

It's not all hot air!

Halton puts
food safety and
energy under
the spotlight

FLOORING

Getting it right from
the bottom up

MICROBIAL TESTING

Reducing the guesswork

GLOBAL BURDEN OF FOODBORNE DISEASES

An Asian perspective

Halton



Richard Mallett
European Director of
HACCP International

How do you know

whether equipment, materials and services are
suitable for use in food processing and handling?

Only one mark truly confirms a non-ingredient product is food-safe. If it's not food-safe in every respect, it can't carry this mark – simple.

The HACCP International certification mark is aligned with the due diligence requirements of the world's leading food safety standards and quality systems. Ten key criteria are examined to give you that full assurance. Certified products need to satisfy ALL criteria – not just individual components. It's either completely fit for its purpose or it's not!



No ifs, no buts, it is or it isn't!

That's why products from these well respected manufacturers and many more carry the mark.



dyson airblade



We measure it.



HACCP INTERNATIONAL
eliminate the hazard - reduce the risk

www.haccp-international.com

Welcome

to the 11th HACCP International Bulletin



Clive Withinshaw,
Director, HACCP International

This Bulletin sees a modernisation of appearance and style though we think we have maintained the quality and breadth of content. Our readers are varied, coming from all sectors – manufacturers, distributors, caterers, retailers, QSRs, specifiers and academia. We like to think that the articles and news of certified products have equally wide appeal.

The release of BRC version 7, together with the earlier release of SQF version 7 and The United States' FSMA, herald the arrival of new era in food safety, particularly in terms of fraud and supply chain vulnerability. This is actually a new dawn for QA managers and auditors in particular – now also having to address potentially criminal activity risks. This is a very different, and additional, scenario to those of accidental contamination and process issues. This has serious ramifications for all involved and I urge you to consider where this leads.

The 'due diligence' requirements in purchasing incidental food contact products, as well as products that have a significant impact on food safety are an

increasingly important requirement and it is pleasing to see so many suppliers of such products helping their customers in managing this requirement through certification with us. Some excellent newly certified products are described in the following article.

Buyers might once have thought, "It's just a cloth" or "a glove is just a glove".

This is just not so. Our certification scheme now sees more products failing than passing and this is because "a glove is not just a glove and a cloth is not just a cloth." Many of these products are manufactured at the lowest possible cost to attract an increasing number of cost-driven buyers. We all know where this leads.

Materials used in some of these lesser known products have been found to be particularly nasty and production managers would freak out if they knew the half of it. Often the suppliers themselves don't even know their constitution!

Feel free to contact any of our offices with any questions you might have!

Thanks for subscribing. ✱

**A glove
is not just
a glove
and a cloth
is not just
a cloth."**



For more information on any article in this magazine or to submit editorial or a comment please email to ifsb@haccp.com.au

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HACCP CERTIFIED PRODUCTS IN THE NEWS

Well made, well designed and food safe

A look at some newly certified products, the issues that surround them and why they, and other similarly certified items, should be on approved suppliers lists.

It has been encouraging to see a diverse range of products joining our register. In this section, we might just look at three very different categories – perhaps illustrating the range of materials and equipment that is supplied to the food industry and the issues that we evaluate in the certification process - leading to real food safe solutions to the industry.

We have selected **Kitchen Disposables,**

Pest Control Chemicals and Flooring – perhaps in the next issue we might look at other diverse products such as Dishwashers, Ice Machines and Lighting

KITCHEN DISPOSABLES

Kimberly-Clark Professional has added a significant number of products to its food safe certificated product list with items from its operations in North and South America and the Asia Pacific region most recently.

Amongst others, these include **'WYPALL'** wiping solutions, **Scott's** paper towels and, from a brand new facility in Korea, **Kleenex** and Scott's towelling products.

Kimberly-Clark Professional has an international reputation for excellence in product design and manufacture. This is evident in the consideration the company has given to its choice of materials and components as well as their manufacturing processes and disciplines.



Biolos R1 hand dryer



- all new brushless motor
- low power consumption - only 1000W
- drying time only 10 seconds
- noise less than 80 db
- easily changeable hygienic HEPA 13 filter
- antibacterial coating with ION PURE®
- up to 85% less energy
- anti-splash provides clean surrounding
- automatic switch off after 20 seconds
- water collection reservoir
- water full sensor, filter change sensor
- remote control (uses and time in operation)
- colors: pearlescent white, silver, black
- HACCP food safety certificate

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“Waiter – there’s a hair in my food!”

**How often do we hear that or similar in these modern times?
Isn’t hair containment meant to be ‘fully covered’ by
HACCP based food safety programmes?**

Richard Burnet explains the issues

Hair is a common and much resented contaminant of food and, when it occurs, it can become a major consumer issue.

Aburnet are a leading UK manufacturer and distributor of hair containment products and according to their managing director, Richard Burnet, the cause of this problem is straight forward, “Food handlers are simply not using decent hair containment products”

Richard goes on to say “Leading food processors who adopt best practices have already achieved dramatic reductions and even zero hair complaints and fines over a sustained time period by using hair containment products which are fit for purpose. They have done this with reduced costs - just by choosing an appropriate product that actually works.

HACCP International, the product certification body, recently evaluated a selection of our hair coverings from both products widely used in industry and those that are new to the market. Their results reveal some conclusions which, while startling to industry, were of little surprise to us. The mob cap, widely used in industry, failed the HACCP International evaluation as a method of hair containment.”

The results of the HACCP International’s findings are interesting because they sit beside research undertaken by University of Bolton, England and endorsements from the President of the Trichological Society 2014-16, Professor Barry Stevens, FTTS.



HACCP International - NOT Certified - Mob cap 12GSM



HACCP International - Certified, KleenCap

The above images show the HACCP International approved HairBarrier fabrics such as those used in KleenCap, working to prevent hairs from passing through the fabric due

to the HairBarrier triple technologies of positive attraction, anti-slip and light uniform recoil. KleenCap’s ‘STAYCOOL’ property wicks moisture through the fabric to the atmosphere keeping workers cool and comfortable and, at the same time, reducing fidgeting which research shows pushes more hairs through ordinary fabrics.

According to Professor Subhash Anand MBE, Professor of Technical Textiles, Institute for Materials Research and Innovation, University of Bolton, England, “Nonwoven materials such as those often used in mob and bouffant caps should not be used as a hair barrier fabric. Due to the nonwoven manufacturing methods of spinning the fibres, it is impossible to control the alignment and spacing of the fibres leading to variable fabric structure with inherent gaps and different densities, allowing hairs to protrude through. Due to the fabrics rigidity, it will neither hold the head of hair nor grip strands of hair that protrude through the fabric. It is a totally unsuitable material”.

Hairs readily pass through standard woven, knitted and more specifically nonwoven materials due to the abrasion of hairs against the fabric, such as when scratching or turning the head. Short hair has been shown to protrude standard head coverings on average 2X more than longer hair and is therefore a greater risk to food safety.

According to Professor Barry Stevens, FTTS, President of the Trichological Society 2014-16, hair contamination is caused by:

- “Natural shedding – the average human being sheds 40 to 130 hairs per day
- Modern styling practices such as higher temperature settings on hair driers or tongs, colouring, bleaching, relaxing and waving by heat or chemical processes will weaken hair shafts rendering them vulnerable to severance. Severed hair needs to be prevented from contaminating food”.

Leading food processors in The UK have used both KleenCaps over HairTite HiCare HygieNets to eliminate hair complaints – helping them to be awarded a ‘Gold’ status from a key retail customer – one of only three sites in the UK to achieve such a high accolade in 2015.

Richard Burnet emphasises that “this is a problem that simply should not exist and the fact that it does is down to people using products that look like they might do the job but are actually not fit for purpose. We are proud to offer products that actually work which is why we sought and were happy to get, certification.” *

**For samples, advice and a trial, contact your distributor. For distributors, contact the UK manufacturers, ABurnet Ltd.
E: info@aburnet.co.uk
T : +44(0)115-944-5909
www.aburnet.co.uk**



Halton introduces safe and energy efficient solutions for the ventilation of professional kitchens.

**Food safety, energy savings
and lighting solutions all under
the same hood!**

In an earlier edition of this Magazine, we ran an article headed "The Impact of Exhaust Ventilation on the Commercial Kitchens, Food Safety and HACCP". Times have moved on and now Halton's high efficiency hoods can play a significantly greater role not just in ventilating the environment but also in food safe operations. They capture very high levels of smoke while reducing the exhaust airflow rates by 35 to 40% when compared to traditional hoods ... and all while saving energy!

Being safe and saving energy is good, but being safe and making massive energy savings is even better. And for good reasons! At 800 kWh/m²(1), catering operations are the most energy-intensive activity performed in commercial and residential buildings, far greater energy usage than the second placed hospital sector (at 600 kWh/m²) in this regard.

The cheapest energy is the energy you don't use! With a great deal of intelligence and several innovations, the Demand Controlled Ventilation (DCV) system M.A.R.V.E.L.⁽²⁾ can truly and safely, bring that flow rate reduction to 64%, massively reducing the energy bill.

Benefit from massive energy savings with a Demand Controlled Ventilation system

The M.A.R.V.E.L. system is suitable for hoods and ventilated ceilings, a perfect combination of technological innovations.

The first innovation is emblematic of the system. M.A.R.V.E.L. 'scans' the surface of the cooking equipment to determine, in real time, the status of the appliances: switched off, idle (warming up and on hold for cooking) or in the process of cooking. Each status corresponds to a different exhaust airflow need. The maximum value is used only in cooking mode, for a limited time period. This leads to the first drastic reduction of the exhaust airflows.

