

# DHS Plum Island Animal Disease Center Science Program: Disinfection and Decontamination Testing



Science and  
Technology

## FIGHTING TRANSBOUNDARY ANIMAL DISEASES

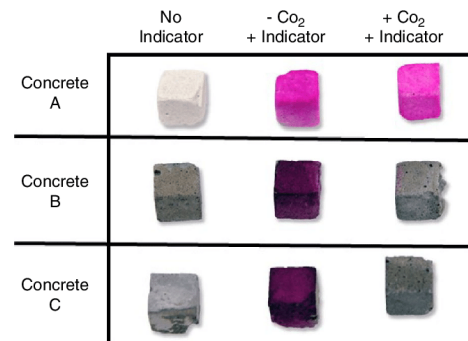
The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) operates the Plum Island Animal Disease Center (PIADC). At PIADC, DHS S&T and Department of Agriculture (USDA) Agriculture Research Service (ARS) and Animal Plant Inspection Service (APHIS) scientists study knowledge gaps and test, evaluate, and develop countermeasures and outbreak prevention and control measures for transboundary animal diseases, including African swine fever (ASF) and foot-and-mouth disease (FMD). PIADC is the only facility within the U.S. that is permitted to utilize live FMD virus as part of its scientific activities.

Our goal is to prevent the introduction of ASF and FMD to North America, and provide tools to end users—first responders, veterinarians, the agriculture industry, decision-makers—to detect, mitigate, and decontaminate threats posed by transboundary animal diseases. Our research builds foundational science, supports current operational needs, and helps characterize future needs and emerging threats.

## IMPACT

The availability of well-characterized, validated disinfection and decontamination technologies (chemical disinfectants, fumigants, etc.) is integral for preventing transboundary animal disease outbreaks and for outbreak response and recovery activities. Cattle and swine industries must be able to effectively decontaminate production and processing environments (barns, feedlots, milking parlors, meat-packing, rendering facilities, etc.) to ensure disease-free status.

The S&T Science Program utilizes the Biosafety Level-3 biocontainment features of PIADC infrastructure to safely test disinfection and decontamination technologies directly on target pathogens. In the coming years, the transition of the PIADC mission to the National Bio and Agro-Defense Facility will require that PIADC buildings be decontaminated in a manner that reduces risks to an acceptable regulatory level for release of the property to a public entity. The terminal decontamination and closure of PIADC will represent the first of its kind for a facility with a history of handling live FMD virus (FMDV) in the U.S. As such, DHS is depending upon the capabilities of the S&T Science Program to enable science-based selection of decontamination technologies and protocols.



*Evaluation of transboundary animal disease pathogen inactivation on concrete.*

## RECENT AND CURRENT PROJECTS

From fiscal year (FY) 2018 to present, S&T has invested more than \$2M in disinfection and decontamination testing studies. The S&T Science Program shares their actionable data with interagency and industry partners to inform policy and outbreak response plans. Examples include:

### Static Pile Composting of ASFV-Infected Swine Carcasses:

In FY 2020, whole carcass composting was evaluated as a mortality disposal option for swine infected with ASF virus (ASFV) to prevent virus spread. Results showed that ASFV was completely inactivated after 10 days in a composting windrow.

### Inactivation of ASFV on Stainless Steel and Concrete with Commercial Disinfectants and Organic Acids:

In FY 2020–2021, results from a National Pork Board-funded cooperative research and development agreement project generated efficacy data to allow industry stakeholders to proactively select effective commercial disinfectants against ASFV.

### Environmental Stability of FMDV and ASFV:

In FY 2022, laboratory studies used an environmental chamber to study the effect of temperature and humidity on FMDV and ASFV stability.

