Preventing E. coli outbreaks – the environmental health practitioner's role

by Dr Lisa Ackerley,
Hygiene Audit Systems Ltd, UK.

Understanding the sources of E. coli. O157 and the implications of research carried out on the organism is a major first step in the process of prevention.

In 2002, Dr A. Maule conducted research into the survival of E. coli O157 on farmland, and later in kitchen environments. He found high levels of the organism in animal faeces. Furthermore, he discovered that E. coli O157 can survive in soil on grassland for over 130 days. Organic waste matter is used on land: this includes abattoir waste, sewage sludge and other agricultural waste.

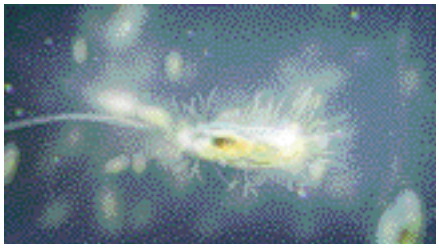
The Food Standards Agency has published new guidance (3/6/09) on managing farm manures, which should improve the situation. More details can be found at: http://www.food.gov.uk/news/newsarchive/2009/jun/manures

Dr Maule's findings in kitchens showed that E. coli O157 remained viable on stainless steel as air-dried deposits for periods in excess of 60 days. Furthermore, and surprisingly, survival was best at chill temperatures (4°C) and was only partially reduced by storage at room temperature (18°C).

Danger of dirty cloths

In 2007, the UK Hygiene Council found that in 25% of kitchens, E. coli was present in high numbers on kitchen cloths. The implications of this are that instead of cleaning the home, people may be actually making it more contaminated. A similar survey by BBC Watchdog found that E. coli was present in cloths tested from fast food restaurants, and in the BBC1 Rogue Restaurants series, a number of appallingly dirty cloths were recovered and E. coli found in high numbers.

E. coli.



The prevention of cross contamination is essential.

The 2006 US Spinach Outbreak occurred due to poor farming practices and inadequate washing of raw spinach, which was then sold pre-washed. In over 26 states, there were 204 cases, 31 with HUS, 104 people were hospitalised and there were three deaths.

E. coli O157 outbreaks associated with John Barr's premises caused 361 non-fatal cases and 20 deaths. The outbreak was widespread, particularly so because large quantities of cooked meat were distributed to other outlets, from the Parish hall to a nursing home and another butcher's shop.

The Pennington Report in 1998 included farm to fork food safety, HACCP, training and enforcement in its recommendations.

The Tudor Outbreak in 2005 was the second largest outbreak in the UK. In the families' submission to the Tudor Public Inquiry they stated: "It is galling to the families that many of the observations of the Sheriff's Inquiry – with the substitution of the name of Tudor for that of Barr, the butcher involved in that outbreak – could be written about the 2005 outbreak."

The local authority inspections of both Barrs' and Tudor's have come under scrutiny. Environmental Health Practitioners (EHPs) need to ensure that they have made good file notes (this is often identified when I am working on a case as an expert witness) and the more detail the better.

Officers need to flag up issues found during inspections so that others following afterwards can identify and check. For example, if records are 'not available' on the day of inspection, then they need to be seen another time. However, I recognise the difficulties faced by enforcement officers in that all file notes and correspondence is potentially disclosable in legal cases and under freedom of information legislation.

HACCP in practice

Inspections need to be thorough, but of course this takes time, and the local authority must allow for this for larger premises.

The officers need a full appreciation of HACCP, which is not just theoretical, but that has a practical understanding. For newly experienced officers, if all they have seen is 'safer food, better business' (SFBB), they may not appreciate how a more formal system works.

The best way to learn is to be involved, and I would urge all managers of environmental health departments to encourage new staff and students to build up a relationship with larger businesses to pick up on how HACCP works in practice.

Identifying the risks is primarily the job of the food business, whilst the EHP needs to start with the same process to assess whether the food business has done the job correctly. Checking things such as what sanitiser they use, and how they use it, what cloths, how much hand washing etc are all

Continued on page 7

Continued from page 5
really important. This involves communication with staff – sometimes a hard pressed EHP may feel there is not enough time to do this.

Although the EHP needs to assess whether the HACCP is valid and verified, that is nevertheless the prime responsibility of the food business operator. If they have not got the knowledge and experience to do this themselves, then they need to get help. They should not rely on the enforcement inspection.