Secondly, M.A.R.V.E.L. has the unique ability to adjust the exhaust airflow, hood by hood, and in a fully independent way. If just one cooking range is operating, the airflow for that corresponding hood only adjusts automatically. The other hoods will continue to operate at a lower flow rate. It works the same way with the zones of a ventilated ceiling. This ability further reduces the exhaust airflows.

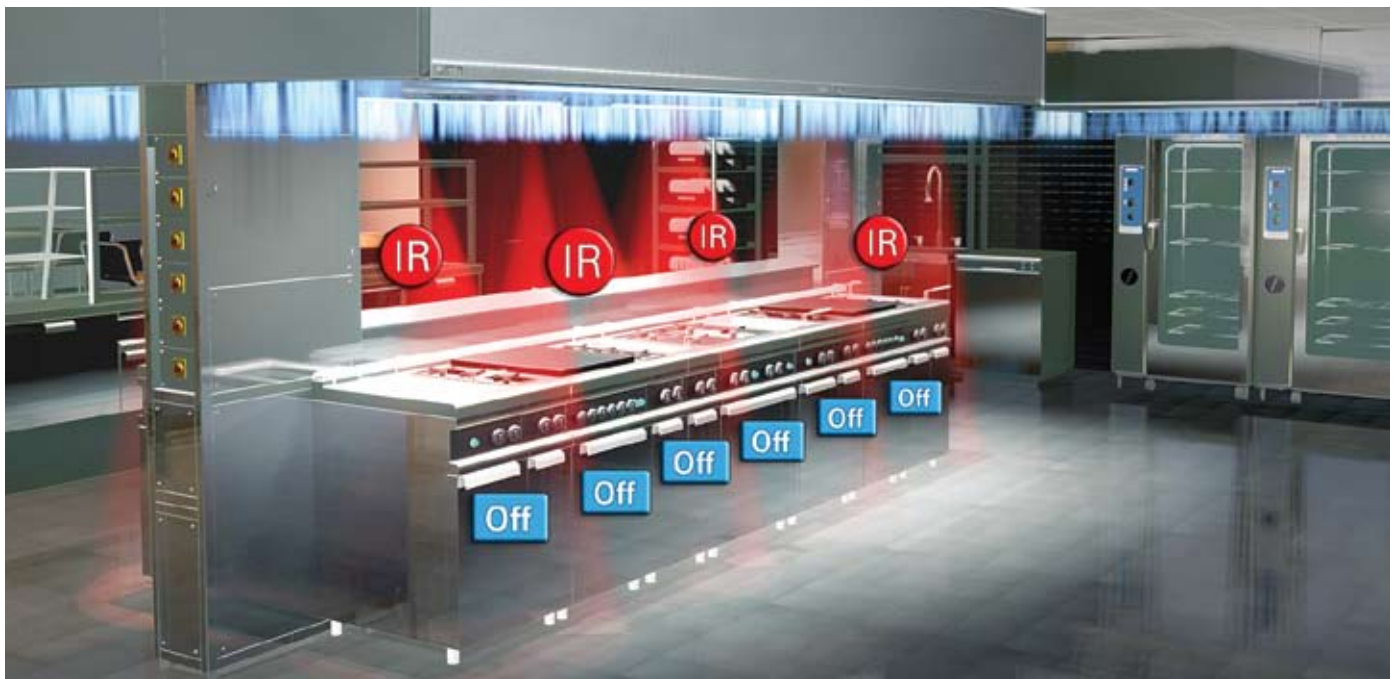
To use patisserie terminology, here is the icing on the cake! M.A.R.V.E.L. continually regulates the speed of the fans to obtain the required flow rates with minimal pressure. Their power consumption is thus kept to the bare minimum.

M.A.R.V.E.L. currently represents the most efficient Demand Controlled Ventilation system available.

Be safe and control the balance of your ventilation system supply

This brings back on the table the vital topic of food safety.

When talking about a safe kitchen ventilation system, it is not only a question of exhausting smoke and inducing fresh air in. Hygiene can rapidly become compromised if a correct balance between supply and exhaust is NOT kept at all times and in each area of the kitchen. Preventing cross contamination is one of the core principles of a well-designed facility operating in accordance with a HACCP program. Soiled product should not contaminate clean areas. Balance and control of air pressure plays an essential part in this. The



Halton M.A.R.V.E.L. IRIS sensors



Halton M.A.R.V.E.L. airflow curve

supply must strictly follow the “rhythm”, and this rhythm is ‘melodious’ when a M.A.R.V.E.L. DCV system is used.

To reach that goal, exhaust and supply units firstly have to “communicate” efficiently with M.A.R.V.E.L. Then, the supply units have to be combined with VAV (Variable Air Volume) boxes. Strategically placed in the supply ductwork, they are used to intelligently distribute the air through the different ductwork branches, i.e. kitchen areas. They are vital in maintaining that required balance between exhaust and supply. All such equipment must be kitchen specific and should be integrated within specifically engineered ventilation solutions.

Halton’s M.A.R.V.E.L. DCV system, the PolluStop (exhaust), Aerolys (supply) and Extenso (exhaust and supply) units have been specifically developed for professional kitchens. Complemented by kitchen-specific VAV boxes, they comprise a consistent, efficient and fully compatible package that provides the promised massive energy savings without compromising the vital hygienic balance between exhaust and supply.

Keep reading because the benefits don’t stop there!

Establish your kitchen where you want and further increase your savings

The new generation of PolluStop exhaust units now feature – as part of the air pollution treatment process – a highly



Halton exhaust supply units

efficient and self-cleaning Electrostatic Precipitator (ESP) combined with the new Capture Ray™ module.

The first increases the lifetime of downstream filters by at least 80%, bringing the particles and moisture control to the highest levels. The second neutralises the grease particles but above all - and additional to any ESP - it also acts on grease vapours and Volatile Organic Compounds (VOCs), two factors in odour transfer.

Airborne particulates and cooking odours are reduced to such minimal levels that the need to discharge at roof level can be negated, eliminating many neighbourhood and safety concerns and allowing restaurants or facilities to be established where they might otherwise have proved difficult!

To suggest that energy efficiency and recovery dominates debate nowadays is no understatement. Provisions for such issues are already compulsory in professional kitchens in a number of European countries. With grease deposits absent from exchanger surfaces, not only is recovery effectiveness facilitated but also, over time, heat-exchanger maintenance and cleaning costs are also reduced.

Benefit from pure and hygienic air inside your kitchen

With the ‘Urban Pack’, included in the Aerolys units, pure and hygienic air is provided inside the kitchen. Two specific filtration stages prevent outdoor pollution from city centres accumulating in the kitchen, thereby minimizing the potential of airborne food bacteria and maximising kitchen staff health and comfort. These aspects are often overlooked when it comes to selecting the right equipment to supply fresh air into the kitchen. Yet, it is of great importance in spaces where sometimes thousands of meals are prepared by a large number of staff all of whom deserve to breathe good quality air and enjoy a comfortable working environment.

Aerolys uses the energy which has been recovered by the PolluStop unit for the fresh air pre-treatment. The energy savings generated in this way are in addition to those provided by M.A.R.V.E.L.

All packaged in a HACCP International certified solution guaranteeing the highest levels of food safety and complementing the requirements of the world’s leading food safety and quality schemes.

The brand new range of combined exhaust and supply units called Extenso brings together all the benefits of PolluStop and Aerolys. With a much smaller footprint for the air handling plant, it also has the unique advantage of offering both air-to-air and air-to-water heat recovery within a single compact unit.

Hygiene, savings and kitchen staff wellbeing is also a question of light

The lighting in professional kitchens has been neglected too often and yet it is an aspect which is extremely important. We’re not just talking about energy efficiency and working conditions but also about hygiene. Good quality lighting allows, for instance, the easy identification of dirt in a kitchen, which might otherwise go unnoticed.

Traditional LED solutions came late to this industry sector because of the high lighting levels required. Once they began to be installed - thanks to their enticing energy features - they quickly gained a reputation of degrading the visual comfort of the kitchen, mainly because of light temperature and dazzling



Halton Culinary light

problems. Many were not specially designed to handle humid and hot conditions one typically finds in kitchen extract systems.

Kitchens are characterised by the presence of many reflective surfaces, such as stainless steel. Furthermore, the lack of space has traditionally complicated the lighting design and options. Put simply, lighting has always been handled poorly in these applications.

Halton's LED based lighting system has been specifically and exclusively designed for professional kitchens, making it the first 'Culinary Light'.

It is based on the latest generation of powerful and energy efficient LEDs, fitted in two types of spot - one with a broad beam (4,000°K colour temperature) and the other with a focused beam (3,000°K colour temperature). The specific reflector used on the broad beam spots has been designed to avoid dazzling the kitchen staff.

Several studies have shown that the lighting levels demanded in kitchens are, by current day standards, too low. This innovative lighting system enables you to adjust the general lighting between 500 to 750 lx, while specific zones benefit of a lighting of 1,000 lx, especially in areas with quality control, such as the outlet of a dishwasher.

Halton's 'Culinary Light' combines the lowest return times on investment, provides the best visual comfort in professional kitchens enhancing food's visual aspect rather than damaging it and also carries HACCP International's food safety certification. That certification process, as well as addressing the risk from physical contamination, looks closely at the hygienic design and cleanability of such products.

Massive savings, enhanced working conditions, direct contribution to hygiene, nowadays kitchen ventilation solutions lead the long overdue revolution. To be enjoyed without moderation! ❁

For further information visit:
www.halton.com/foodservice

Halton

(1) Energy Efficiency in Buildings, Transforming the Market (WBCSD World Business Council for Sustainable Development).
(2) Model-based Automated Regulation of Ventilation Exhaust Levels.



Halton MobiChef - Move the show where it is of most value!

