The hidden risk of food room equipment, materials and services

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What does a hand dryer, hand soap, a floor, a cold store room, a temperature probe, a lighting unit and a piece of processing equipment all have in common?

Answer – they are all used in the food industry and provide the foundation to some key HACCP prerequisite controls. In the examples above; the well designed hand dryer and hand soap are an absolute necessity to ensure clean hands before handling food; the hygienic floor not only supports equipment, people and movement but ensures that dirt and microbes can be effectively washed away; the hygienic cold store ensures that perishable foods can be stored safely and hygienically; the temperature probe helps us to measure accurately the temperature of the food being stored in a cold store, or being cooked, the lighting unit ensures that there is sufficient light for operations, cleaning and inspection, whilst remaining cleanable and able to resist or contain breakage, and the processing equipment ensures that we can actually make our food without risk of contamination.

In the past the food industry has perhaps taken equipment and materials for granted. The floor manufacturer tells us that this floor material is suitable for use in a wet processing area in which acidic food spillage occurs, the temperature probe manufacturer tells us that you can easily clean the probe, it is safe in contact with food and is accurate, the hand soap manufacturer tells us that the soap is non-toxic, non-tainting and will certainly kill 99.9% of commonly occurring pathogenic bacteria in just 30 seconds! The cold room manufacturer tells us that the materials used in constructing the panels are thermally efficient, cleanable and are non-toxic should they actually come into contact with food. And if the manufacturers of these articles tell us these 'facts' and are prepared to reproduce them on their websites and in the brochures then who are we to argue?

Fit for purpose?

The uncomfortable truth is that articles and materials destined for the food room are sometimes not quite as suitable as has been made out: A well publicised and very large recall of meat products in Australia in 2008 was attributed to tainting by a volatile chemical called methacrylate from poor installation control of a fast cure floor in a supermarket bakery. In December 2012 UK supermarkets recalled certain varieties of Cheddar and Leicester cheese because of small pieces of metal in the product. In 2013 a recognised brand of confectionary was recalled in the UK because of reports of plastic being found in the bars.

The source of the contaminants in these examples, with the exception of the first example, could not clearly be attributed to specific food room equipment or materials, but, in considering the material of the contaminants, plastic and metal, this, as a potential source, simply cannot be ruled out.

The lesson here is that as human beings, if something is presented to us well, we are inclined to believe it. That is the power of a well executed advertisement! But we are inclined to mix up opinion and fact and these are two very different things.

Opinion will not protect the due diligence demanded by a HACCP based food safety management system, or the European Food Hygiene Regulations or the GFSI benchmarked and approved Global Food Safety Standards, or the retailers,

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Hand hygiene solution

Deb are a household name when it comes to hand hygiene chemicals. In November 2012 the new and novel sanitising hand soap OxyBAC, based on the power of accelerated hydrogen peroxide was certified by HACCP International as safe to use in a food facility that manages food safety based on HACCP.

Accelerated hydrogen peroxide, or AHP, when coming into contact with germs, releases free-radicals which act non-specifically on multiple cell targets to kill germs in such a manner that prevents antibacterial resistance.

Using the standard HACCP International assessment criteria, but sensitive to the fact that a specific anti-microbial claim was being made, the HACCP International assessor visited the UK manufacturing facility for Deb OxyBAC.

The criteria were:

- Materials and specifications.
- Toxicity.
- Contamination risks.
- Ease of cleaning.
- Operating Instructions.
- Consequences of error.
- Batch and process controls.
- Claims.
- Packaging and labelling.
- Positive contribution to food safety.

This almost brand new facility boasts GMP (Good Manufacturing Practice) principles normally operated within the food industry, with specific personnel movement, access and personal protective clothing procedures to prevent contamination of the product and excellent site maintenance and housekeeping procedures are operated.

Incoming raw materials are subject to an approval procedure and are tested in the on-site laboratory to ensure that they meet specification before release to production. In the production area product recipe and mixing is controlled by a very robust automated process, with regular sampling by the process control laboratory to ensure product remains within a tight specification. The product is subject to a robust non-conforming product procedure and excellent traceability is maintained, with ability to withdraw or recall stock by batch.

