

HACCP – ICoMST 2009

Dr Peter Wareing

18 August 2009

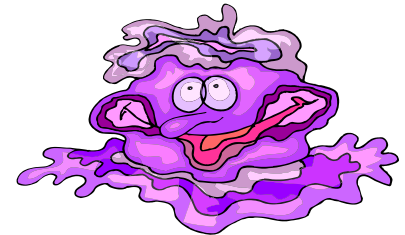
- In this presentation we will review:
 - Effectiveness of HACCP in controlling food safety risks
 - The integration of HACCP in food companies
 - How HACCP becomes operational
 - Influence of HACCP on the company economy
 - How employees can implement HACCP
 - The importance of management commitment
 - The cost benefits & safety gains by using HACCP

- Legal drivers to HACCP
 - National
 - UK Food Safety Act 1990
 - International
 - EC 852/2004 and EC 853/2004
- Commercial drivers to HACCP
 - Retailer pressure, which leads to:
 - Third party audit schemes
 - BRC, EFSIS, ISO 22000
 - Flexibility for small scale producers
 - SALSA



SALSA
Safe and Local Supplier Approval

- What does a typical HACCP hazard analysis highlight?
- Common microbiological hazards in meat include:
 - *Salmonella* spp
 - *Campylobacter*
 - *Escherichia coli*, particularly *E. coli* O157
 - *Listeria monocytogenes*
 - *Clostridium perfringens*
 - *C. botulinum*



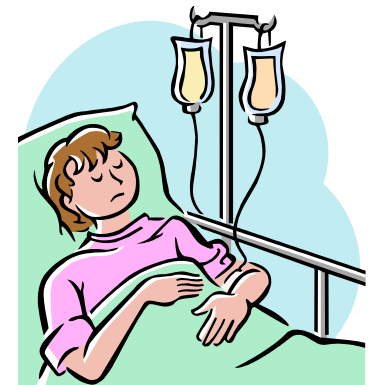
- Important spoilage organisms from a shelf-life perspective:
 - *Bacillus*
 - *Clostridium*
 - *Pseudomonas*
 - *Flavobacterium*
 - *Alcaligenes*
 - Lactic acid bacteria



- Physical hazards within meat include:
 - Raw materials: bones
 - In process: metal, plastic, glass
- Chemical hazards include:
 - Raw materials: veterinary compounds
 - In process: cleaning chemicals



- Legal
 - Fines, penalties, prison sentences
- Commercial
 - Recall costs, cleaning, loss of contracts, business closure
- Social and moral
 - Illness, hospitalisations, death



- Jack in the Box chain
 - Undercooking of hamburgers allowed contaminant *E. coli* to survive
 - Over 600 cases of food poisoning
 - 500 confirmed to be from *E. coli* O157
 - 200 hospitalisations & four deaths, all children
 - Company costs were \$160 million in lost sales
 - Lawsuits for more than \$50 million were filed



- Poor hygienic practices caused:
 - Cross contamination of cooked meat by *E. coli* O157 from uncooked meat
 - John Barr in Scotland in 1996
 - 21 elderly people died
 - William Tudor in Wales in 2005
 - 157 cases, 118 confirmed as *E. coli* O157
 - 31 hospitalisations - one child died
 - Recommendations from previous Scottish case ignored

- Canned corn beef from Argentina
 - Cans cooled with *Salmonella typhi*-contaminated river water
 - A single can contaminated – pinhole allowed contamination
 - Used in Aberdeen
 - Cross contamination spread it to equipment, surfaces and food items
 - Over 500 people hospitalised, three deaths



- HACCP is a food safety management system which uses Quality Management (QM) techniques
 - Document control, procedures
 - Integration easier if companies already have a QMS
 - ISO 22000 and BRC Global Standard for Food Safety successfully integrate safety and quality
- Within EU, member states encouraged to produce local guides to good practice
 - UK - Meat Plant HACCP Manual available
 - Simple guidance manual for meat plants



- Gap analysis – what do we need?
 - Financial, technical, human resources
- Gather team
 - Across company departments and disciplines
- System Design
 - Modular, linear, generic
- Management commitment and plan
- Training of HACCP team
- Apply HACCP to products and processes
- Document operating procedures

- Once the plan is in place, validation is required:
 - Hazards - realistic?
 - Limits for CCPs – relate to the hazard?
 - Critical limits - control the hazard at the CCP?
 - Is monitoring real time?
 - Frequent enough?
 - Corrective actions relate to critical limits and targets?
 - Think outside the box; what could happen?

- When manufacturing starts:
 - Record keeping processes required for :
 - Monitoring
 - Statistical Process Control (SPC)
 - Paper, electronic or both?
 - Procedures for reporting deviations
 - Feedback to operational staff via:
 - Departmental meetings, electronic & paper notice boards, individual feedback

- Implementation plan required:
 - GANTT or PERT style
 - Phased or all at once?
 - Influence of company size
 - QMS in place?
- Preliminary basic training by the HACCP team for all staff
- CCP monitor training

- Verification
 - Auditing, testing – chemical, microbiological
- System as set up still being applied?
- Is the HACCP plan ‘live’ – updated regularly?
- Are SPC procedures reviewed during HACCP team meetings?
- Are CCP deviations reviewed?
- Regular internal auditing of procedures, records, PRPs?
- Annual external third party auditing?
 - If BRC or other external QMS
- All audits (internal and external) must be independent

- HACCP plan implementation costs:
 - Staff training
 - CCP and PRP monitoring
 - Corrective action meetings
 - Auditing
- HACCP study could take between
 - 40 man-days (simple study, team of 6) to:
 - 160 man-days (more complex study, same size team)

- These include:
 - Time, product loss, and equipment and facilities
- In contrast, with an ineffective HACCP, there are costs associated with getting it wrong:
 - Product recalls
 - Potentially a greater loss of product, leading to more recalls
 - Loss of public confidence, loss of market share
 - Legal consequences

- Cargill turkey processing:
 - A study was made of the cooling process for a CCP to improve safety control at that point
 - Losses were reduced, leading to efficiency savings in the business of \$150,000 per year

- India – new HACCP for ice cream factory :
 - Implementation lead to these improvements within 6 months:
 - 46% increase in output
 - Reduced frequency of shutdowns for cleaning
 - 10% reduction in the costs of poor quality product
 - Additional benefits:
 - Decrease in positive *Listeria* counts from 14% of samples to 1% in year one
 - Declining to zero by year three

- Management involvement and understanding of HACCP?
- Resources available for HACCP study, implementation and maintenance of the system?
- Management training in the principles and requirements of HACCP?
- HACCP Champion
- HACCP goals incorporated into performance, incentive and bonus goals?
- HACCP of equal importance to profitable operations?
- HACCP on the agenda of team briefings at all levels within the company?

- HACCP has evolved and improved during its existence
- Management commitment is vital for HACCP
- Sufficient resources required for HACCP
- Barriers to HACCP must be addressed, and resolution communicated to staff

- HACCP is a simple, logical process
- Should make life easier
- Has the potential to save money
- Enhance the company reputation if properly implemented
- HACCP is only as good as the staff that run the system
 - Adequate training of staff is vital for success

- Contact details:
- Dr Peter Wareing
- Principal Food Safety Advisor
- Leatherhead Food Research
- E: pwareing@leatherheadfood.com
-  + 44 1372 822257