

### I. HACCP Produces Net Benefit to Society

Food Safety and Inspection Service (FSIS) is proposing, in docket no. 93-016P, above, to require all federally inspected meat and poultry plants to adopt a Hazard Analysis and Critical Control Points (HACCP) processing control system for each of its processes within 3 years of publication of the final rule. The proposed regulations also mandate some near-term pathogen reduction interventions prior to HACCP plan implementation. In the same document, FSIS provides advance notice of plans to establish interim targets, guidelines, and standards to establish public health goals for pathogens.

The objective of these regulations is to initially reduce and eventually minimize the risk of foodborne illness from four human pathogens in meat and poultry in the manufacturing sector under current production technologies. These pathogens are:

1. *Campylobacter jejuni/coli*;
2. *Escherichia coli* 0157:H7;
3. *Listeria monocytogenes*; and
4. *Salmonella*.

These regulations also require appropriate controls to minimize or prevent other biological, chemical and physical safety hazards. To a certain extent HACCP can improve quality

aspects of products and production efficiency. However, the benefits assessed here are based only upon pathogen reduction and control for safety.

FSIS has selected mandatory HACCP as the centerpiece for this new regulatory program because scientists and industry leaders agree that it provides the most effective food processing controls available to reduce and control meat and poultry pathogens and accomplish other food safety objectives such as chemical residue control.

The function of this regulatory impact assessment is to evaluate the costs and benefits of a mandatory HACCP-based regulatory program for all meat and poultry establishments under inspection. The HACCP "program" includes all the interventions in this proposal. Because contamination can occur any place in the production process, no one intervention can minimize the risk; indeed, the value of the HACCP system is that it provides a framework for systematically using interventions to minimize risk. For this reason benefits have been estimated only for the entire HACCP program. Costs are provided for each individual intervention. (A Supplement on Costs is available from Diane Moore, Docket Clerk, Room 3171, South Building, Food

Safety and Inspection Service, U.S. Department of Agriculture, Washington, DC 20250.)

Because there are no scientific data that can be used to relate intermediate pathogen reductions to reductions in foodborne illness, benefits have been based on the Agency's intention to minimize the risk of foodborne illness in the manufacturing sector. Risk minimization means the elimination of almost all the foodborne illness caused by the contamination of meat and poultry products with the four pathogens listed above in inspected plants. The amount of reduction in pathogens needed to do this is unknown and would vary for individual pathogens and products. The testing requirement will enable the Agency to learn more about what pathogen reduction standards would be appropriate to minimize risk.

The conclusion of the cost-benefit analysis is that mandating HACCP-based processing control systems will result in net benefits that far exceed implementation and operation costs. Table 1 provides a summary of these costs and benefits. The proposed regulation will redistribute costs in a fashion more acceptable to societal values which have always given priority to minimizing the occurrence of controllable diseases.

TABLE 1.—COST-BENEFIT COMPARISON HACCP/PATHOGEN REDUCTION PROPOSAL  
(Millions of \$—discounted 20 years) \*

	Costs		Benefits **
Total .....	\$2,298.9	Total .....	\$6,422–23,935
Near-Term:		Foodborne illness avoided:	
Micro testing .....	131.9	<i>Campylobacter jejuni/coli</i> .....	2,919–4,670
Sanitation SOP .....	86.6	<i>E. coli</i> 0157:H7 .....	1,168–2,419
Time/Temperature Requirements .....	45.5	<i>Listeria monocytogenes</i> .....	584–1,168
Antimicrobial Treatments .....	51.7	<i>Salmonella</i> .....	1,751–15,178
Subtotal .....	315.7		
HACCP Implementation:			
Plan development .....	35.7		
Micro testing .....	1,262.5		
Record keeping .....	456.4		
HACCP Training .....	24.2		
Aseptic Training .....	1.9		
Fed. TQC Overtime .....	20.9		
Agency Training .....	0.4		
SOP under HACCP .....	181.2		
Subtotal .....	1,983.2		

Source: Economic Research Service, Centers for Disease Control and Prevention, and Food Safety and Inspection Service.

\* These costs have been discounted using the OMB suggested rate of 7%.

\*\* Benefits from elimination of *Salmonella*, *E. coli* 0157:H7, *Campylobacter jejuni/coli* and *Listeria monocytogenes* are estimated at 90% of the total meat- and poultry-related medical costs and productivity losses associated with each pathogen as depicted in Table 4. Total benefits start 5 years after publication of final rule.

It is not known exactly what percentage of contamination takes place in the manufacturing sector in contrast to that which occurs afterwards during

distribution and preparation. It is clear that most contamination takes place during manufacturing since it derives from processing animals and cross

contamination during further processing. Agency microbiologists have estimated that about 90 percent of pathogen contamination occurs within