Catering is not just about eating food, it's an experience. The kitchen of today is open, putting on a show for guests who want to see the preparation of what they are going to savour.

Halton MobiChef is a plug and play, highly efficient and autonomous mobile cooking station. It can be used with electric hobs or 700/900 mm modular cooking appliances.

This innovation moves the show amongst the guests, where it is of most value. The average client-spend gained by such live cooking concepts, based on fresh ingredients, is significantly higher. Unleashed business opportunities!



Enabling Wellbeing
www.halton.com/foodservice



Halton

A cautionary tale for all food businesses as an American court gets tough on food poisoning.

Salmonella outbreak brings sentences ranging from 3 to 28 years among a total of 63.

It is not unreasonable to expect the world to act in a similar tough manner when irresponsible food processors take lives.

In September last year, an American peanut company mogul, Stuart Parnell, began facing the prospect of spending the rest of his life in prison after a US federal judge in Georgia sentenced him to 28 years for shipping tainted products that caused a deadly nationwide salmonella outbreak in 2008.

Some seven years after the event, he was convicted of conspiracy, obstruction of justice, wire fraud and other crimes that killed nine people, sickened more than 700 and prompted one of the largest food recalls in U.S. history. Two others involved with the now-bankrupt company also were sentenced to long prison terms.

These sentences are the first felony punishments for executives in a food-borne outbreak in 77 years, according to attorney Bill Marler, who represents several victims of Parnell's products.

"It's significant - very significant," Marler said after the sentencing. "Even if (they) end up not spending much time in jail, the sentences send a strong message to executives."

The four victims testified during the sentencing, including 7-year-old Jacob Hurley, who was 3 when he became seriously ill from crackers made with tainted peanut products. Also present was Lou Tousignant, whose 78-year-old father, Cliff, died after eating tainted peanut butter.

Cliff Tousignant "was a Korean War vet with three Purple Hearts who lived in Minnesota. He got all shot up (in the war)," Marler said. "So he comes back and dies from eating peanut butter? There's something fundamentally wrong with that."

In October, two former managers at the Georgia peanut plant were also sentenced to prison sentences though they received significantly lesser time behind bars than the ex-boss they helped convict.

A U.S. District Court judge in Albany, Georgia, sentenced Daniel Kilgore to six years in prison and gave Samuel Lightsey a three-year prison term. Both men, at different times, managed the Peanut Corporation of America's Georgian processing plant.

Kilgore and Lightsey would have faced decades in prison had they been convicted at trial. Instead, both pleaded guilty to charges that they knowingly shipped tainted food to customers and faked the results of lab tests intended to screen for salmonella.

"Mr. Kilgore and Mr. Lightsey acknowledged their wrongdoing," U.S. Attorney Michael Moore, whose office prosecuted the case in the Middle District of Georgia, said in statement. "and today their sentences reflect not only their acceptance of that responsibility, but also the requirement of accountability."

Investigators discovered the Georgia plant had a leaky roof, cock roaches and evidence of rodents, all ingredients for



brewing salmonella. They also uncovered emails and records showing food confirmed by lab tests to contain salmonella while other batches were never tested at all.

Prosecutors said chopped peanuts, peanut butter and peanut paste tainted with salmonella were shipped to manufacturers who used them in products from snack crackers to pet food.

Before Parnell and two co-defendants were sentenced, both Lightsey and Kilgore offered apologies to victims' relatives who filled the courtroom.

"I'm sincerely sorry to all of you here and all the ones who are not here," Lightsey said.

Kilgore also apologized "for my part in any of this and for my actions, and for my lack of action."

Parnell's attorneys blamed the scheming on Lightsey and Kilgore. They argued Parnell, who ran the business from his home in Lynchburg, Virginia, was a poor manager who failed to keep up with his employees' actions.

Parnell's brother, food broker Michael Parnell, received 20 years in prison. Mary Wilkerson, the plant's quality control manager, got five years.

Peanut Corporation closed after declaring bankruptcy in 2009.

Three deaths linked to the outbreak occurred in Minnesota, two in Ohio, two in Virginia, one in Idaho and one in North Carolina.

Tainted products from Parnell's Georgia processing plant led to the recall of approximately 4,000 processed foods, from crackers to pet food.

Email, lab and financial records showed that Parnell was aware of the conditions and wrote an email to a manager in 2007, saying: "Just ship it." In some cases, products were shipped the same day they were processed rather than held for lab tests, and records were faked to indicate the outgoing batches passed salmonella tests.

Michael Parnell, the executive's brother, a food broker who provided companies like Kellogg's with peanut paste from Peanut Corporation of America, was sentenced to 20 years in prison. Mary Wilkerson, quality control manager at the Georgia-based factory, was sentenced to five years in prison.

Marler said he would not be surprised if Parnell and his co-defendants served just a few years.

"It's not so much how much time they spend, it's the fact that the government, for the first time since 1938, prosecuted corporate executives poisoning customers," Marler said.

"All of them view this as a kind of a door closing. They can put this behind them now," Marler said. "The same families who testified were the ones who testified before Congress asking for more food safety regulations. It's not just about justice in a criminal court sense - it's about stopping this from happening to other people again." ❀

Life on the shelf: can antibacterial packaging help?

By Dr Richard Hastings, Technical Director at BioCote Ltd

BioCote is a market leading antimicrobial solutions provider. When manufactured into products such as kitchen surfaces to industrial and domestic appliances, BioCote additives provide the ultimate protection against microbes, such as bacteria and mould – reducing the risk of contamination in everyday activity. But here, we are going to explore its application in food packaging where significant benefits could result for the food industry and the planet.

One of the great successes of human ingenuity is the treatment of foods to preserve their usability. It is believed Homo sapiens migrated into colder climates tens of thousands of years ago because, whilst food tended to be scarcer, it survived longer because of the lower temperatures. Chilling food in order to extend its shelf life is one of the best known methods in a range of preservation methods that are used today. Food preservation methods, from the historic to the modern, are based on the need to inhibit the metabolic activity of food-contaminating microorganisms. In more recent years, sophisticated technologies continue to improve shelf life and reduce food wastage. Some studies⁽¹⁾ suggest that up to 50% of the world's food production is wasted. WRAP estimates that an increase of just one day on product life across a range of foods could prevent around 250,000 tonnes of food waste each year.

Antimicrobials: A contributor to the solution?

One particular technological development holds the potential to contribute greatly in the reduction of food going to waste. Various substances possess the ability to inhibit the growth of food-spoiling microorganisms. Some of these active substances have been successfully added to polymers used to make food packaging. The concept is simple: if the growth of these microorganisms can be inhibited by the activity of the antimicrobials incorporated into packaging materials the spoilage point of food will be deferred.

There are myriad natural and man-made substances that are candidates for incorporating into food packaging with the specific intention of extending shelf-life. Some antimicrobials are better than others because they are safer for food contact, being more acceptable in terms of cost and demonstrating higher levels of effective antimicrobial activity from the packaging material. This last factor - packaging material with the ability to inhibit microbial growth - is one that needs to be based on evidence produced from meaningful studies.

Studies & Research

BioCote Ltd (UK) are leaders in antimicrobial technology and have undertaken extensive studies into the efficacy of antimicrobial technologies in real-world environments as well as in the lab. To do this, BioCote collaborated with commercial organisations involved in the food industry with the objective

of measuring the difference antimicrobial food packaging made to shelf-life of the food studied. This article summarises those studies and seeks to make conclusions about the potential benefits of antimicrobial technology in food packaging.

The basic approach to the studies was to package foodstuffs identically in BioCote®-treated and 2 types of untreated packaging and store as normal. Periodically, sufficient representative samples in both types of packaging were retrieved from storage and examined in the laboratory to quantify levels of microorganisms present on the surface of the foods.

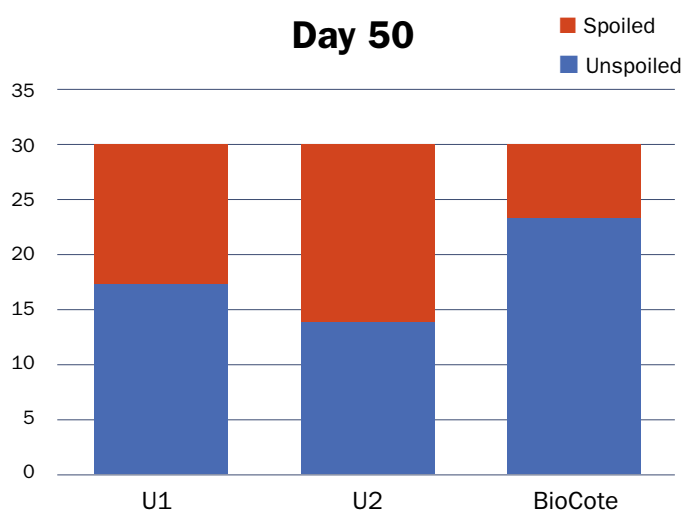
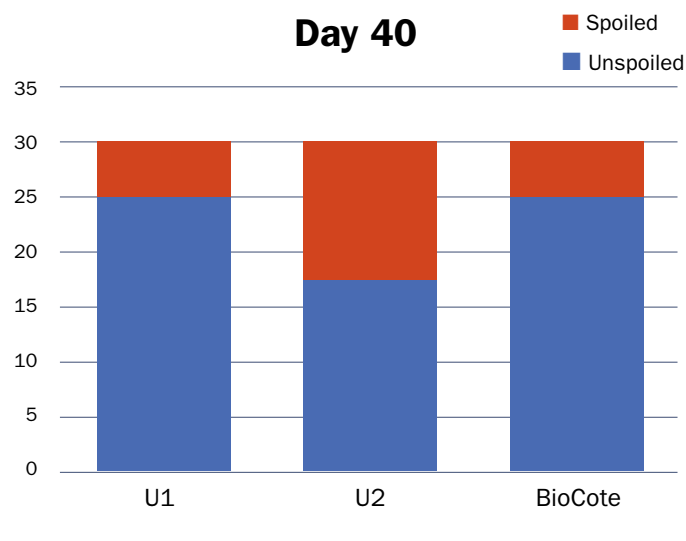


Table: Microbial analysis to determine numbers of unspoilt red meat samples per microbial group of interest over study period.
U1 = Untreated packaging 1, U2 = Untreated packaging, BioCote® - treated antimicrobial packaging

The Results

All meat samples obtained from primals stored in each packaging type were unspoilt by microbial contamination after 30 days in cold storage. This 30 day period of storage was composed of 20 days at 1°C and a subsequent 10 days at 6°C.

