

## HACCP & Demonstrably Safe Working Procedures

Hazard Analysis & Critical Control Point (**HACCP** or *hass-up*) is a food management safety system based on risk assessment analysis with process based controls over food borne hazards developed by NASA during the Gemini and Apollo space missions<sup>92</sup> The HACCP system is based on *documented* evidence of safe control procedures designed to *minimise risk* of food poisoning or contamination which would support a *due diligence defence* if you were investigated and prosecuted.

### *The Law*

[Environmental Health Officers](#) in 434 Local Authorities are legally bound to investigate complaints made anonymously by the public or otherwise. The defence against *criminal prosecution*<sup>93</sup> for health and safety offences relies on proving that safe procedures were implemented in event of Environmental Health or [Food Standards Agency](#) investigation or civil action over food poisoning.

It is a legal requirement of any food producer or food business to comply with Food Hygiene Regulation (EC) 852/2004, Food Safety Act 1990, Environmental Health orders and [at least 95 other Acts](#) in addition to food safety or workplace health and safety legislation – the largest body of English law.

**The Food Safety Act 1990, affects everyone who works in the production, processing, storage, distribution and sale of food. This includes self employed people and non profit making organisations as well as farmers, growers and caterers.**

In other words, you *and your staff* can be prosecuted so a successful prosecution would also give you and them a *criminal* record!

You are legally obliged to inform your local authority if you run a food business and have your premises inspected and licensed as appropriate. You will be prosecuted if you don't and you would not have a defence.

Similarly, you are legally obliged to inform your local authority if you run a food business 28 days before starting. There is a difference between registering and having your business approved. *Businesses that use products derived from animals including honey cannot, unless certain conditions apply, trade until approval is granted.* Those conditions are in general terms about who you supply to, the distribution and who the end consumer is.

### **Risk Categories**

Raw meat is a '*low risk*' product. In fact there is no legal requirement to keep meat at a low temperature<sup>94</sup> which is bad news for butchers and sausage makers since 80% of all food poisoning occurs in the home and FSA rules don't apply to Jo Public – even if he/she keeps a chicken breast in a bag for week then poisons his/her family.

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<sup>92</sup> [“From Farm to Fork”: How Space Food Standards Impacted the Food Industry and Changed Food Safety Standards](#) by Jennifer Ross-Nazzari.

<sup>93</sup> Magistrates courts may impose a fine of up to £20,000 per offence and a prison sentence of up to six months. For most offences Crown courts may send offenders to prison for up to two years and /or impose unlimited fines.

<sup>94</sup> Source: Paul Bache, MBE, author of the [Meat & Livestock Commission's HACCP Manual For Butchers](#)

High Risk foods<sup>95</sup> include [Ready To Eat Meals](#) (e.g pre-cooked food like sausage rolls, tinned baked beans or anything prepared ready to eat or ready to cook), cooked meats and poultry, dairy and egg products plus seafood but *not* fresh sausages<sup>96</sup>.

With the move to once-a-week shopping there is a higher risk of food poisoning at home since meat is rarely kept in a refrigerator at the correct temperature (0°C–5°C) and will often be kept bagged rather than allowed to breathe and dry. Increasingly, children are not taught to wash their hands<sup>97</sup> the moment they walk in the door as my generation were.

Because so many convenience foods contain preservatives and have been packed using gas or irradiated to inhibit natural decay consumers forget ‘fresh’ food deteriorates naturally and fresh food is generally best eaten within three days or less e.g. if it goes mouldy quick it has better nutritional quality.

Although a smallholder presents a lower risk in terms of the size of a food poisoning outbreak he can cause compared to an industrial conglomerate<sup>98</sup> the *risk* of contamination from serious pathogens is intuitively higher because of the producer’s proximity to farms. More often than not the producer rears or is in contact with animals in the field e.g. there is a direct transfer of organisms<sup>99</sup>.

