After all, history has taught us this lesson time and time again. Let this be the last time we have to learn it.



Simply put, there are only two food poisoning risk sources for operators of such facilities and they come from the actions of the food handlers and the actions of their suppliers. That's it!

1 - Food handler practices can be managed very effectively with a disciplined food safety system, training and monitoring – a rigorously managed HACCP programme would seem an obvious answer.

2 - Suppliers' product safety can also be managed very effectively through a disciplined Vendor Quality Assurance (VQA) programme.

One cannot help assuming that one or both were absent in some significant part in this case.

There is no other requirement and there should be absolutely no excuses for absences in either of these, especially in facilities designed to care for the vulnerable in our community. Just allowing the undertaking of food service operations without

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such protocols in place is the real cause of death. Sadly the eventual victims and the particulars of the incident giving rise to an attack are merely random.

“HOW MUCH THAT FOOD SAFETY, MISTER”

The Victorian government is considered by many to have the best food safety legislation in Australia and the operators of Broughton Hall, Benetas, have an excellent reputation. Clearly, these in themselves were insufficient and give rise to the greater fears for the residents of homes operated by less respected organisations. While the exact circumstance might now never be fully known, both government and operator appear to have fallen short in meeting the minimum expectations of the residents and their families.

Dare one think that the small cost of doing it properly was too high or is that too awful to contemplate? But contemplate it we must because it is an argument we hear frequently from others. Food safety is very commonly under funded and low on the priority list in many such establishments. “As long as we’re legal” is typical of comments heard all too often. ‘Perhaps “legal” just ain’t enough any more’. Every operator should be audited to the highest food safety standards and licences should be conditional upon this.

Only a minority of establishments in our estimation operate to anything like world’s best practice. Most of our food manufacturing industry meets those standards voluntarily in their quest to meet the high standards demanded by the large retailers and in turn their customers – the general public.



Residents and their families should demand similar standards and begin to voice these demands loudly. Why on earth is it that the sector that requires adherence to the the highest standard be allowed to get away with so much less?

Readers of this journal especially should be making the loudest noise. We fully endorse the comments of the editor of ‘The Australian’ newspaper who’s editorial of 18th April 2007 is reprinted below.

CARE FOR THE ELDERLY

The aged deserve the best we can offer

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After a lifetime of work, raising families, paying taxes and supporting the community, the elderly should not be shuffled off into a nursing home somewhere - out of sight and mind - to become someone else's problem. And those who do find themselves in nursing homes should not be stripped of their dignity and have their lives treated as not being worth bothering about over a holiday weekend or if they stand in the way of a business deal.

Five people have now died at Melbourne's Broughton Hall nursing home since Easter. That is the same number of Australians who died in the recent Indonesian air crash - but the media coverage has been remarkably different, with coverage of the Broughton Hall affair tucked away in the middle pages of some newspapers. Those who dismiss the plight of the elderly as someone else's problem would do well to remember they too will one day be old. As the population ages and the bulging demographic of baby boomers move into the ranks of the old and infirm, the problem will become even more acute. The next 20 or 30 years will see an unprecedented strain placed on aged care services.

Five people died at Melbourne's Broughton Hall nursing home at Easter this year.

The fact that one of Melbourne's leading aged care facilities, operated by the Anglican Church, can have a deadly outbreak of suspected food poisoning without the health authorities being notified for four days is a disgrace. The investigation of standards at the home ordered yesterday by Federal Ageing Minister Christopher Pyne is window-dressing, as is the sacking by the Bracks Government of Victoria's chief health officer, Robert Hall. Victoria has a history of turning a blind eye to questionable behaviour in such facilities. Who can forget the kerosene baths given in 2000 to elderly residents of the now-closed Riverside Nursing Home, just a year after the Aged Care Standards and Accreditation Agency found Victoria to have the nation's worst standards in nursing homes.

While the unnecessary death of any elderly Australian is regrettable, the callous disregard of a large group is unforgivable. On May 28, more than 400 elderly nursing home residents in NSW, Victoria, Western Australia and Tasmania may find themselves homeless because the villages where they rent units or rooms have been sold to an investment company that wants vacant possession. Many of the residents of the 10 villages previously run by Village Life, the country's largest provider of rental accommodation to the aged, are pensioners who sign over 85 per cent of their pension for rent and three meals a day.

