Optimum and limiting factors affecting the multiplication of important UK foodborne pathogens

Temperature

Minimum temperature	**3°C/4°C**	**(*E. coli* O157 and *Clostridium botulinum*)**
Maximum temperature	**52°C (Usually 50°C)**	***Clostridium perfringens***
Optimum temperature	**20°C to 47°C**	**20°C *Clostridium botulinum* 47°C *Clostridium perfringens***
Scientific danger zone	**3°C to 52°C**	
Legal danger zone	**8°C to 63°C**	

pH value

Minimum pH	**3.8**	***(Staphylococcus aureus/Salmonella)***
Optimum pH	**Around 7 (neutral)**	

A_W

Minimum	**0.83**	***(Staphylococcus aureus/Salmonella)***

NB Moulds grow at lower pH and a_W values

No reports of mycotoxin production below an a_W value of 0.80

Although low pH prevents the multiplication of pathogens they may remain viable for some time and if present in large numbers have been known to cause food poisoning, for example, salmonella in apple juice