Similarly, the changing pattern of retail with butchers and supermarkets selling and handling ready to eat items in proximity to fresh meat and meat products also increases the risk of [cross-contamination](#) and is specifically mentioned in FSA [E. COLI O157 CONTROL OF CROSS-CONTAMINATION Guidance](#).

HACCP regulations<sup>100</sup> apply equally to the big conglomerate as to the small producer since they deal with *risk* and improving or maintaining safety through [Critical Control Points](#) (CCPs). The risk of the system is that the cost of regulation and barriers to startup discourages the small producer using unsophisticated rearing and production processes whilst the profit motive and cost analysis of big business cheapens ingredients and introduces high tech additives and processes in large plants producing a multiplicity of food of which the long term physical and social effects are not fully understood.

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<sup>95</sup> categorised as “any ready-to-eat food that will support the growth of pathogenic bacteria easily and does not require any further heat treatment or cooking”.

<sup>96</sup> Low-risk foods are ambient-stable such as; bread, biscuits, cereals, crisps and cakes (not cream cakes). Such foods are unlikely to be implicated in food poisoning and include:

- foods that have been preserved, for example; smoked or salted fish
- dry goods, those that contain minimal amounts of moisture, such as; bread, flour, biscuits
- acidic foods, for example; pickled foods, vinegar, fruit
- fermented products such as; salami, pepperoni
- foods with high sugar/fat content for example; jam & chocolate
- tinned food, whilst unopened

<sup>97</sup> [Whether we’re suffering from guilt or not — we should all be washing our hands](#), Dr Thomas Stuttford from *The Times*, September 15, 2006

<sup>98</sup> in 2007 [United States Dept of Agriculture and Food Safety and Inspection Service \(FSIS\)](#) recalled of 9.85 million tonnes of frozen beef burgers over one [incident](#) which is part of a [catalogue of recalls by the FSIS](#)

<sup>99</sup> interestingly, there is no recorded case of a farmer, slaughterman or person directly involved in the cutting of meat suffering from *Escherichia coli* O157:H7 poisoning so there is academic interest whether high risk groups develop a natural immunity through low level exposure to other organisms or better diet. See [Asymptomatic Carriage of Verocytotoxin-Producing Escherichia coli O157 in Farm Workers in Northern Italy](#), Authors L. Silvestro, M. Caputo, S. Blancato, L. Decastelli, A. Fioravanti, R. Tozzoli, S. Morabito and A. Caprioli *Epidemiology and Infection* Vol. 132, No. 5 (Oct., 2004), pp. 915-919 “which seems to confirm the hypothesis that farm residents often develop immunity to VTEC O157 infection, possibly due to recurrent exposure to less virulent strains of VTEC.” In other words *E. coli* O157:H7 poses more risk of causing “serious illness or death in the elderly, the very young or the immunocompromised.” [5][31]” Also [Vero cytotoxigenic Escherichia coli infection in dairy farm families](#)

<sup>100</sup> [Regulation \(EC\) 852/2004](#) to have HACCP-based procedures in place.

The principles of reducing risk are not at fault. What is new is a [transgenic](#) microorganism called [Escherichia coli type O157:H7](#) which was first reported in 1982. This has changed food safety because of its virulence since it only takes 15-50 bacteria in the gut to cause poisoning. If you put this in context of the fact that meat contains [1,000 to 10,000 lactic acid bacteria per gramme](#) (rising to 10,000,000 or 100,000,000 per gramme if you ferment a salami<sup>101</sup>) you soon realise that O157:H7 is the dream killer of every terrorist.

What makes O157:H7 a problem to food producers is that the bacteria can remain dormant on surfaces or packaging for weeks and up to a year in the soil or manure<sup>102</sup>. What makes O157:H7 to health is that it produces Shiga-like verotoxins<sup>103</sup> whilst the Ph in your stomach is not strong enough to kill it<sup>104</sup> and there [increasing numbers of antibiotic resistant e coli](#).

Contaminated foods include meat, dairy, fruits and juices, salads plus biscuits or spices (which have very low water activity and are therefore normally classed as low-risk foodstuffs). “*The incubation period for diarrhoeal illness caused by infection with e.coli VTEC is usually three to four days, but has been occasionally recorded as up to 14 days*<sup>105</sup>.”