The eldest of the affected residents is 95, and some of the others have leases that still have 20 years to run. The state and federal governments cannot stand by and allow them to be put on the street. They helped to build the society we now enjoy. ■

Editorial reprinted with kind permission of 'The Australian'.



Good Bacteria

Someone is standing up for all the good bacteria. Learn how to pickle vegetables and ferment milk with positive outcomes! Also some useful links to food and water safety. Go the good Guys!

<http://www.bacteriamuseum.org/niches/foodsafety/goodfood.shtml>

Chemical Cocktails

Worried about chemicals in Food? So is the World Health Organisation! This area of their food safety information spells out some of the issues and recommendations. Interesting reading (and remember to wash your fruit and veg!)

<http://www.who.int/foodsafety/chem/en/>

India Food Safety

A good basic site with four lessons and a self-test which could be used for preliminary training of food handling staff....I even learned what FAT TOM was! (Alas, no good recipes on the page and no call centre!)

<http://foodsafetyindia.nic.in/index.htm>

Capturing Food Borne Illness Issues

The mission of OzFoodNet is to apply concentrated effort at a national level to investigate and understand foodborne disease; to describe more effectively its epidemiology and to provide better evidence of how to minimise foodborne illness in Australia. A government initiative with very interesting reports and statistics.

<http://www.ozfoodnet.org.au/>

A Leading Publication

Food Safety & Hygiene is now published by the Australian Food Safety Centre of Excellence but some excellent back copies and articles are available from the days when this was published by Food Science Australia.

<http://www.foodscience.csiro.au/fshlist.htm> ■



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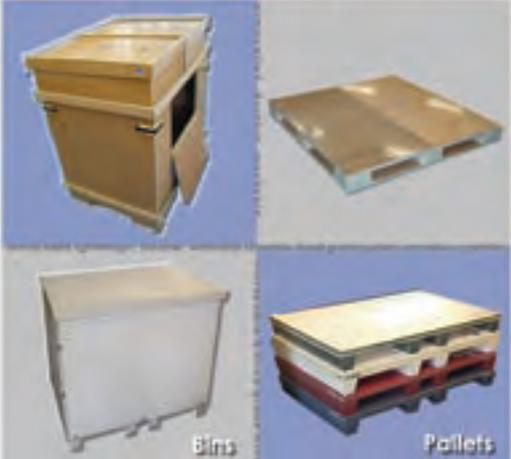


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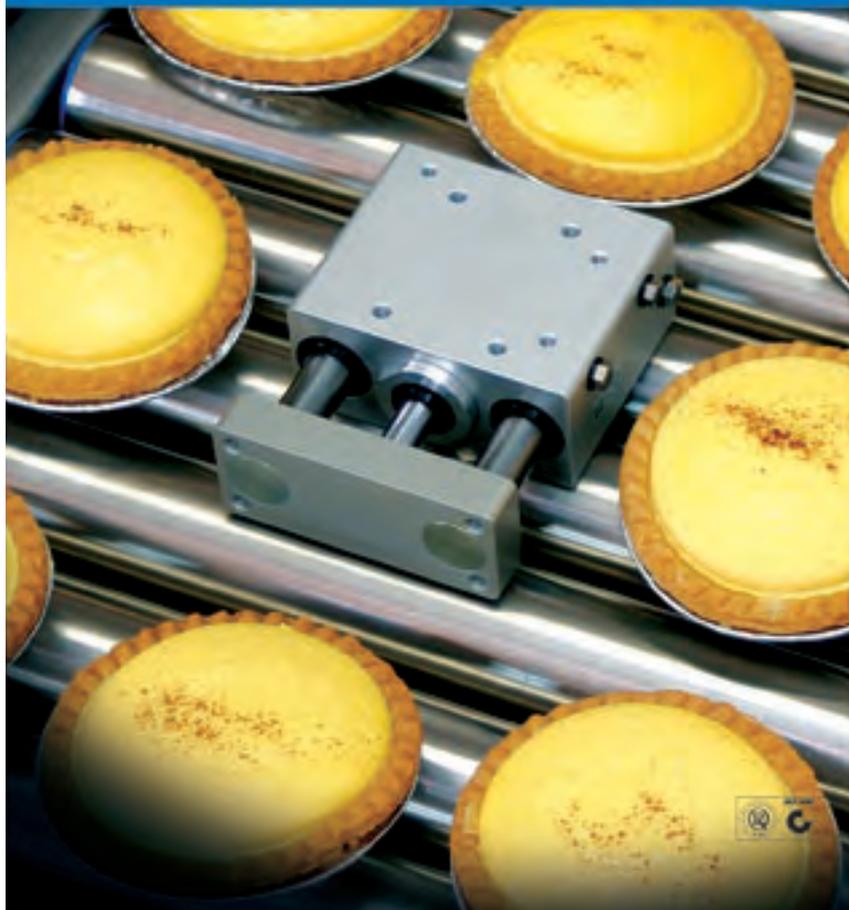


