

The evolution of food safety inspection – meat products

Stephen Yearwood

Disclaimer and introduction

This is my directed research on an area of human endeavour that employs many people, including many veterinarians. It came about through discussions with colleagues in Australia, where I am a member of the Australian Veterinary Public Health group of the Australian Veterinary Association. Although employed by Ministry of Primary Industries, Verification Services, and servant to their principles and objectives, this paper is my initiative and not representative of anything else.

History of food safety inspections

Food safety concerns have been with humanity since very early on in the evolution of our civilisation.

“Humans must have developed some rudimentary concept of food conservation very early on during the gathering and hunting era in order to survive” (Zaccheo *et al.* 2017).

Food safety inspections are as old as humanity. However, in the modern age with mass production, national and international trade in food, vulnerable populations, food standards and regulations, and with a consumer and litigious society, food safety and quality is expected.

Legislation and judge made law

Food laws were among the earliest regulations and are found in ancient Egyptian, Chinese, Hindu, Greek and Roman writings. Islamic and Judaic law address food, often with practical consideration. This quote from a Halal organisation reads well:

“Muslims believe in what they see as the ethical treatment of animals. Halal practices align with this philosophy of promoting kindness, compassion, and humane treatment throughout the entire lifecycle of the animal. The emphasis on swift and painless slaughter respects the animal’s dignity and minimises suffering” (Wikipedia).

In the Middle Ages trade guilds acted to regulate food and prevent poor quality product from being sold. (Lasztity *et al.* 2012) Consumer protection to prevent adulteration was an early government regulation and over 2000 years ago India had regulations prohibiting the adulteration of grains and edible fats. The Laws of Moses, in the Old Testament, prohibited the consumption of meat from animals that had died from other causes than the slaughter process. Ancient Roman law endeavoured to protect consumers against bad quality food and fraud (Lasztity *et al.* 2012).

Early food laws by governments were generally designed to protect consumers from fraud, and the public health benefit was a consequence. Mass food production and distribution because of industrialisation and the increased urban population led to consolidation of the laws and in the late 19th century and early 20th century food law and national standards became established in Europe. In common law countries the doctrine of negligence was developed from a contaminated drink (Donoghue v Stevenson 1932) where a duty of care was owed by a

manufacturer to a consumer of their product where there was no possibility of examination for the defect.

In the modern age there has been an explosion in the quantity of legislation, particularly delegated legislation. There may be prescriptive food safety requirements and scoring systems to rate compliance (Yapp and Fairman 2005), with established regulatory actions for set scores (Stadlmuller *et al.* 2017).

Definitions

Food Safety Inspection is not easily defined and this review (Barnes *et al.* 2022) identified six meanings that consumers recognise as food safety inspection, five meanings that food businesses use, and seven meanings were attributed by inspectors. Food Safety Inspection here includes all of these meanings, postmortem inspection and disposition, and qualitative risk assessment of the meat business's operations and compliance with documented standards. There is broad, outcome focused food safety objectives (Green and Kane 2014).

“These systems require inspectors to apply autonomy and professional judgement in the assessment process and place much of the responsibility for determination of inspection results and subsequent regulatory actions with the inspector” (Barnes *et al.* 2022).

HACCP/GMP

Hazard Analysis and Critical Control Point (Green and Kane 2014), together with Good Manufacturing Practices and well-maintained prerequisite programmes, are the most effective systems for reducing the risk of food-borne illness (Surak 2009, Weinroth *et al.* 2018).

The role of the veterinarian in food safety

Veterinarian's work has traditionally extended from the farm to the slaughterhouse, where a veterinarian completes epidemiological surveillance of animal diseases and ensures the safety and suitability of meat (WOAH 2018). In 1897 John A. Gilruth became Chief Veterinarian and Government bacteriologist in New Zealand and promoted new research facilities and the upgrading of meat inspection and meatwork standards. He recruited veterinarians to work in the New Zealand Department of Lands and Survey meat inspection service (Carroll A). Today the role of veterinarians in the humane and hygienic production of meat is well established; with skills and knowledge valuable to the teams producing safe food.

Human/animal interaction

Individual variations require skilled operatives to act appropriately to ensure animal welfare and hygienic dressing. Recognising the uniqueness of humans and animals and treating them with the dignity they deserve can enhance operational effectiveness and achieve a team focused on good outcomes for the food business (Chen *et al.* 2021).

Microbiology

Improvements in testing and test sensitivity are likely to ensure the continued importance of sanitary dressing of carcasses.

Conclusion

The conversion of animals into food is a process as old as humanity. The human/animal interaction is crucial to a good outcome from both an animal welfare and food quality outcome. Today's legislated process provides for a good outcome from a consumer viewpoint. There has

been considerable veterinary contribution to food safety, and this should continue. Increased microbial testing and improved test sensitivity ensures that quality sanitary dressing is required. Successful decontamination treatments start with already clean carcasses. To achieve high standards of sanitary dressing a hygienic environment and a skilled and dedicated workforce is required. Independent oversight removes a commercial conflict of interest where a business is solely responsible for product and obliged to maximise profit. The veterinarian is ideally trained to provide independent verification.

References

- Barnes J et al.** Defining Food Safety Inspection *Int J Environ Res Public Health* 19(2): 789, 2022
- Carroll A.** Cultural traffic in the making of New Zealand's Veterinary Profession 1880s-1960s.
- Chen Y et al.** Workplace events and employee creativity: A multistudy field investigation *Personnel Psychology* 74(2): 211-236, 2021
- Donoghue v Stevenson** [1932] AC 562
- Green RM, Kane K.** The effective enforcement of HACCP based food safety management systems in the UK. *Food Control* 37: 257-262, 2014
- Halal.** <https://en.m.wikipedia.org>, 2024
- Huxtable L.** Reotahi Freezing Works, First-Prize Essay. Boyes J (Ed) *True Tales of Whangarei Heads*. Whangarei Heads Citizens Association p42, 2016.
- Larkin M.** *Pioneering a profession – The birth of veterinary education in the Age of Enlightenment*. AVMA, 2011 <https://www.avma.org/javma-news/2011-01-01/pioneering-profession>
- Laszitty R et al.** History of Food Quality Standards. *Food Quality and Standards - Vol 1*, 2012. <http://www.eolss.net/sample-chapters/c10/e5-08-01-01.pdf>
- Stadlmuller L et al.** An operational hygiene inspection scoring system for Austrian high-risk companies producing food of animal origin. *Food Control*. 77: 121-130, 2017
- Surak JG.** The Evolution of HACCP *Food Quality & Safety*, 2009
- The Role of the Veterinary Services in Food Safety*. <https://www.woah.org/app/uploads/2008/09/en-role-des-services-veterinarie-securite-sanitaire-des-aliments.pdf> 2008
- Weinroth MD et al.** History, development, and current status of food safety systems worldwide. *Animal Frontiers* 8(4): 9-15, 2018
- Yapp C, Fairman R.** Assessing compliance with food safety legislation in small businesses. *British Food Journal* (107): 150-161, 2005
- Zaccheo A et al.** A Brief History of Food, Food Safety, and Hygiene. *Food Hygiene and Applied Food Microbiology in an Anthropological Cross-Cultural Perspective*. Springer, 2017

