

	Microbial Decontamination,
	Food Safety, & Antimicrobial Interventions
	Dean O. Cliver

	USDA, 1996
	<ul style="list-style-type: none"> ■ Pathogen Reduction & Hazard Analysis & Critical Control Points (HACCP) Rule ("Mega Reg") ■ Mandated SSOPs, graduated implementation of HACCP

	Mega Reg, 1996
	<ul style="list-style-type: none"> ■ Companies to design their own HACCP plans ■ One mandated CCP – no visible fecal (ingesta, milk) deposits on carcass surface (others optional)

	Mega Reg, 1996
	<ul style="list-style-type: none"> ■ Carcass surface swab samples: <ul style="list-style-type: none"> ■ Generic <i>E. coli</i> – quantitative ■ <i>Salmonella</i> – qualitative

	Mega Reg, 1996
	<ul style="list-style-type: none"> ■ <i>E. coli</i> O157:H7 (only) – illegal adulterant in raw ground beef (only) ■ New development – recalls of trimmings used to make ground beef, due to O157 presence

	Interventions
	<ul style="list-style-type: none"> ■ Sanitation ■ Trimming ■ Washing ■ Carcass treatments ■ Packaging

	Sanitation
	<ul style="list-style-type: none"> ■ Midline incision, etc. ■ Hide pulling ■ Evisceration

	Trimming
	<ul style="list-style-type: none"> ■ Knife trimming of carcass surface to remove visible deposits ■ Opinions of inspectors vs workers

	Washing
	<ul style="list-style-type: none"> ■ Carcass washing with tap water was traditional ■ Hot water now generally used

	Carcass treatments
	<ul style="list-style-type: none"> ■ Organic acids ■ Steam Pasteurization™ System ■ Irradiation pasteurization ■ Ozonation ■ Hydrogen peroxide

	Carcass treatments
	<ul style="list-style-type: none"> ■ Cetylpyridinium chloride ■ Sodium chloride ■ Acidified sodium chlorite (Sanova® Process)

	Carcass treatments
	<ul style="list-style-type: none"> ■ Chlorine washes ■ Trisodium phosphate ■ Lactates

	Packaging (color)
	<ul style="list-style-type: none">■ O₂ adsorption (e.g., potassium permanganate)■ MAP – 80% O₂, 20% CO₂■ Vacuum

	Summary
	<ul style="list-style-type: none">■ USDA's version of HACCP■ CCPs■ Shelf life extension