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PRODUCTS

Detailed in this section are some new products that are now available in Australia and which are particularly appropriate for the food and beverage industries. Like all products that carry the HACCP Australia certification mark, they are well designed and demonstrate the highest standards of food safety and industry compatibility.

3M INTRODUCES ECONOMICAL, REUSABLE MONITOR FOR TEMPERATURE SENSITIVE SHIPMENTS

3M Packaging introduces the Temperature Logger TL20 from 3M, a new temperature monitoring system for the shipment and storage of temperature sensitive and perishable goods. The Temperature Logger TL20 combines all the features and technology needed for food and other perishable goods shippers to standardize their monitoring around one easy to use system.



The TL20 has a temperature range from -20c to +60c, and can be set to monitor a temperature range anywhere within those limits. With the simple press of a "check" button, green or red LED lights signal if the shipment has stayed within or gone outside the pre-set range. The accompanying Temperature Logger Software from 3M offers robust and detailed graphing and reporting capability, while being very easy and intuitive to use.

Other features include the ability to program variable logging frequencies, the ability to store up to 12,000 temperature data points, secure password protection, easy to use functionality, and re-usability for up to one year.

For more information on the Temperature Logger TL20 from 3M, call 136 136. This product is offered through 3M Industrial Adhesives & Tapes Division.

www.3m.com.au

NEW GLUEBOARD MODEL FROM INSECT-O-MATIC

INSECT-O-MATIC has introduced a new Glueboard model, the IND45. It covers an area of 180 square metres and is suitable for use in commercial, factory and warehouse situations. The unit can be wall-mounted or freestanding, and in meeting food safety standards uses shatterproof lamps as standard.

Like all INSECT-O-MATIC products, it features

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www.insectomatic.com.au

FOOD GRADE BAITS AND COCKROACH CONTROL GEL FROM BASF

BASF has one of the world's best known names in the chemical industry and now that name is set to become better known in the food and beverage sector as the company introduces specific pest control materials to this particular market.



BASF's, 'Amdro' and 'Goliath' branded cockroach control gel and their 'Stratagem' rodenticide blocks have been endorsed by HACCP Australia as particularly suitable for use by pest controllers servicing the food industry.

Says Martin Stone, Technical Director of HACCP Australia " While chemical substances in any form are generally unwelcome in the food industry, there are some which are absolutely necessary and certain pest control substances are among these. That being the case, it is very important that the risk associated with these products is minimised as far as possible and BASF have done this".

The rodent bait, 'Stratagem,' is very suitable for its purpose in a controlled environment.

In examining such products, HACCP Australia considers many issues including the food safety characteristics and risks attached to them. In the case of the cockroach control, we do very much prefer such gel to powder or other forms and this 'Goliath' product is appropriate for the food industry in terms of both its application and toxicity.

The rodent bait, 'Stratagem,' is very suitable for its purpose in a controlled environment. It also has an anti-fungal quality which is a sensible feature as

such items often find themselves attached to bait stations in wet or damp areas and it also has also a bright blue colouring which makes for easy identification should it accidentally become detached or lost in a plant."

QA Managers and expert food industry pest controllers who have HACCP compliant procedures will no doubt be interested in these products.

www.termidor.com.au

CONCEPT LABORATORIES' "GERM BUSTER" A SANITISING HAND GEL

Concept Laboratories has introduced GERM BUSTER™ to the food market, a very effective sanitising hand gel designed to prevent the spread of infections and microbial contamination through hand contact. It is very appropriate for the food industry and especially in and high-risk occupations such as Nursing homes and Childcare facilities.



