

# Decontamination of High Pathogenic Avian Influenza H5N1

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## Introduction

Due to the infectious nature and economical impact of avian influenza outbreaks, the disinfection and sanitation of the affected area is necessary for rapid and complete containment. We have conducted virus inactivation studies using various test disinfectants to determine efficacy against influenza A (low path avian influenza H5N8) and have included appropriate environmental/organic controls (poultry feces/litter material). This effort includes the evaluation of the mechanisms of action of the various test disinfectants based on subsequent effect on viral RNA and structural proteins.

Inactivation studies for avian influenza includes 1) evaluation of various test disinfectants including Sandia National Laboratory DF-200<sup>i</sup>, Virkon® S<sup>ii</sup>, bleach, and ethanol, 2) optimization of challenge exposure concentration and duration parameters to avian influenza on various surfaces (steel, rubber, polyethylene), on poultry carcasses, and in litter, feed, water, etc, 3) to develop methodology to understand the mechanism of action of the disinfectants by evaluating the effect on nucleic acid, structural proteins, and the lipid envelope and 4) development of a rapid detection and infectivity assessment tool.

## Technical Approach

In this research, preliminary inactivation studies using a mammalian isolate (A/WSN/33) and a low pathogenic avian influenza (A/Turkey/Wisconsin/68 H5N9) provided by the Division of Viral & Rickettsial Diseases, CDC in Atlanta, GA, were used to evaluate efficacy under the environmental and organic load conditions expected at a poultry facility. Further evaluation using H5N1 is planned to be conducted at the CDC in Fall 2005. The experimental testing was conducted following current EPA guidelines for evaluating virucidal efficacy. Endpoint assay using TCID<sub>50</sub> (tissue culture infectious dose) was used to quantify post treated virus. RT-PCR and immunological based assays were used to study the degradation of viral RNA and viral proteins, respectively.

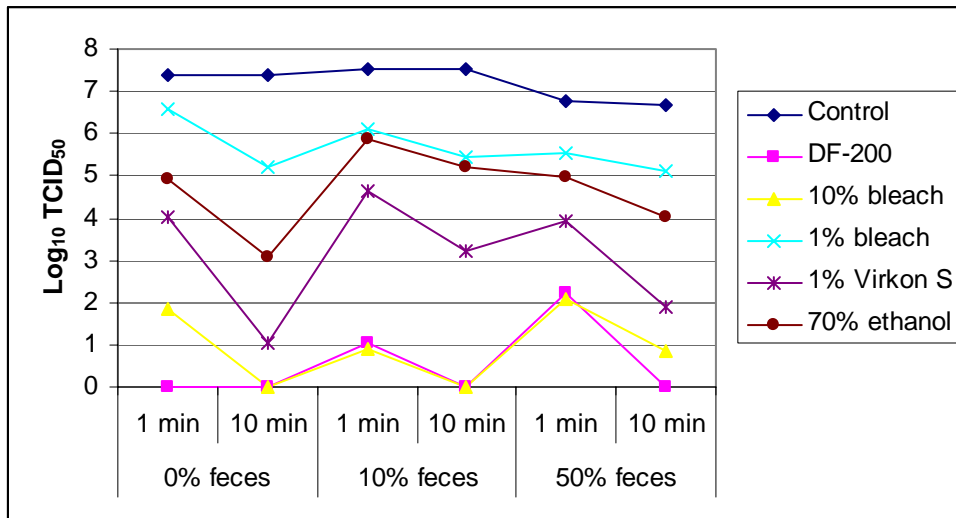


Figure 1: Recovery of H5N8 (low pathogenic avian influenza) following 1 or 10 minute treatment with test disinfectants with 0%, 10%, or 50% organic challenge (poultry feces/litter). Control indicates treatment with 0.01 M phosphate buffered saline.

<sup>i</sup><http://www.sandia.gov/news-center/news-releases/2004/mat-chem/sarsfoam.html>

<sup>ii</sup> <http://www.antecint.co.uk/>