At the end of the study period, the treated samples were collectively less spoiled than both types of untreated package samples.”

Conclusions

After 30 days of chilled storage none of the samples packaged in either BioCote®-treated or untreated materials exhibited microbial growth to the point of food spoilage. By day 40, samples of all three packaging types were exhibiting microbial spoilage. Specifically, type 2 untreated packaging demonstrated the most spoiled samples (13 spoiled samples from 30), whereas the untreated packaging type 1 and the

BioCote®-treated packaging performed identically (5 spoiled samples from 30).

At the end of the study period, the treated samples were collectively less spoiled than both types of untreated package samples. Specifically, while Type 2 untreated packaging showed a spoilage ratio of 16/30, type two showed 13/30. The BioCote®-treated package samples produced the fewest number of spoiled samples (6/30). In contrast to both untreated packaging types, the BioCote®-treated packaging did not produce any samples spoiled by the growth of yeasts throughout the course of the study.

These data suggest that adding a BioCote® antimicrobial additive to food packaging material can produce a beneficial outcome with respect to the shelf life of food. The main finding of this study has been reproduced in other similar studies examining the effect of antimicrobial packaging on the longevity of various stored meat types. So, will adding antimicrobials single-handedly solve the world's food waste problems? The short answer, of course, is no. But, by extending the shelf life of certain food products it could be a contributing factor. ✱

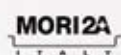
Founded in 1994, BioCote today supplies clients in 50 countries around the world. For more information visit www.biocote.com.



(1) http://www.imeche.org/docs/default-source/reports/Global_Food_Report.pdf



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Update from HACCP International's office in The USA



Debby Newslow, Vice President - Americas
gives you her take on equipment and material safety as the
**FSMA FDA Preventive Controls for Human Foods
(21 CFR 117) becomes a reality**

The wait is over! It is time to comply.

'Title 21 of the Code of Federal Regulation Part 117 –
Current Good Manufacturing Practice, Hazard Analysis, and
Risk-based Preventive Controls for Human Food' has become a reality!

This regulation is made of several parts, most of which have been released or scheduled for release in the next few months.

This regulation applies to facilities that manufacture, process, pack or hold human food as defined in 21CFR 117.1. Its focus is on prevention. The days when “we didn’t have time to do it right, but had time to do it over” are gone forever. We can no longer learn from our mistakes, we must not make the mistakes, because these mistakes can and do result in serious food safety events.

This concept requires a strong focus on critical programs that prevent food safety events rather than reacting to problems as they occur. Preventive controls not only include Critical Control Points but also for controls for some of the hazards that we use to address in our prerequisite programs (PRPs). Examples include sanitation, allergen control and supplier management.

The timing for having the opportunity to utilize HACCP International's certification in the United States is perfect. It is so very important that food manufacturers have the assurance that there are standards that apply the same “science” and “experience” based analysis related to ingredients, packaging, and finished products to product contact surfaces (equipment, materials, chemicals, etc.) and to food safety and quality critical services (i.e. pest control, calibration, etc.). Such products need to be subjected to an auditable due diligence process and often this can be difficult for manufacturers to do or be beyond their expertise. That's why this 3rd party certification is so useful. Many suppliers of such products carry this certification in The USA.

Some of the world's best known brands carry this certification here in the United States – **Silikal Flooring, 3M, Dyson, BASE, Bayer, SCA Hygiene, Kimberly Clark, Dyson, Testo and Flowcrete** to name a few. These companies have successfully applied for certification – demonstrating their commitment to the food safety and the food industry by providing food businesses with that due diligence.

All aspects of the process must be considered during HACCP International's food safety evaluation. Dave McNeece,

Managing Director of the aforementioned Flowcrete Americas stated in his article “The Role of the Floor in a HACCP Food Safety Management System” (Food Manufacturing, January/February 2016) that it is critical to get the floor right because this is “a critical part of the HACCP process. Otherwise, it can present a variety of challenging health and safety concerns. He said “One of the most common findings during our food safety audits are decayed floors. Water puddling allowing organic matter to build up in crevices, drains, walls, under and in cracks in the floor can make controlling and eliminating hazards an impossible challenge. So many times the operations repair the floors but within months, the condition is right back to where it was or worse. When my clients ask me what should we do? It is great to be able to recommend a company that I know has had their floor tested and approved that relates directly to food safety.”

Flooring is one example. The equipment used to clean with is another. Always think about cross contamination. Can a situation cause or contribute to a cross contamination issue. Many organizations now have color coded cleaning utensils such as brooms, buckets, mops, etc. This type of system usually separates between, raw, finished products and external use. It is a very important tool in prevention. But is just color coding enough for prevention? Is the equipment themselves safe? How are they constructed? It wasn't too long ago that one of my clients discovered that their magnet had caught several “staples”. After a lengthy investigation, it was found that the bristles on the brushes were attached by staples. Evidently through use and exposure to cleaning chemicals, the brushes started to deteriorate. Do we now as a food product manufacturer have to do an on-site audit of the brush supplier to be sure that their product is safe for our equipment and our product? Could it deteriorate contributing to a hazard to our system? Maybe that would work for some larger companies, but it would most likely be very costly and do we have the “expertise” and the “standard” to audit with? It is great to be able to choose a supplier that has been evaluated

based on specific product standards.

Food safety management programs including those schemes approved by the Global Food Safety Initiative (GFSI) state that the hazard analysis must include product contact surfaces and processing aids. This, in most instances, is a very long list including such items as lubricants, cleaners, cleaning utensils, equipment surfaces, floors, walls, drains, and much more. The advantage of being able to choose items that have the HACCP International seal doesn't just tick the 'due diligence box' but also builds confidence and efficiency into our food safety HACCP programs.

In being "proactive", we must examine every aspect of the process without exception. Time is a precious commodity in today's world, the continued safety of our food products is vital. Our role at HACCP International-Americas becomes more critical every day. We are fortunate to have the support of our worldwide partners including the vast expertise and experience that they are sharing with us here in America. In anticipation of more companies joining our global initiatives, we are expanding our HACCP International Technical Team so that we can continue to provide our same level of expertise and efficiency. We look forward to hearing from our readers. No matter where you are in the world, please do not hesitate to contact us either by email to myself (debby.n@haccp-international.com) or Bill Dubose (bill.d@haccp-international.com). You may also contact us in our Americas corporate office at 407-992-6223.

Read more about product contact surfaces and HACCP International in Debby's latest book *Food Safety Management Programs* available at (www.crcpress.com). *



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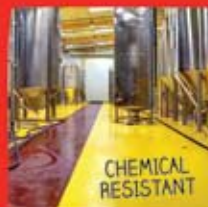
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HACCP CERTIFIED PRODUCTS IN THE NEWS

Our evaluation technologists have been impressed with the standard of care that Kimberly-Clark has demonstrated all over the world from Atlanta to Singapore and Sydney. They do have food safety and the food industry front of mind.

In the United States, **SCA Hygiene** has successfully submitted a number of products for certification in this field. These include **Tork** paper wipers and excellently designed and cleanable Tork Wash station dispenser.

*Look for the certification
and meet your
'due diligence'
requirements."*

The range of **3Ms** scourers from around the world has recently successfully undergone a complete re-evaluation. Traditional metal scourers have always presented a food safety risk but so do many of the man-made alternatives. 3Ms products are not only made from appropriate materials, they are also well - designed and packaged. From a food safety perspective, they meet the world's best practice – as well as doing the job they are designed for as effectively as any alternative.

PEST CONTROL CHEMICALS

Pest control substances are one of the few dangerous chemicals that the food industry has to employ in processing and handling facilities. As such, a strict due diligence is vital in determining which ones are appropriate for use. This is not something that can be left to the contractor – it is the facility's management's responsibility. To this end, HACCP International have a food safety certification scheme for pest control chemicals which examines the materials, toxicity, application, labelling, instructions for use, and registration among other items. This allows the pest contractor to source appropriate products and allows for completion of the due diligence process by food businesses.

Bayer CropScience, a world leader in this field, manufactures a wide range of pest control substances, many of which are designed particularly for the food industry sector. Those that are particularly appropriate for food business applications carry HACCP International's certification. Once again, the manufacturer has gone to great lengths to ensure the food industry, worldwide, is supplied not only with insecticides, rodenticides and methodologies that are effective against vermin but ones that are designed with food safety and

the requirements of leading food safety schemes front of mind.

Requirements for such product differ around the world however **Bayer's** certification for pest control chemicals is global and their identified food safe products can be found from Europe to the South Pacific and The Americas carrying the HACCP International certification mark.

That said, other suppliers of such products also carry the mark in various countries and regions around the world. In Europe, **Lodi** has added some products to their certification while **BASF**, **Syngenta** and **Sumitomo** carry a range of HACCP International certified products in their Asian and Australasian markets.