GERM BUSTER™ is a fast evaporating, pH neutralised, non-greasy formulation that, on drying is fragrance free and contains moisturisers to condition the skin. As well as offering first class protection, it also saves water, towels and waste disposal costs

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SunnyWipes Pty Ltd, has developed a product range that meets the strict emerging guidelines for the use of hazardous chemicals in cleaning and disinfection products. The Wipes are a triple action product. The ethanol dissolves dirt and grease while killing germs, the micro-fibre cloth picks up particles and sticky deposits whilst at the same time it polishes the surface for a lasting anti-fog, anti-dust effect.

Saint-Gobain Abrasives Australia are the Australian and New Zealand market Master Distributors and have launched the Norton-branded product into the O.H&S market. Norton Safety Wipes are a superior product and are intended to replace existing products using petrochemicals and hazardous chemicals, with wipes manufactured using 'Green' technology, that are safe for the environment and humans.

For more information contact Saint-Gobain Abrasives Australia

www.norton.com.au

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The patented CRYONITE technology has been developed in Sweden and is used commercially in the food industry and accommodation industry across Europe, the UK, Japan, and most recently in the USA. It was awarded Best Product by The Society of Food Hygiene and Technology in the UK in 2005, recognising the positive impact of CRYONITE on the food industry. It has recently been endorsed by HACCP as food safe equipment.

The advantages of using CRYONITE for food production and processing facilities are very significant:

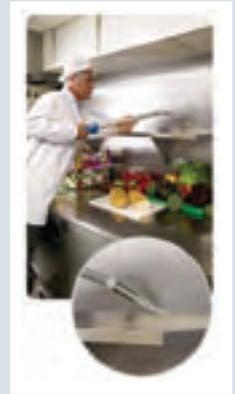
- Preserves a completely pesticide-free environment
- Completely dry treatment procedure, no liquid residues
- Effective against most crawling insect pests, including stored product pests

- Enables production to be continued during treatment, minimising production downtime
- Safely allows for direct contact with food stuffs and food contact surfaces
- Kills all stages of insect life-cycle, adults, larvae, pupae and eggs

Using CRYONITE reduces costs for the food industry as there is minimal production disruption. And CRYONITE can be used safely in sensitive food production areas where chemicals cannot be used.

More information on CRYONITE can be found at www.insectomatic.com.au/cryonite.htm, and www.cryonite.net

For enquiries, contact INSECT-O-MATIC at 02 9999 5201 or email info@insectomatic.com.au



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SUPPLIERS OF ENDORSED PRODUCTS AND SERVICES SUPPORTING THE FOOD INDUSTRY

The HACCP Australia endorsement process supports organisations achieving food safety excellence in non-food products and services that are commonly used in the food industry. The HACCP endorsement is particularly aimed at those organisations that are required to supply 'food safe', 'compliant' or 'HACCP approved' products and services to their food safety conscious customers. This independent assessment and verification of fitness for purpose offers assurance to the buyer or user that HACCP food safety protocols will not be compromised in using such a product or service correctly and that such a product is 'fit for purpose' in the food industry.

Compliant or endorsed products are rigorously reviewed by HACCP Australia's food technologists and in their expert estimation are manufactured and designed to meet all the appropriate food safety standards demanded by industry or regulation in Australia and internationally. In

performing the assessment, they look for 'world's best' in terms of food safety features and characteristics. The technologists undertaking these reviews all have extensive industry and manufacturing experience. They are very familiar with the particular needs of the food industry.

Only products that are assessed as meeting the criteria can carry the mark. Quite often, organisations are required to make modifications to the product, design, delivery, literature or recommendations in order to comply. This process is therefore particularly useful for products that are designed for many industrial applications.

The companies listed in this section carry a range of excellent and food safe products or services endorsed by HACCP Australia. If you are looking for more detail or a particular food safe product or service please call us for a recommendation or assistance at any time on 02 9956 6911.