Specific anti-microbial claims, which are marketed for OxyBAC, were verified during the assessment by the provision of bactericidal efficacy test reports conducted against EN 1499, EN 1276 and ASTM E2315-03, which were carried out by The Institute for Hygiene and Microbiology in Hamburg, Germany. A Food Taint test was carried out by Campden BRI using a triangle test based on exposure to food product, with reference to BS EN ISO 4120:2007 to provide proof that this soap will not cause food taint.

Research Director John Hines and European Marketing Director Paul Blount are delighted with having achieved HACCP International certification.

"HACCP International Certification now paves the way for Deb Group to satisfy the stringent demands of technical managers and buyers within the food industry who are under immense pressure to ensure that equipment and materials, as well as foodstuffs, are well controlled and will not present a food safety risk to their operation," Paul told us. "That is a need which is demanded by food hygiene legislation and by global codes of practice such as the British Retail Consortium, Global Food Safety Standard. Deb Group are proud to be able to help them to meet this need." ■

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who require that contamination from any source is considered and appropriate controls put in place. Fact will protect due diligence. Facts, proof and evidence that equipment, materials and even services such as pest control and laundry, have taken into account food safety and include measures to mitigate any contamination risk.

Understanding this is the first step. We are now more diligent in our selection and choice of suppliers of equipment, materials and services in the food industry. They are being considered now in the same way that we select and approve raw material and packaging suppliers. That process is being driven by legislation, the GFSI Food Safety Standards, the retailers and of course the consumers – not forgetting that the whole point of a HACCP based food safety management system is to take all practical measures to protect the consumer from food safety risk.

The next step is to consider the criteria, by which we shall explore the food safety risks and controls implemented by the manufacturer of equipment, materials and services, to select those that present the least risk, or putting it more positively, can demonstrate, through fact, that they have taken account of potential food safety risk through well implemented controls. This may not be as straightforward as it initially seems.

The well trained quality or technical manager normally is able to boast an excellent pedigree in terms of qualification and experience when it comes to assessing food raw material, finished product and even packaging risks. Most HACCP Plans these days do reasonable justice to the risk assessment of the four key food safety hazards of microbial, chemical, physical and allergenic, from food and packaging sources and represent best practice in terms of the most appropriate control of these hazards.

But the breadth of understanding of the different types of food safety hazard that may be presented by, for instance, a lighting unit, temperature probe, cold storage room, floor material, hand dryer or hand soap, across the industry, may not be quite so robust. Issues of basic hygienic design, cleanability, integrity, batch and process control, toxicity, suitability for incidental food contact, instructions for servicing, cleaning and use, and food safety "claims" all come into play here. And then there is the potential for consequence of error in use, misuse or as a result of article or material failure. This is an unwelcome, additional mine-field for quality and technical personnel already having to manage all sorts of other food safety procedure, specification, training and audit tasks in a day which never seems to contain enough hours!

The in-house risk assessment of equipment, materials and articles intended for the food room is of course a perfectly valid way of assessing potential food safety risk and selecting appropriate suppliers based on that risk, but only if performed properly. And that will be the concern of many who are charged with purchasing 'food safe' and suitable equipment and materials.

There has to be another way, which dispenses with some of the worry about having conducted an appropriate risk assessment.

The good news is that there is – and indeed, manufacturers of temperature probes, floor materials, wall materials, cold store rooms, ice machines, hand dryers, soaps, cleaning materials, lighting units, food processing equipment, anti-microbial coatings and many, many other types of articles have indeed chosen to take this new way.

They have all submitted their materials and equipment for a specific kind of evaluation leading to certification, which in itself can then be supplied as proof (not opinion) to the food industry that they are the most appropriate to use in a facility that manages food safety risk, considering all sources of food safety hazard, through a HACCP based food safety management programme.

