Appendix 2 - Food safety and Net Zero measures

In this guide

This short brief gives a quick explanation of the food safety themes being used to structure discussion of the food safety and net zero carbon workshop on 18 November 2021. The purpose of this brief is to give attendees some insight into types of food safety concern to aide discussion of links between activities to achieve net zero carbon and possible implications for food safety.

Zoonoses are infectious diseases caused by a pathogen (an infectious agent, such as a bacterium, virus or parasite) that can pass from animals to humans. Zoonoses can be transmitted directly from animals to humans through media such as air (influenza) or through bites and saliva (bluetongue, Ebola). Transmission can also occur via an intermediate species, which carry the disease pathogen without getting sick.

Foodborne diseases are caused by the consumption of pathogens (such as E. coli, Listeria, Campylobacter, Salmonella, Clostridium etc) which have contaminated food. Contamination of food can occur at any stage of the food production, delivery and consumption chain. They can result from several forms of environmental contamination including pollution in water, soil or air, as well as unsafe food storage and cross-contamination during processing or food preparation.

Radiation is radiological contamination of food with radionuclides (isotopes of elements that emit ionizing radiation) that emit radiation types and at levels that are harmful to humans. Examples include sheep from North Wales and Cumbrian, where caesium-137 from the cloud emitted by the Chernobyl accident accumulated in the environment and affected their grazing land.

Chemical contamination is contamination of food with chemicals that can cause harm if ingested. These include heavy metals (such as mercury or lead), naturally occurring chemicals (such as mycotoxins that can be produced by some types of moulds), organic pollutants (like dioxins and PCBs, from burning hydrocarbons and old transformers respectively) and from processing food (such as acrylamide from burning carbohydrates).

Food contact materials include anything food touches as it passes through the food chain (e.g. packaging, processing equipment, pipes etc). Some materials can transfer harmful chemicals into food they are in contact with at levels which are considered unsafe. The amount transferred depends on: the material (e.g. moving from biodegradable packaging which contains allergenic chemicals), contact duration, temperature, acid/base food etc.

Food Allergy (to peanuts, soya, egg etc), food intolerance (sulphites and lactose) and coeliac disease (gluten) is collectively called food hypersensitivity. This is when a person's body suffers an adverse reaction to even small amounts of certain foodstuffs. Changes to formulations of food to include allergenic ingredients, introductions of new vectors for existing allergens (such as bioplastics), new allergens and increasing use of allergenic raw materials for products like biodegradable packaging are all possible concerns.

Nutrition changes in the macro (fat, sugar, protein) and micronutrients (minerals and vitamins) are a potential outcome of changes to farming and production methods. New processing methods, changing species, breeding or GE modification of crops or animals for one characteristic may affect others, like nutrition. Whilst not an immediate food safety issue this does affect the health of consumers long term.

Labelling is important as accurate labelling and product information allows informed consumer choice, e.g. organic food, GM or GE modified. Where labelling is vague to allow exchange of ingredients depending on availability/cost, this restricts consumers' self-determination