These certifications are regional or country specific, so do check each product with our register which can be found on line at haccp-international.com or haccp.com.au

FLOORING

Two flooring companies, **Cemcrete** and **Flowcrete** have added HACCP International's global certification to their qualifications in the last few months and their food safe floors are available America, Europe and Asia. **Sika** have also added certification to the the flooring products they distribute in Asia and Australasia.

Few in our industry sector do not understand the serious issues that flooring presents to the food processing sites and kitchens. No other industry submits flooring to as much abuse as ours!

With floors being attacked by high acid and alkaline products, extremes of temperature, foot traffic and constant moisture issues, it is hardly surprising that flooring problems often become a head chef's or production manager's nightmare. Solving floor problems is always time consuming, expensive and often halts production. Furthermore, flooring can present significant and on-going food safety issues in terms of cleaning and moisture or taint in the laying process. It's so important to get it right first time. Few can afford the disruption of a mistake.

HACCP International's evaluation process addresses all these issues closely to ensure that a certified floor is fit for purpose in this environment and will not compromise food safety in its application or use. These newly certified products from Flowcrete and Cemcrete are truly excellent and join a stable of certified alternatives. In the USA, Europe and Asia, the market can look with confidence to these products, as well as may other excellent food safe floor products such as those available through **Altro**, **Silikal** and **BASF Ucrete**.

It would be remiss, in discussing flooring not to remind the food industry that flooring needs drainage and that can present a plethora of additional food safety concerns if not addressed correctly. To this end, we would recommend specifiers and technical managers examine the food safe drainage solutions provided, all over the world, by **Blücher**. Their drainage solutions are truly excellent and have food safe design front of mind.

If you are looking for the very best food safe equipment and materials, check with us or our register. ❄



Global Burden of Foodborne Diseases

An Asian Perspective

A food secure world is one where there is a steady supply of nutritious, safe and accessible food for all. When conditions for food security are not met, problems arise and the most vulnerable sectors of society suffer.

One such problem is brought about by unsafe food containing harmful bacteria, viruses, parasites or chemical substances, causing more than 200 diseases—ranging from diarrhoea to cancers. Foodborne diseases are responsible for the death of 125,000 children under the age of 5 around the world, according to the World Health Organization (WHO).

In the recently published “WHO Estimates of the Global Burden of Foodborne Diseases,” the WHO reports that annually, as many as 600 million, or almost 1 in 10 people in the world, fall ill after consuming contaminated food. Of these, 420,000 people die.

The report presents the first global and regional estimates of the burden of foodborne diseases. The large disease burden from food highlights the importance of food safety, particularly in Africa, South-East Asia and other regions. Despite the data gaps and limitations of these initial estimates, it is clear that the global burden of foodborne diseases is considerable, and affects individuals of all ages, particularly young children and those living in low-income regions of the world.

“Unsafe food puts each one of us at risk, regardless of where we are in the world,” said Dr. Kazuaki Miyagishima,

Director of the WHO’s Department of Food Safety and Zoonoses, in his commentary following the publication of the report. “These illnesses are preventable. WHO has long worked to improve access to adequate, safe and nutritious food for everyone, particularly those most vulnerable to foodborne diseases,” he added.

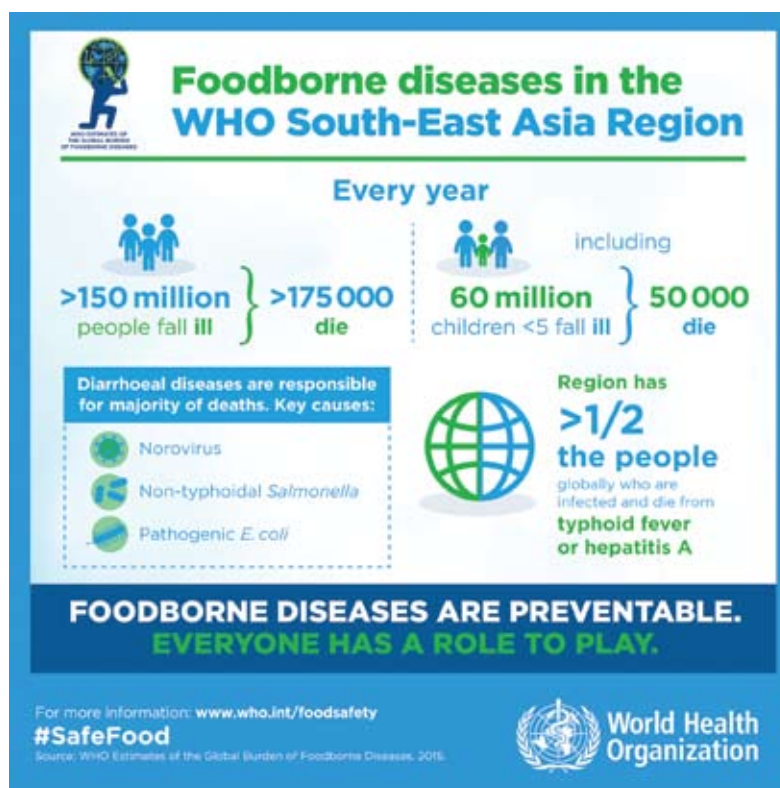
Foodborne diseases can cause short-term symptoms, such as nausea, vomiting and diarrhoea (commonly referred to as food poisoning), but can also cause longer-term illnesses, such as cancer, kidney or liver failure, brain and neural disorders.

These diseases may be more serious in children, pregnant women and those who are older or have a weakened immune system. Children who survive some of the more serious foodborne diseases may suffer from delayed physical and mental development, impacting their quality of life permanently.

According to the report, the risk of foodborne diseases is most severe in low- and middle-income countries, linked to preparing food with unsafe water; poor hygiene and inadequate conditions in food production and storage; lower levels of literacy and education; and insufficient food safety

legislation or implementation of such legislation.

Dr. Miyagishima pointed out that by incorporating the report’s estimates into policy development at both national and international levels, all stakeholders can contribute to improvements in safety throughout the food chain. These results will also help to direct future research activities.



“WHO has been working closely with governments to improve surveillance and reporting of foodborne diseases, to obtain a clearer picture of unique local challenges. This work, along with the global report, will support policy makers to put the right strategies in place to prevent, detect and manage foodborne risks,” adds Dr. Miyagishima.

In his conclusion, Dr. Miyagishima said he hopes that this new information will foster increased political attention and spur collective action to improve food safety, help protect those who are most vulnerable, and ultimately deliver reductions in these preventable illnesses, disabilities and deaths.

Food safety, nutrition and food security are inextricably linked. Unsafe food creates a vicious cycle of disease and malnutrition, and foodborne diseases can impede socioeconomic development by straining health care systems and harming national economies, tourism and trade.

Good collaboration between governments, producers and consumers helps ensure food safety. The industry, for its part, recognises that the best way to tackle food safety effectively on a global scale is through multi-sectoral partnerships.

Food Industry Asia (FIA) recognises the power of partnership to scale up food safety capacity, to protect food supply chains for the benefit of consumers, businesses and governments in the region. Recently, FIA signed an agreement with the World Bank for the Global Food Safety Partnership (GFSP) to help scale up food safety capacity building in China and the ASEAN region. This unique global partnership aims to drive a joined-up food safety agenda, especially in China, where there is a real opportunity to build a strong food safety culture between the government and the food industry.

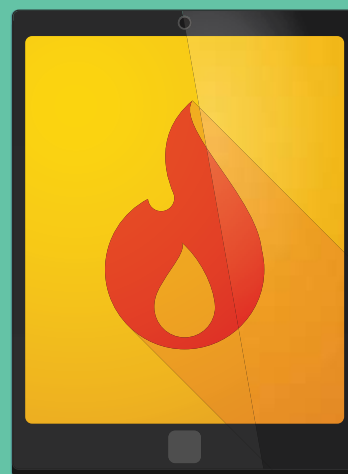
Since the creation of the GFSP in 2012, FIA has worked to ensure that this initiative is well-informed and responsive to the needs of the food and beverage sector in Asia. This agreement signals an important milestone in the private sector's commitment to invest in a strong food safety culture in the region.

Over the last five years, FIA has worked with other industry partners to provide significant input into shaping the future of investments in food safety competency development. This includes upgrading regulatory systems to meet internationally recognised standards.

Mr. Matt Kovac, Executive Director at FIA says: “FIA’s goal is to stimulate effective multi-stakeholder collaboration in Asia to deliver a positive impact for society. By working together, we know that companies, governments and academic experts can be greater than the sum of their parts. Together, we can join forces to strengthen supply chains, reduce foodborne illnesses and drive economic growth and prosperity by fostering a safe food culture.”

Everyone has a role to play in preventing foodborne diseases and ensuring that food is safe. From simple and basic principles, such as regular handwashing and proper handling of food, up to the herculean task of ensuring safety across the food supply chain; various sectors and organisations are doing their part and continuously building their capacities toward the common goal of food safety. More importantly, with the publication of the “WHO Estimates of the Global Burden of Foodborne Diseases” report, governments and the food industry can now make use of reliable data that show the human costs of unsafe and contaminated food to come up with targeted policies and actions. ❀

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www.worldfooddayusa.org

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Food Industry Asia (FIA)

www.foodindustry.asia

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The World Health Organization (WHO)

www.who.int

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www.foodsafety.gov

A food safety treasure trove supported by The Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture, the U.S. Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC). ❀

Testing is a tool:

Improved microbial food safety assurance: tools and technologies to reduce the guesswork.