CATERING EQUIPMENT (HEAVY)	CARTS AUSTRALIA SEMAK W AND P REEDY	Coffee and food carts for mobile sales Manufacturers of chicken rotisseries Suppliers of ovens and provers to the baking industry	02 9888 5200 03 9551 5896 02 9533 9522
CLEANING EQUIPMENT	ADVANCED CARTS JUG WASH AUSSIE RED EQUIPMENT GOLDSTEIN ESWOOD OATES CLEAN STEAMASTER AUSTRALIA PTY LTD	Automatic jug cleaning and sanitising system Aquafortis hot water high pressure clean and capture equip. Manufacturers of industrial dish and glass washers Full range of food grade cleaning equipment Hot and cold water pressure cleaners	02 8868 8999 1800 804 878 02 9604 7333 1800 791 099 02 9796 3433
CLEANING CHEMICALS	AVANTI CHEMICALS DEB AUSTRALIA HYGIENESIS PASCOES WONDER TECH	Cleaning chemicals for food and agri. businesses Skin care and hand cleaning soaps for food handlers Liquid skin cleaning products Cleaning chemicals for the food industry High Alkaline water for general cleaning	07 5549 3666 1800 090 330 07 3889 3788 08 9353 3900 0418 621 629
CLEANING AND MAINTENANCE SERVICES TO THE FOOD INDUSTRY	ACE FILTERS AERIS HYGIENE SERVICES PTY LTD BORG CLEANING INITIAL BATHROOM SERVICES METROPOLITAN FILTERS OZ TANK	Food grade cooking oil filters Specialist cool room and cool room motor cleaning services Specialist contract cleaning services for food premises Bathroom services for the food industry and premises Filters and filter services for range hoods and food facilities SS deep cleaning tanks and systems for pans and trays	1300 555 204 1300 790 895 03 9463 1300 1800 007 794 02 9971 8060 1300 66 88 66
CLEANING MATERIALS	3M CLOROX AUSTRALIA CONCEPT LABORATORIES PTY LTD DEB AUSTRALIA MERINO PTY LTD OATES CLEANING SABCO SUNNYWIPES PTY LTD	Scotchbrite™, Cleaning Chemicals, Scourers and sponges Chux™, Oso™ and Glad™ range of materials Suppliers of sanitising hand gel and sanitising wipes Disposable Cleaning Wipes Swipes™ disposable and anti-bacterial paper cloths Full range of kitchen cleaning materials Scourers, sponges, clothes and cleaning aids Disposable cleaning wipes for the food industry	136 136 02 9794 9500 07 5493 8433 02 9755 3388 1800 622 018 1800 791 099 02 9642 6411 03 5436 1100
CLEANING SYSTEMS FOR CUTLERY AND UTENSILS	GIBPAT PTY LTD	Automatic glass and cutlery cleaning machinery	1300 558 668
FACILITY FIXTURES AND FIT OUT	COLDSHIELD FLEXIBLE DOORS DMF INTERNATIONAL DOORS THORN LIGHTING	PVC flexible doors for food premises Flexible door material for food manufacturing and storage Food safe lighting solutions for food handling facilities	1800 462 233 02 9636 5466 1300 139 965
FLOORING, WALLS, AND MATTING	3M AERODYNAMIC DEVELOPMENTS ALTRO SAFETY FLOORING BLUESCOPE STEEL ECO SURFACES GENERAL MAT COMPANY (THE)	Specialist safety matting for food and beverage areas Glasbord Coolroom and Food Transport Panelling Products Specialist Food premises flooring Colorbond® Anti Bacterial Coolroom Panelling Products (quote 2222) Anti Bacterial Flooring Product and Services Specialist safety matting for food and beverage areas	136 136 1800 051 100 1800 673 441 1800 022 999 1300 853 990 1800 625 388
FOOD SERVICE EQUIPMENT AND UTENSILS	AACLAIM ADVANCED CARTS AUSTRALIA CARTS AUSTRALIA FOOD SERVICE EQUIPMENT (FSE) KENCAN LTD TOMKIN AUSTRALIA PTY LTD	Food service and food storage light equipment Automatic jug cleaning and sanitising system Coffee carts and pre-packaged food carts. Juice dispensers and other buffet equipment Kee-seal™ disposable piping bags Providers of colour coded catering utensils	02 9525 1049 02 8868 8999 02 8762 9200 1800 673 153 07 3273 8111 02 9319 2993
FOREIGN BODY IDENTIFICATION	SMITH HEINMANN AUSTRALIA WJB ENGINEERING	X-ray inspection and foreign object detection equipment Magnetic separation technology and services	02 9597 6833 1800 835 858
ICE MACHINES	ICE MASTER SYSTEMS PTY LTD	Ice machines for hotels, restaurants and catering outlets	03 9455 2300