Should audits be announced or not? An external third party private sector audit (such as BRC) is always announced. And guess what? They find faults, they identify where HACCP is failing, and recommendations are made for improvements. In some instances supply is stopped where premises are found to fail – so even when they know we are coming they can not get it right!

In the private sector our auditors have the luxury of time to delve fully into the business and they have access to the records they need and the staff they need to talk to. They also know from experience when someone is pulling a fast one, and can see beyond a quick clean up.

What would be the point of an unannounced visit? Maybe you would catch someone out, maybe you would see that they do not follow their HACCP every day and control their CCPs every time, but beyond this I am not sure you would get a quality audit. So let's have a bit of both! I would say a planned audit, and an unannounced inspection or check-up from time to time, or when flagged up by an auditor who may not be totally convinced they have been told the truth.

Prevention of E. coli

So, what can the Environmental Health Practitioner do? Remember an EHP is not just a food inspector: they have many other roles. For example, they may be involved in farm visits, beach hygiene, school and nursery education, contaminated water supplies, health and safety, housing, pollution and open air events.

We can learn from previous outbreaks and events and use our wide ranging skills to provide expert help; for example on farms, it is recommended that compost is matured for at least 90 days before being spread on fields; we can advise that irrigation is not carried out using contaminated water. From the USA we may take the idea that it is important to try to segregate salads from cattle and wild animals.

In processing, washing fruit, vegetables and salads effectively is paramount if the product is to be sold ready to eat. This also follows for juice and smoothie producers. Pasteurisation of not just milk but juice as well is important as is, of course, the maintenance of the chill chain.

Food businesses need help to ensure that they have considered prevention of cross-contamination from the design and layout of the business to the selection of cleaning products and methods. In relation to purchasing and supply chain management, third party audits should be carried out by experienced EHPs (a recommendation for third party audits of high risk food sold to the public sector is given in the Pennington Report).

Washing vegetables and salads effectively is paramount.

Use of colour coded boards, knives, cloths and other utensils for preparation and even segregation of staff may be appropriate.

In catering, washing vegetables, salad and herbs effectively is important. Pay attention to herbs – the last thing thrown on a dish is a critical control point. Obviously cooking effectively, cooling quickly and practically (not just that 90 minute old chestnut) are also important, as is effective and monitored cold storage.

The human element

Finally, the human element – if training is not carried out adequately, then there is a high chance that something could go wrong. Training must, in my opinion always focus on the job and the food business, particularly in a high risk operation. Staff at all levels need to understand their role in the HACCP at that business. Blanket 'sheep dipping' is not going to work.

In relation to the business' HACCP this needs to be appropriate to the size and nature of the operation, but must in all instances provide for all processes and identify CCPs. Through regular reviews new processes will be included.

Effective monitoring is essential to ensure that controls are in place and to help to prove that the system is working.

For larger businesses the use of automatic temperature monitoring must be a consideration, so long as there are processes in place for attending to problems – it is no use identifying a problem on the computer if no-one does anything about it. The policy needs to be practical and achievable and the staff must do what it says in the policy. In terms of validation (is the HACCP adequate?) and verification (does the HACCP work?), this is the food business operator's responsibility.

Educating consumers

In relation to consumers, we need to ensure that they understand the importance of preventing cross-contamination and cooking foods thoroughly.

This education process can be helped with media campaigns. As new technologies and trends emerge, we need to be ready. What will the credit crunch bring? Will people be more reluctant to throw away out of date food? Will they start doing potentially dangerous things such as home canning and vacuum packing? Will trends coming from other countries and from an 'eco' standpoint get in the way of food safety? Will people wash their cloths at 15°C? Will they be tempted to use a micro cloth without anti-bacterial cleansers to clean up after raw meat or poultry preparation?

And, finally, back to the holistic approach of the EHP: with the use of pastureland for other activities, from scout and brownie camps, to farm visits and school trips, and open air pop concerts, organisations need advice and help. With our knowledge of survival of E. coli O157, of its low infective dose, and the vulnerability of young children, we can help to reduce the risks with good controls, effective communication and education. A public inquiry gives us the opportunity to learn and make changes, but we must always reflect on the wider issues and remember that the next outbreak may be from a different source. ■

FaxNOW +44 1727 844522
www.hygieneauditsystems.com