**Most people know
the basic rules of
food hygiene,
don't they?**

By Dr Tom Ross

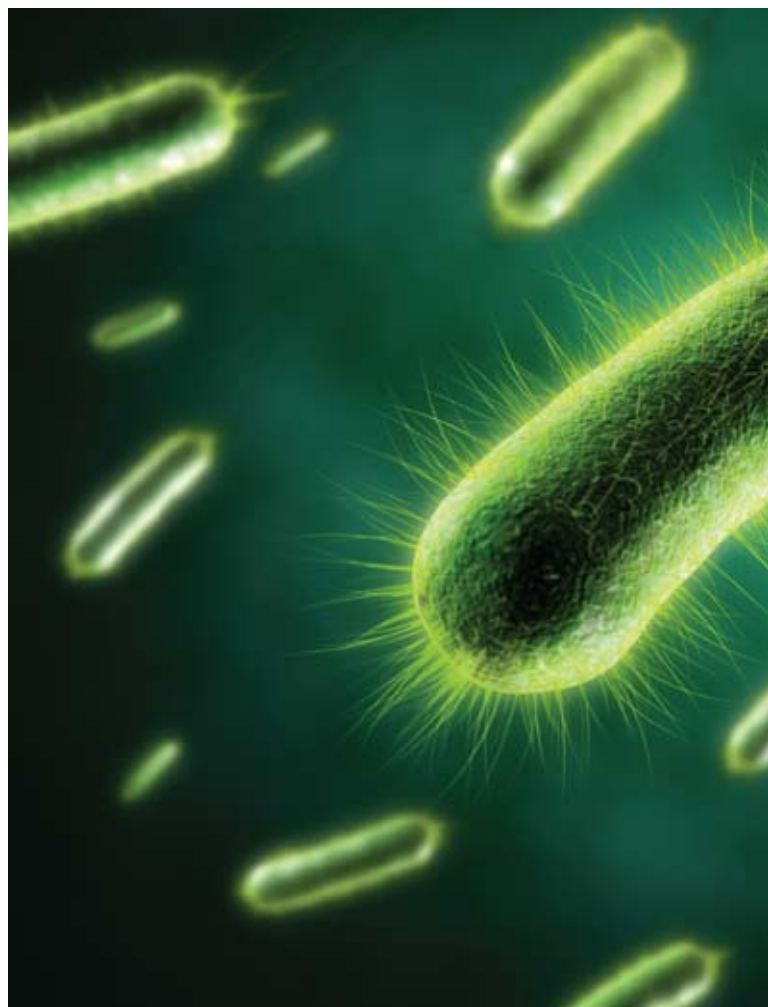
We teach our children to wash their hands after going to the toilet, we know to keep left-overs in the fridge and to cook, or at least wash, raw foods because they might be contaminated with 'germs'. We cover foods, we avoid mixing cooked and raw and, if the food is old or we're not sure about how it's been stored, we apply the old adage of "if in doubt, throw it out". They're really simple rules that reflect our awareness that invisible microbes might make us sick, and ways to minimise the risk. It's hardly rocket science, is it? And if these are simple rules that ordinary people apply, how much safer must it be when food professionals prepare and process foods?

If it is that easy, then it's hard to understand why – particularly given the enormous advances in biological science and technology over the last few decades – that there seems to have been no reduction in the incidence of microbial food-borne illness in decades.

Our foods, at source, are not free from microorganisms. Irrespective of technological advances, foods are still produced in natural environments that can harbour pathogenic microbes. Common food animals have a gut microbiota that can also harbour pathogens. Cows udders can become infected and contaminate milk with pathogens like *Staphylococcus aureus* or *Listeria monocytogenes*. Microbial hazards arise from myriad sources, often without signs that contamination has occurred.

The problem is compounded by expectations that fresh food is inherently 'healthier', and by longer food supply chains that can extend across continents. Longer supply chains with more handlers involved, and reduced use and choices of food preservatives, increase the chance of contamination and for microbes to grow to hazardous levels before consumption. Put simply, much higher standards of food hygiene are expected, and needed, but with fewer 'weapons' in the arsenal.

'End product' testing is useful only for batches of product that contain a high proportion of defective units, i.e., units that fail to meet relevant food safety criteria. If we assume that a just tolerable foodborne illness risk is one per 100 meals, to assure



this incidence by testing we would need to be able to detect batches of product that have ≥ 2 contaminated units per 100. We have the methods, particularly those involving enrichment and/or signal amplification (e.g. PCR), to detect a few microbes in a large volume (e.g., 125g) of food, but only if we know where to look. The problem is finding those one or two contaminated units among 100 with confidence. The probability of detection can be estimated using the "binomial distribution"⁽¹⁾ equation, that tells us how many samples are needed to be 95% certain that the batch as a whole has less ≤ 1 in 100 unacceptable units.

The binomial distribution tells us we'd need to take 299 samples, and they'd all have to test negative, to provide confidence that the frequency of contaminated units was less than one in 100. However to be confident that the frequency of contamination was less than one in 10,000 (essentially the estimated status quo), we'd need to take nearly 30,000 samples and all of them would have to be "clear"⁽²⁾. Those sorts of sampling numbers are simply not feasible.

So, what is the answer?

On May 25, 1961 then US President John F. Kennedy set a vision for his nation, that USA should "commit itself to achieving the goal... of landing a man on the moon and returning him safely to the earth." That speech started the 'space race', but the race was not without drama. The US space

(1) To be strictly correct, we should use another, related, equation called the 'hypergeometric distribution', but for almost all practical purposes the binomial distribution gives the same result.

(2) Reliable on-line tools that can perform these calculations to design or assess the reliability of sampling plans can be found at: http://www.icmsf.org/main/software_downloads.html, or <http://www.fstools.org/samplingmodel/>



safety of the astronauts' food supply was regarded as critical which led to the application of FMECA to food production, eventually spawning the Hazard Analysis Critical Control Points (HACCP) system. HACCP is now the most widely endorsed approach to food safety management in the world.

The basic principle of HACCP is that by understanding where hazards arise in food processes and by putting in place procedures to prevent, control or remove them, those hazards can be controlled in the end product to ensure the safety of the food and to minimise reliance on "end product" testing. Indeed, before HACCP, quality assurance for space foods initially consumed most of the food through testing.

Sooner or later, if you perform HACCP properly, you end up asking questions that need quantitative answers, like "how much control is needed" and "how can it be achieved"? For instance what times, and temperatures, or product formulations are needed to control specific microbial hazards?

To answer those questions requires a high level of expert knowledge because of the diversity of behaviour and environmental limits of different microbial hazards. Thus, while HACCP is founded on a logical a system that allows for the early detection and elimination of specific hazards the correct application of the concept requires comprehensive expert knowledge.

Fortunately, food microbiology is predictable and the reproducibility of microbial behaviour in foods does offers great potential to food safety managers.

Microbes can't think, ergo Predictive Microbiology

Bacteria and fungi can't think. They don't have free will. As such, they tend to behave reproducibly in response to their environment, which has led to the development of the discipline of predictive food microbiology.

The basic premise of predictive food microbiology is that the behaviour (growth potential, growth rate, inactivation) of microorganisms is deterministic and able to be predicted from:

- specific characteristics of the micro-organism itself
- the immediate environment of the micro-organism (i.e., food composition and storage conditions)
- time the organism is in those conditions and – sometimes –
- the previous environment (because it affects lag time, and may affect resistance to inimical conditions).

In practice, the information about those responses is derived from systematic studies in research laboratories or gleaned and collated from the published scientific literature. The patterns of response are characterised and the data and patterns summarised as mathematical equations, called "predictive microbiology models". In essence, these equations represent condensed quantitative knowledge of the microbial ecology of foods.

No matter how much a researcher knows, or how well that knowledge can be summarised in a mathematical model, to be useful that knowledge still needs to be communicated and made accessible to people in the food industry in a form that they can use to improve food safety or shelf life. Accordingly, the equations are usually integrated into computer software that automates the calculations to enable quick predictions of microbial changes in foods over time.

Many of these models are publicly available and can be downloaded, or used, for free. As an example of the depth of



The Expedition 20 crew members share a meal in the Unity node of the International Space Station. Image Credit: NASA

program had many spectacular explosive failures and the rocket scientists realized there was a weakness in the way that the rockets were assembled and constructed. Through those failures it became clear that new techniques for assuring the quality of individual components and their final integration were needed.

A technique called Failure Mode, Effects, and Criticality Analysis (FMECA), first developed by the US Army in 1949 was applied to the Apollo program. That analysis focused attention on ensuring the absolute reliability of 'mission critical' components, including the astronauts themselves. Thus, the

FACTERIA

Hepatitis A

Hepatitis A is becoming increasingly common and is now a major food-borne illness concern both in Australia and elsewhere in the world. The recent product recall linked to frozen berries in Australia has sharply focussed the food industry and the consumer on this potential contaminant of food.

What is Hepatitis A?

It is a virus that results in liver disease. It can effect anyone at any age. The Hepatitis A virus (HAV) is found in faeces and is spread from human to human when contaminated items are placed in the mouth. The virus can also be spread from HAV – infected animals to humans. Poor sanitation processes and poor personal hygiene are far and away the most common causes of HAV.

What are the symptoms?

Signs of infection include yellow eyes or a 'jaundiced' complexion, dark urine, nausea, fever, fatigue, vomiting, stomach pains and/or loss of appetite. Signs of infection normally appear within six weeks of exposure though children rarely display symptoms of infection. Three out of four adults will develop these symptoms when infected over several days.

Making it a more difficult problem is the fact that HAV can be spread about one week before symptoms appear and during the first week of those symptoms. In this way an infected person spreads the disease unknowingly.

Unpleasant as it is, it is not a long-term illness and death is rare. Once recovered, an infected person is most unlikely to be reinfected in the future.

Is food a carrier of HAV?

