RESEARCH ABSTRACT

PORK SAFETY

**Title:** Microbial Profile of Overhead Surfaces and Condensate in Pork Processing Plants - **NPB #02-139**

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**Abstract:** Temperature and humidity differences within pork slaughter plants lead to condensate formation and dripping, especially in the carcass cooler. The purpose of this research was to enumerate selected types of microorganisms on rail and overhead surfaces and in condensate on those surfaces in pork coolers where carcasses are chilled and held prior to fabrication. Swab samples were collected from rails and overhead structures in three areas in the cooler before and during operations. Condensate droplets were also collected, when present, from rail or overhead structures. Enumeration of psychrotrophic aerobic plate count (APC), mesophilic APC and coliform bacteria were completed. Samples were also enriched and evaluated for presence of *Listeria*, *Salmonella*, and *Campylobacter* species. For rail and overhead structures, 5.8% of the samples had psychrotrophic APC counts greater than the 1.3 $\log_{10}$ colony forming units/$cm^2$ (CFU/$cm^2$) enumeration threshold. For both mesophilic APC and coliform samples, 1.4% of samples had greater than 1.3 $\log_{10}$ CFU/$cm^2$. For the condensate samples, 32.7% of psychrotrophic APC counts and 4.1% of mesophilic APC counts were greater than the 4.2 $\log_{10}$ CFU/ml enumeration threshold of the sampling technique. There were no coliforms detected in any of the condensate samples at a detection threshold of about 2.8 $\log_{10}$ CFU/ml. The high detection limits for condensate samples resulted from the very low volume of condensate recovered. Rail and overhead samples produced positive results in 3.2% of samples enriched for *Salmonella sp.* and 4.1% for *Listeria sp.* Condensate samples had 4.1% positive for *Salmonella*, 4.2% positive for *Listeria*. None of the samples gave a positive result upon enrichment for *Campylobacter*. The results of this study indicate that in most cases, rail and overhead structures and condensate droplets are free of pathogens. However, when pathogens are present, they may be carried in droplets of condensate that accumulate on overhead surfaces.