KITCHEN CONSUMABLES	3M	Scotchbrite™, Cleaning Chemicals, Scourers	136 136	
	CLOROX	Glad™, Chux™ and Oso™ range of materials	02 9794 9500	
	LALAN GLOVES SAFETYCARE	Disposable gloves for the food industry	03 9706 5609	
	MERINO	Swipes™ disposable and anti-bacterial paper cloths	1800 622 018	
	OATES CLEANING	Full range of kitchen consumables	1800 791 099	
LABELS - FOOD GRADE	PARAMOUNT SAFETY PRODUCTS	Disposable gloves for the food industry	03 9762 2500	
	PURBRICK HEALTHPRINT	Labels for the food and pharmaceutical industries	03 9751 7100	
	W W WEDDERBURN	Food safe Labels for food products and food retail	02 9797 0111	
	LUBRICANTS - FOOD GRADE	LANOTEC AUSTRALIA	Suppliers of food grade lubricants	07 3373 3700
		MANUFACTURING EQUIPMENT AND COMPONENTS	ENMIN PTY LTD	Manufacturers of food grade feeder equipment
FCR MOTION			Manufactures of food grade geared motors and inverter	03 9362 6800
FESTO PTY LTD			Pneumatics and valves for food manufacturing equipment	1300 889 696
HARRINGTON ELECTRICAL MOTORS			Stainless Steel Electric Motors for food processors	03 9546 7515
NORGREN PTY LTD	Suppliers of pneumatics and valves for food manufacturing		02 9582 8000	
PACKAGING MATERIAL AND EQUIPMENT	SMC PNEUMATICS	Suppliers of pneumatics and valves for food manufacturing	02 9354 8222	
	CROWLE INDUSTRIES	Repacking of consumables and food products	02 9809 0254	
	DALTON PACKAGING	Manufacturers of paper bags and products for the food industry	02 9774 3233	
	KINGFOIL CONTAINERS	Suppliers of food grade foil containers	02 8825 8800	
	MICROPAK PTY LTD	Manufacturers of food grade packaging materials	02 9646 3666	
PEST CONTROL (ALL STATES)	NETPAK	Suppliers of food grade netting to small goods manufacturers	02 9604 4950	
	RENTOKIL	National pest control services for the food industry	1800 675 356	
	PEST CONTROL (NSW)	AEROBEAM PROFESSIONAL PEST MGMT.	Specialist food premises pest management	02 9636 5840
		AFFIRMATIVE PEST CONTROL	Specialist pest control services for food industry	07 5596 2555
		ANT-EATER ENVIRONMENTAL SERVICES	Specialist pest control services for food industry	02 9939 8208
CPM PEST & HYGIENE SERVICES		Specialist pest control services for food industry	02 9674 5499	
COPEP PEST CONTROL		Specialist pest control services for food industry	1800 13 13 15	
CORPORATE PEST MANAGEMENT		Specialist pest control services for food industry	02 9311 1234	
HACCP PEST MANAGEMENT		Specialist food premises pest management services	02 9922 3743	
RENTOKIL		National pest control services for the food industry	02 9395 0519	
SCIENTIFIC PEST MANAGEMENT		Regional pest control services for the food industry	1300 139 840	
STOP CREEP PEST CONTROL		Regional pest control services for the food industry	02 9371 3911	
PEST CONTROL (QLD)	ARREST-A-PEST	Specialist pest control services for the food industry	07 3279 1199	
	GOODE PEST CONTROL	Specialist pest control services for the food premises	1300 13 12 14	
	RENTOKIL	National pest control services for the food industry	07 3268 2252	
	SCIENTIFIC PEST MANAGEMENT	Regional pest control services for the food industry	1300 139 840	
PEST CONTROL (VIC)	COPEP PEST CONTROL	Specialist pest control services for food the industry	1800 13 13 15	
	DAWSON'S WEED AND PEST CONTROL	Specialist pest control services for food the industry	03 9222 2222	
	PROTECH PEST CONTROL	Specialist pest control services for food industry	1300 780 980	