Yes. In addition to the well-publicised berry incidents, reports over the last few years indicate Hepatitis A being linked to contaminations in raw vegetables and shellfish. Other possible sources identified include contaminated drinking water and ice.

Does cooking kill HAV?

Subjecting the virus to temperature in excess of 41°C for one minute does kill HAV however such a process does not mean the product cannot be reinfected. Chlorine treatment also kills HAV.

Is HAV preventable?

Proper hand washing discipline after using the toilet, changing nappies or preparing / handling food is essential as is correct food preparation, handling and sanitation procedures. Vaccines are also available. ❀

information, ComBase, which is the most developed predictive microbiology application in the world, is based on ~ 50,000 determinations of microbial growth, or inactivation rate, or survival, relevant to foods.

Australia is an international leader in the use of predictive microbiology, having adopted the "Refrigeration Index" (RI), a predictive microbiology model, into legislation. The RI evaluates the effects of temperature and time on the safety of red meat by converting that data into the potential growth of *E. coli*.

Recently, Australia adopted Codex Alimentarius Commission (CAC) criteria for *L. monocytogenes* in foods. Those regulations differentiate between foods that do, or do not, support the growth of *L. monocytogenes*. For foods, that do not support growth, tolerance for *L. monocytogenes* is much higher (≤ 100 CFU/g) than in products that do support growth (< 1 CFU/25g), greatly reducing the probability of product recalls and the burden of microbiological testing. In the guidelines the use of predictive microbiology models to differentiate foods that do, or do not, support the growth of *L. monocytogenes* is specifically endorsed.

There are limits of application of predictive microbiology. Predictions about the number of bacteria in a specific food after a certain amount of time, and under given storage conditions, requires that we know the initial number, and also how the storage conditions fluctuate over time. Low-cost data logging technology now exists that can wirelessly communicate details of product storage conditions over time. But sources of variability might include differences between strains, and inhomogeneity in the foods that might be enough to allow some cells to be able to grow, while others of the same population cannot. For these reasons, models usually make predictions that take this variability into account and can provide predictions that include the probability of different responses occurring in different environment.

Conclusions

Both theory and experience show that end-product testing isn't practical for food safety assurance, particularly for the low incidence of contamination that consumers expect. The HACCP philosophy approach provides the most reliable means of food safety assurance, but for that approach to be practical it's necessary to prioritise among potential hazards and understand how to control them. This challenge requires expert knowledge of the physiology of individual microbial hazards. That knowledge is increasingly being made available through the development of predictive microbiology mathematical models and software.

While basic principles of food safety aren't rocket science, the complexities of the modern food industry mean that food safety managers can gain much from lessons learnt and technologies developed in the space program. The HACCP concept had its genesis in the USA space program. The modelling approaches and software now being used to optimise food safety management rely on high level mathematics to develop tools and strategies to best satisfy the paradoxical consumers expectations of minimally processed foods with maximum levels of safety. ❀

Dr Tom Ross is Associate Professor in Food Microbiology in the Food Safety Centre at the University of Tasmania

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FLOORING

Master Builders Solutions from BASF

BASF flooring in the Namet meat factory in Çayirova, Turkey

Meat, fish, baked goods, cheese – the list could go on and on. More and more food products are being processed in large-scale facilities. The hygiene and safety regulations in the facilities that produce them are stringent and begin at the very bottom – with the floor.

Floors used in the food processing industry must be able to withstand a lot of abuse. From boiling water to temperatures around the freezing point, or organic substances like oils, milk, and scraps of meat and dough – to name just a few examples. To ensure that the floor is just as safe and hygienic at the end of a long day of work as it was when the day began, regular cleaning with chemical cleaning agents and disinfectants is required. One floor that can handle all this and more is Ucrete, a polyurethane resin system which is part of the Master Builders Solutions product range for the construction industry from BASF.

In spite of constant contact with foods of all kinds, the impervious surface of the floor prevents the growth of bacteria and fungi. Thanks to these characteristics, the Ucrete floors have received HACCP certification (Hazard Analysis and Critical Control Points). The highly standardised hygiene concept is designed to ensure the safety of food and consumers.

“Ucrete is a true all-rounder”, says Philip Ansell, European marketing manager for Ucrete at BASF in the UK. Ansell supports the worldwide marketing of the floors. “Another huge advantage for the food industry is that the floors are non-tainting. And above all, these synthetic floors are extremely long-lasting – and that benefits customers financially as well.”

And the floors are not only safe for food products. Because the floors are often wet due to the raw materials being processed and frequent cleaning, the floors feature a slip-protection class that can be adapted to individual requirements, protecting workers against slips or falls.

Learn more about Ucrete on our Master Builders Solutions website: <http://www.master-builders-solutions.basf.co.uk>

About BASF

At BASF, we create chemistry – and have been doing so for 150 years. Our portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas. As the world's leading chemical company, we combine economic success with environmental protection and social responsibility. Through science and innovation, we enable our customers in nearly every industry to meet the current and future needs of society. Our products and solutions contribute to conserving resources, ensuring nutrition and improving quality of life. We have summed up this contribution in our corporate purpose: We create chemistry for a sustainable future. BASF had sales of over 74 billion in 2014 and around 113,000 employees as of the end of the year. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN).

Further information on BASF is available on the internet at www.basf.com.

About the Construction Chemicals division

BASF's Construction Chemicals division offers advanced chemicals solutions for new construction, maintenance, repair and renovation of structures: Our comprehensive portfolio encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing systems, sealants, concrete repair and protection systems, performance grouts, performance flooring systems, tile fixing systems, expansion control systems and wood protection solutions.

700,000 square metres of Ucrete are laid in European food processing operations every year."

The Construction Chemicals division employs approximately 5,400 people and these employees form a global community of construction experts. To solve our customers' specific construction challenges from conception through to completion of a project, we combine our know-how across areas of expertise and regions and draw on the experience gained in countless construction projects worldwide. We leverage global BASF technologies, as well as our in-depth knowledge of local building

needs, to develop innovations that help make our customers more successful and drive sustainable construction.

The division operates production sites and sales centers in more than 50 countries and achieved sales of about 2.1 billion in 2014.

Master Builders Solutions from BASF

Under the Master Builders Solutions® brand, BASF bundles its advanced chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than 100 years in the construction industry. The comprehensive portfolio under the brand encompasses concrete admixtures, form release agents, cement additives, chemical solutions for underground construction, waterproofing solutions, sealants, repair and protection solutions, performance grouts, and performance flooring solutions.

Master Builders Solutions is backed by a global community of BASF construction experts. To solve our customers' specific construction challenges, we combine the suitable elements of our portfolio, our know-how across areas of expertise and regions, and draw on the experience gained in countless construction projects worldwide. We leverage global BASF technologies as well as our in-depth knowledge of local building needs, to develop innovations that help make our customers more successful and drive sustainable construction. ❁



**I NEED UCURETE FLOORING;
HYGIENIC, DURABLE AND SAFE**

Ucrete flooring forms a dependable part of daily operations in your facility. It is certified for use in facilities operating an HACCP food safety programme, is as cleanable as stainless steel and does not support biological growth. Through our global network of trained installers, Master Builders Solutions by BASF delivers the world's toughest floor: Ucrete, with more than 40 year's proven track record in the food and beverage industry. We invented a floor you can rely on – for your products, your customers and your staff.

For more information please visit www.master-builders-solutions.basf.com/ucurete

FACT



This product is food safe

The HACCP International certification and endorsement process supports organisations achieving food safety excellence in non-food products, material, consumables and services that are commonly used in the food industry. HACCP International's Certification is particularly aimed at those organisations that are required to supply 'food safe', 'compliant' or 'approved' products and services to their food safety conscious customers.

Such products or services are usually those that have incidental food contact or might significantly impact food safety in their application. Food safety schemes, particularly the leading ones which are GFSI endorsed, require food businesses to subject many such products to an auditable 'due diligence' process and the HACCP International certification is designed to meet this. This independent assessment and verification of fitness for purpose offers assurance to the buyer or user that food safety protocols and processes will not be compromised in using such a product or service correctly, that such a product is 'fit for purpose' and that it makes a contribution to food safety in its application.

Certified products have been rigorously evaluated by HACCP International's food technologists and, in their expert estimation, are manufactured and designed to meet all the appropriate food safety standards. In performing the assessment, they look for 'world's best' in terms of food safety features and characteristics. The food technologists undertaking these reviews, as well as being highly qualified, also have extensive industry and manufacturing experience. 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 multiple industrial applications.

There are 10 key components reviewed in this process and certified products need to demonstrate their conformance in all the relevant facets. The ten key components are:

- 1** *Materials and specifications*
- 2** *Toxicity*
- 3** *Contamination risks*
- 4** *Ease of cleaning*
- 5** *Operating instructions*
- 6** *Consequences of error*
- 7** *Batch and process controls*
- 8** *Claims*
- 9** *Packaging and labelling*
- 10** *Contribution to food safety*

In addition to these, service providers are also assessed, through an audit process, in terms of:

- HACCP and food safety awareness
- Food Safety Training
- Documentation and reporting
- On site service delivery
- Standard Operating Procedures

HACCP International is accredited by JAS-ANZ as a conformity assessment body. JAS-ANZ is a member of The International Accreditation Forum (IAF). HACCP International operates an accredited product certification scheme, titled "Food Safety Assurance", as well as other product certification schemes.

