Strengthening Our Nation's Ability to Protect Human Health

Prevention, early warning, assessment and control, and remediation of microbial risks require a sound scientific basis. Anthrax attacks on the Capitol, Hurricane Katrina, massive sewage spills and Bird Flu infections—each of these events had the potential to result in serious large-scale risks to human health. During outbreaks of disease, whether caused by bioterrorist attacks, natural disasters, or large contamination events associated with air, water, food or the environment, several important questions need to be answered:

1. What is the disease risk to human health?
2. How is the pathogen spread and how do we stop it?
3. How do we clean up?
4. How do we monitor to ensure people are safe?

The Center for Advancing Microbial Risk Assessment (CAMRA) seeks to answer these essential questions. Through innovative research programs, scientists at CAMRA study how to protect human health from microbial agents in the natural and built environment. CAMRA will fill critical gaps in current microbial risk assessment frameworks needed to support environmental protection, homeland security and public health objectives.

What is CAMRA?

The U.S. Department of Homeland Security and the U.S. Environmental Protection Agency established CAMRA in 2005 through a five-year, $10 million jointly-funded grant.

The Center is a consortium of world-class scientists and engineers from Michigan State University, Drexel University, University of Michigan, Carnegie Mellon University, Northern Arizona University, University of Arizona and University of California, Berkeley. CAMRA has two missions:

1. To develop models, tools and information that will be used in a risk assessment framework to reduce or eliminate disease health impacts from biological agents of concern as in indoor and outdoor environments; and
2. To build a national network for knowledge management, learning, and transfer of microbial risk assessment for scientists, students, and professionals in the field and in our communities.

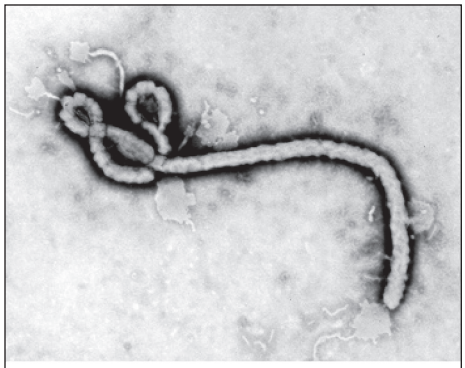

Image of the Ebola virus.
Image from: microbelibrary.org

What is microbial risk assessment?

Microbial risk assessment estimates the consequences of exposure to microbial agents such as bacteria, viruses and parasites, toxins and fungi. Risk assessments enable those responding to a contamination event to develop steps to mitigate, control, and prevent exposure in order to protect human health.

Why is CAMRA important?

Bioterrorism and disease outbreaks threaten human health and well-being. In 1993, approximately 400,000 people became ill and over 100 died in Milwaukee, WI because the water supply was contaminated with a parasite. In 2003, four people died as a result of the anthrax attacks on the US Senate and Capitol buildings, which cost over

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$40 million to clean after the attack. In 2005 Hurricane Katrina left the Gulf Coast covered in sewage. CAMRA will provide critical information on how to respond and prepare for future bioterrorism attacks, microbial contamination events, and disease outbreaks.

What are the Center's goals?

CAMRA has five major research goals:

- Improve our ability to measure exposure to biological agents of concern in the built and natural environment (water, surfaces and air)
- Develop a methodology linking models of environmental exposure and models of disease processes to help with early detection of outbreaks, response, and control efforts
- Produce a reference set of information on the dose and subsequent response for specific biological agents of concern (BAC)
- Identify research strategies and risk communication priorities to improve how society manages biological risks
- Develop educational programs, online learning tools, and workshops to increase knowledge about microbial risk assessment

What is unique about CAMRA?

CAMRA is led by top researchers from seven universities across the US. Three of the principal investigators literally wrote the book on quantitative microbial risk assessment.

CAMRA is researching risks from viruses, a critical knowledge gap in current risk assessment frameworks.

CAMRA researchers have access to unique resources. For example, a laboratory facility to address the potential contamination of the nation's water supply is currently under development at the University of Arizona and will be used by CAMRA researchers to understand how biological agents might travel through a real water distribution system, neighborhood, or building to taps, showers and toilets and even through aerosols.

Why is this important?

CAMRA provides state-of-the-art technology and research for addressing the pressing human health issues associated with microbial contamination, either from bioterrorism or other contamination events.

The study of emerging infectious diseases and the ecology of those diseases are areas where science can begin to directly benefit national and global health, as well as the future health of our children.

CAMRA, along with other DHS Centers, provides high quality academic and outreach programs to inform and assist all levels of government and to engage minorities and minority serving institutions. The DHS Centers are producing results that can be used at local and state levels, across multiple jurisdictions to enhance planning, prevention, emergency response, and recovery at all levels.

Where can I find more information?

www.camra.msu.edu

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