	RENTOKIL	National pest control services for the food industry	03 9372 6699	
	SCIENTIFIC PEST MANAGEMENT	Regional pest control services for the food industry	1300 139 840	
	TRAPS PEST CONTROL PTY LTD	Specialist pest control services for food industry	03 9390 6998	
PEST CONTROL (WA/SA)	RENTOKIL	National pest control services for the food industry	08 9479 4622	
PEST CONTROL EQUIPMENT	BASF AUSTRALIA LTD	Suppliers of rodent and cockroach control materials	02 9150 7449	
	BELL LABORATORIES INC	Suppliers of rodent control materials and stations	0427 802 844	
	EKO SOLUTIONS	Distributors of the 'ecomille rodent eradication equipment	1800 612 212	
	INSECT-O-MATIC	Suppliers of insect eradication systems and 'cryonite'	1800 244 30	
	PEST FREE AUSTRALIA PTY LTD	Specialist electronic vermin elimination devices	02 4969 5515	
	WEBCOT PTY LTD	Suppliers of "Brandenburg" flying insect control	03 9984 2255	
	WEEPA PRODUCTS PTY LTD	Weep hole protection devices for new or retro application	07 3844 3744	
	REFRIGERATION MATERIALS AND EQUIPMENT	CAREL	Temperature controllers and supervisors for refrigeration	02 8762 9200
		CHILLZONE	Construction of food grade coolrooms	02 9823 9398
DANFOSS		M2 alarm and monitoring system	02 8845 1813	
HEATCRAFT AUSTRALIA PTY LTD		HACCP specification cool room thermostats and alarms	13 23 50	
REFRIGERATION	PHASEFALE	Temperature controllers for refrigerated storage	03 9553 0800	
	CHILLZONE	Construction of food grade coolrooms	02 9823 9398	
	FROSTLINE REFRIGERATION SERVICES	Cold room services	1300 550 502	
	REEFER/REFRIGERATION RESEARCH	Versatile, mobile refrigerators for travelling and remote use	08 8398 3224	
REFRIGERATION GOVERNORS	CAREL	Temperature controllers and supervisors for refrigeration	02 8762 9200	
	CHILLZONE	Construction of food grade cool rooms	02 9831 1281	
	DANFOSS	M2 alarm and monitoring system	02 8845 1813	
	HEATCRAFT AUSTRALIA PTY LTD	HACCP specification cool room thermostats and alarms	13 23 50	
	PHASEFALE	Temperature controllers for refrigerated storage	03 9553 0800	
REFRIGERATOR SERVICE	AERIS HYGIENE SERVICES PTY LTD	Specialist cool room and cool room motor cleaning services	1300 790 895	
	FROSTLINE REFRIGERATION	Cold room services	1300 550 502	
	MELBOURNE REFRIGERATION SERVICES	Refrigeration installation and repair	1800 441 718	
	REJUVENATORS (THE)	Specialist cool room cleaning and rejuvenation services	0407 292 826	
STAFF RECRUITMENT AND HUMAN RESOURCES	SKILLED GROUP	Specialist HACCP trained workforce solutions for the food industry	1300 366 606	
STORAGE, SHELVING AND RACKING	ARMACEL TECHNOLOGY GROUP	Food storage containers, food grade shelving	02 9450 0900	
	SYNCHROMATIC	Distributors of Food Grade Shelving	02 9690 0900	
THERMOMETERS, PH METERS AND DATA LOGGERS	3M	TL 20 Temperature logger for logistics	136 136	
	TESTO PTY LTD	Specialist thermometers for use in the food industry	03 9800 4677	
	TRIPLE POINT CALIBRATION	Thermometer calibration services	08 8172 2233	
TRANSPORT CONTAINERS AND PALLETS	ARMACEL TECHNOLOGY GROUP	Manufacturers of food grade pallets and storage solutions	02 9450 0900	
	MONET INDUSTRIES	Manufacturers of food grade pallets and storage solutions	03 8786 3449	
	SCHUETZ DSL (AUSTRALIA) PTY LTD	Food safe storage and transportation palletcons	1800 336 228	

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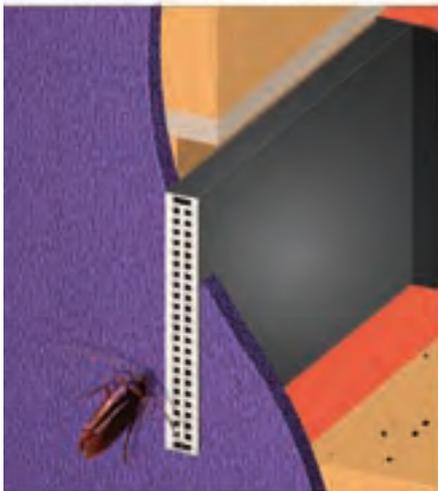
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