The companies listed on page 25 carry a range of excellent food safe products or services certified and endorsed by HACCP International. For more details, please visit www.haccp-international.com or email info@haccp-international.com. The contact numbers for our regional offices can be found on page 3 of this bulletin. ❄

www.haccp-international.com

CLEANING PRODUCTS | PROCESS
CATERING AND FOOD SERVICE EQUIPMENT
 CHEF INOX (I)
 HOSHIZAKI (I)
 LANCER CORPORATION
 MACKIES ASIA PACIFIC (I)
 S.P.M. DRINK SYSTEMS S.r.l. (I)
CLEANING EQUIPMENT
 CARLISLE CLEANING EQUIPMENT (I)
 CHAMPION MACHINERY HK LTD (I)
 GLOBAL CHAMPION (Shanghai) LTD (I)
 GOLDSTEIN ESWOOD COMMERCIAL
 OATES
 SABCO
CLEANING CHEMICALS
KITCHEN MATERIALS AND SANITATION PRODUCTS
 3M (I)
 BAXX (I)
 BIOZONE SCIENTIFIC (I)
 BUNZL
 CHAMPION CHEMICALS LTD
 CLOROX (I)
 CONCEPT LABORATORIES
 DEB GROUP (I)
 EDCO (EDGAR EDMONDSON)
 KIMBERLY-CLARK PROFESSIONAL (I)
 OATES
 PREMIUM PRODUCT SOLUTIONS (I)
 SCA HYGIENE/TORK
CLEANING & MAINTENANCE SERVICES TO THE FOOD INDUSTRY
 ACE FILTERS INTERNATIONAL
 AERIS HYGIENE SERVICES (I)
 CHALLENGER CLEANING SERVICES
 INITIAL HYGIENE
 INTEGRATED PREMISES SERVICES
 ISS HYGIENE SERVICES
 LOTUS FILTERS
CLOTHING, DISPOSABLE GLOVES AND PROTECTIVE WEAR
 ABURNET
 KIMBERLY-CLARK PROFESSIONAL (I)
 LALAN GLOVES SAFETYCARE
 LIVINGSTONE INTERNATIONAL
 PARAMOUNT SAFETY PRODUCTS
 PRO PAC PACKAGING
 RCR INTERNATIONAL
 STEELDRILL WORKWEAR & GLOVES
FACILITY FIXTURES, FLOORING AND FIT OUT
 ALTRO SAFETY FLOORING & WALLING (I)
 ASSA ABLOY ENTRANCE SYSTEMS (I)
 BLUCHER (I)
 BLUE SCOPE STEEL (I)
 CARONA GROUP
 CEMKRETE/ MFRP ENGINEERING (I)
 DEFLECTA CRETE SEALS
 DYSON AIRBLADE (I)
 ELECTROLUX (I)
 ELPRESS (I)
 ESTOP FLOORING SYSTEMS
 FLOWCRETE (I)
 GENERAL MAT COMPANY
 GIF ACTIVEVENT (I)
 HALTON (I)
 MANTOVA
 NUPLEX

CLEANING PRODUCTS | PROCESS
FACILITY FIXTURES, FLOORING AND FIT OUT CONTINUED
LABELS - FOOD GRADE
 LABEL POWER
 OMEGA LABELS
 W W WEDDERBURN
MAGNETS
 MAGNATTACK GLOBAL (I)
MANUFACTURING EQUIPMENT COMPONENTS & CONSUMABLES
 AURORA PROCESS SOLUTIONS
 BIOCOTE (I)
 CRC INDUSTRIES
 ENMIN (I)
 ITW POLYMERS & FLUIDS
 LANOTEC (I)
 SICK
 SMC PNEUMATICS (I)
 WURTH
PEST CONTROL EQUIPMENT AND MATERIALS
 BAITSAFE (I)
 BASF (I)
 BAYER (I)
 BELL LABORATORIES INC (I)
 ECOLAB
 LODI (I)
 PEST FREE AUSTRALIA (I)
 STARKEY PRODUCTS (I)
 SUMITOMO (I)
 SYNGENTA (I)
 WEEPA PRODUCTS
PEST CONTROL SERVICES
 AMALGAMATED PEST CONTROL
 CPM PEST & HYGIENE SERVICES
 ECOLAB
 FLICK ANTICIMEX
 HICARE
 ORIGIN EXTERMINATORS
 RENTOKIL
 SCIENTIFIC PEST MANAGEMENT
 STAR PEST CONTROL
REFRIGERATION, GOVERNORS, EQUIPMENT AND DATA SYSTEMS
 AERIS HYGIENE SERVICES (I)
 CAREL (I)
 DIGINOL
 E-CUBE SOLUTIONS
 MISA (I)
STORAGE EQUIPMENT & PACKING MATERIAL
 NETPAK
 RCR INTERNATIONAL
 SCHUETZ
THERMOMETERS, PH METERS AND DATA LOGGERS
 3M
 TESTO (I)

PHILIPS LIGHTING
 ROXSET
 SIKA (I)
 SILIKAL (I)
 THORN LIGHTING (I)
 UCRETE-BASF (I)
 UNIVERSAL FOOD SERVICE DESIGN
 YOUNGSAN (I)
 YUE PO ENGINEERING (I)
 LABEL POWER
 OMEGA LABELS
 W W WEDDERBURN
 MAGNATTACK GLOBAL (I)
 AURORA PROCESS SOLUTIONS
 BIOCOTE (I)
 CRC INDUSTRIES
 ENMIN (I)
 ITW POLYMERS & FLUIDS
 LANOTEC (I)
 SICK
 SMC PNEUMATICS (I)
 WURTH
 BAITSAFE (I)
 BASF (I)
 BAYER (I)
 BELL LABORATORIES INC (I)
 ECOLAB
 LODI (I)
 PEST FREE AUSTRALIA (I)
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 STAR PEST CONTROL
 AERIS HYGIENE SERVICES (I)
 CAREL (I)
 DIGINOL
 E-CUBE SOLUTIONS
 MISA (I)
 NETPAK
 RCR INTERNATIONAL
 SCHUETZ
 3M
 TESTO (I)

(I) indicates that the company offers products or services with global or regional certification. Others have national certification in one or more countries.

HygienicPro®

Cleaner. Better.

New BLÜCHER® drains and channels range designed specifically for the hygiene requirements of the food processing industry.

Production downtime reduced thanks to high-capacity filter basket



Efficient flow towards outlet even during minimal water flow due to special channel geometry



Hygienic floor concept due to rounded corners providing durable floor joints



Easy and efficient floor cleaning is ensured by the open-sided grating



Neat and hygienic bonding between floor and drain owing to heavy-duty frame



Hygiene matters

Learn more:
www.blucher.com/HygienicPro

BLÜCHER®
A Division of Watts Water Technologies Inc.



BLÜCHER export@blucher.com • www.blucher.com



HOW BAITSAFE® HELPS YOU TO ELIMINATE THE RISK.

There is a hidden danger either in or on almost every single roof in the world; this enemy cannot be controlled with sprays, powders, baits or any of the most sophisticated pest control equipment ever designed.

This infestation can affect even the most seasoned pest control professional. Most often it strikes when we have no idea it's there. You may feel completely in control and when everything seems safe it strikes. Men and women are often seriously hurt while some skate by with just a scratch and a scare. The danger in the roof is not an insect or vicious animal lurking in the shadows but it can be just as surprising.

Every year 1,000's performing pest control around the World either in or on roofs fall because they are unfamiliar with how to safely traverse its dangers. Some fall all the way to the surface below while others might just stick a foot through the ceiling or a roof tile before they catch themselves.

Most ceilings aren't made to walk in, and insulation, duct work and low clearances just increase the difficulty. Damp iron or roof tiles are extremely dangerous to cross or climb and if those aren't bad enough, add to it the fact that a roof space can reach temperatures of 120 degrees on a hot summer day. If you have to go in or onto roofs all the time it is not something not to look forward too.

At MakeSafe® we believe that the focus should always be on the safety elements most important for the type of work you perform so maybe you will consider BaitSafe® in your next safety audit.

For more information please visit baitsafe.com.au.



Cleans a dirty flat top griddle 40% faster

than the leading competitive system*



Scotch-Brite™ Quick Clean Griddle Cleaning System Starter Kit 710

- Safer to use compared to traditional methods
- Food safe*
- Quick and easy
- Cost effective



Can **Clean** a Dirty,
Food-soiled Griddle
in **3 to 5 Minutes**

Three simple steps to a clean flat top griddle.

1 Squirt



2 Scour



3 Squeegee



The Scotch-Brite™ Quick Clean Griddle Liquid in this kit meets Green Seal™ Standard GS-53 based on effective performance, minimized/recycled packaging, and protective limits on VOCs and human & environmental toxicity. GreenSeal.org.



Scan with your
mobile device
to view product
demonstration.

3M.com/foodservice
1-800-698-4595

*Based on time to clean equivalently soiled griddle surfaces with a baked-on food soil mixture.

**Scotch-Brite™ Quick Clean Griddle Liquid is formulated with ingredients that are explicitly listed as "Generally Recognized as Safe" (GRAS) in food by the U.S. FDA, or are present in such low levels that they may be considered GRAS due to *de minimis* exposure. The Scotch-Brite™ Quick Clean Heavy Duty Griddle Pad 746 is also certified by HACCP International as being "Food Safe" and "Fit for Purpose".

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DISCOVER OUR INTEGRATED PEST MANAGEMENT OFFER
MORE EXPERTISE FOR A BETTER LIFE



With our extensive expertise in professional pest management, we at Bayer are ready to help you meet your food safety challenges.

Bayer provides **dedicated pest management solutions** for the Food Industry:

- ☑ HACCP certified pest control products
- ☑ Product usage protocols for the Food Industry



food chain partnership



- ☑ A network of pest control specialists experienced in Food Industry requirements
- ☑ Technical support and dedicated training for Food Industry operators

Email **pestfreefood@bayer.com** to arrange a consultation about your pest control challenge.

www.environmentalscience.bayer.com