In other words, there is nothing you can do to eliminate the *risk* of having O157:H7 in your meat, vegetables or premises but what you can do is *dramatically reduce the chances of you giving it a good environment to reproduce and passing it on as with any other bacteria* which is why learning about bacteria and applying HACCP is a good idea. This links back to the [due diligence defence](#) since you will always be guilty if you cannot show on the balance of probabilities<sup>106</sup> you did not pass on the O157:H7 or whatever. It is just a question of whether you passed on more!

## Recording, Control & Traceability

If you want a good understanding of HACCP and how to implement it book yourself on a cheap course with Paul Bache MBE through John Taylor MBE of Coventry & District Association of Meat Traders. Paul Bache wrote the HACCP manual for the Meat & Livestock Commission and has been in the meat industry for years as a butcher. He also wrote the MLC's HACCP templates and demonstrates how to use them and collaborated in the production of the FSA video [E.coli O157 -- A butchers' guide to staying safe](#). For downloadable templates try the Kings Lynne & West Norfolk

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<sup>101</sup> Source: [The Art of Making Fermented Sausages](#) [Paperback], Stanley Marianski (Author), Adam Marianski (Author) ISBN-10: 1432732579 and [USDA; MICROBIOLOGY - SHELF-STABLE DRIED MEATS](#)

<sup>102</sup> If you spread slurry or farm organically it is worth reading [Verocytotoxic Escherichia coli in animal faeces, manures and slurries](#), G. Duffy *Journal of Applied Microbiology* 2003, 94, 94S-103S “The dispersion of untreated manure in the environment can cause the contamination of different items, which can then act as secondary vehicles of human infections.” Source: <http://www.iss.it/binary/vtec/cont/More%20about%20VTEC.pdf.1164814793.pdf>

<sup>103</sup> E. coli O157:H7 can reproduce by division as normal bacteria and by direct cell-to-cell contact known as conjugation by which genetic material is transferred between two bacterial cells via a specialized type of [fimbriae](#) called sex pili (also known as conjugate fimbriae). Source: [http://bioweb.uwlax.edu/bio203/s2008/moder\\_just/reproduction.htm](http://bioweb.uwlax.edu/bio203/s2008/moder_just/reproduction.htm). E.coli can also pass their DNA by [horizontal gene transfer](#) through [bacterial conjugation](#), [transduction](#) and [transformation](#). “This process led to the spread of the gene encoding [shiga toxin](#) from [Shigella](#) to [E. coli O157:H7](#), carried by a [bacteriophage](#). [25]”. “It should also be noted that the process may be a hidden hazard of genetic engineering as it may allow dangerous [transgenic DNA](#) to spread from species to species. [18]”

<sup>104</sup> see [Leafy Green Sewage](#) by Nina Planck, New York Times: September 21, 2006, [Antimicrobial susceptibility and factors affecting the shedding of E. coli O157:H7 and Salmonella in dairy cattle](#) A.C. Fitzgerald *Letters in Applied Microbiology* Volume 37, Issue 5, pages 392-398, November 2003 and [E. coli O157:H7 in hay- or grain-fed cattle](#) Dale Hancock and Tom Besser, *College of Veterinary Medicine, Washington State University* October 12, 2006 for the debate on whether the diet of cattle contributes to the incidence of e.coli O157:H7. [Diet, Escherichia coli O157:H7, and Cattle: A Review After 10 Years](#)

<sup>105</sup> <http://www.patient.co.uk/doctor/Escherichia-Coli-O157.htm>

<sup>106</sup> [Food Standards Scotland suffered criticism](#) for naming an unpasteurised cheese maker in relation to an e.coli O157 outbreak that killed a 3-year old girl without direct evidence linking the product with an outbreak based on responses to a questionnaire when there had been no E coli O157 of the same strain detected at all at its factory or in its cheeses when tested by its own laboratory or it's local council.