The way forward

That evaluation is the HACCP International Non-Food certification programme. HACCP International is a global food safety organisation and the programme itself is managed by a dedicated team of food safety professionals boasting between them probably a few hundred years' worth of experience as chemists, food technologists, microbiologists, biochemists and similar within the food industry.

In assessing equipment, materials and services for potential food safety risk they are considering risk from the point of view of the very people who have had to manage food safety within the food industry itself. In short they are aware of, and empathetic towards the same risks that concern the quality and technical manager.

To explain this in practical terms we have taken two of the items already mentioned in this article and provide a brief synopsis (see inset) of how they became awarded with HACCP International Certification and what it now means to them.

The likes of UK based Dyson (Airblade and the new Dyson Tap), UK based Altro (floor and wall materials), Germany based Silikal (fast curing flooring systems), Italy based SPM (ice drinks dispensing systems), Germany based Testo (temperature probes and devices), Germany based Hidria GIF (novel, kitchen fume ceiling extraction systems), UK based Biocote (anti-microbial silver based coating and additive systems), BASF (Ucrete flooring) and Kimberly Clark (paper towel and dispenser systems), plus many more, have all realised the benefit of achieving HACCP International certification after a stringent evaluation process.

Through them, and certification, the food industry continues to become a safer place. ■

Food safe cold storage

Misa is a company from the EPTA Group and manufactures modular cold-store rooms ranging from a floor area of just a few square metres to more than 50m^2.

Since their key market includes the major foodservice and restaurant groups, providing proof that their cold-rooms support food safety was a major factor in seeking certification – this side of the food industry serves millions of customers, as an example McDonalds alone serves 68 million customers daily across the world, and so the prospect of a food safety related incident is one they are keen to avoid!

Misa submitted their K1 series of cold-rooms for evaluation to achieve HACCP International Certification in June of 2012. HACCP International assessors were sent to Italy to inspect the controls in place in the Rome factory and they accompanied Misa personnel to assess just how well the cold-rooms had stood up to years of physical 'abuse' at a 24 hour fast food restaurant on the outskirts of Rome. The standard HACCP International assessment criteria were used in performing the evaluation to assess whether the K1 series cold-room would support a food safety management system, in operation at a food facility, based on HACCP. The points that really stood out for Misa included the robustness and cleanability of the PVC protected panels and of the other materials that make up a complete cold-room. These had really withstood some heavy impacts at the fast food restaurant and maintained near perfect integrity.

The materials used in making the cold-rooms are subject to a stringent supplier approval and incoming materials QC inspection system with a robust non-conforming product procedure. In fact the level of quality inspection throughout assembly, and including the integrity of foam fill of the panels was very high. Poorly fitting panels is one area of potential thermal weakness in cold room systems but this was mitigated by a very clever and patented panel locking system.

Understanding that environmental and user conditions can sometimes be very different, Misa operate a Product Development Room to simulate user and environmental conditions when developing further improvements to their cold-room range. Contamination risks are an important part of the evaluation process. The Misa K1 units are fitted with protected and shielded lighting units to prevent accidental glass contamination, and, in terms of preventing and reacting to temperature fluctuations that could affect food safety, there were alarms on the display for temperature anomalies and for a door simply being left open!

One hot topic now is the potential for migration of toxic components to foodstuffs but this risk is mitigated by Misa holding evidence of compliance to regulation EC 1935/2004 to ensure non toxicity in the case of incidental food contact.

The provision of misinformation, poor information or unsubstantiated claims is always assessed! The HACCP International assessors found that the guidance in the K1 series User Manual needed development. This was closed out before certification and the manual now has excellent detail concerning cleaning, temperature and maintaining food safety when using the K1 cold-room units.

Simone Salani the R&D and Quality Manager for Misa and Claudio Fabiani, Export Sales Director are delighted with certification. In a tough market and in a difficult economic environment they can now use HACCP International Certification to rise to the challenge of proving why the K1 series cold-room is the best and the most 'food-safe'. ■