CAMRA

Center for Advancing Microbial Risk Assessment

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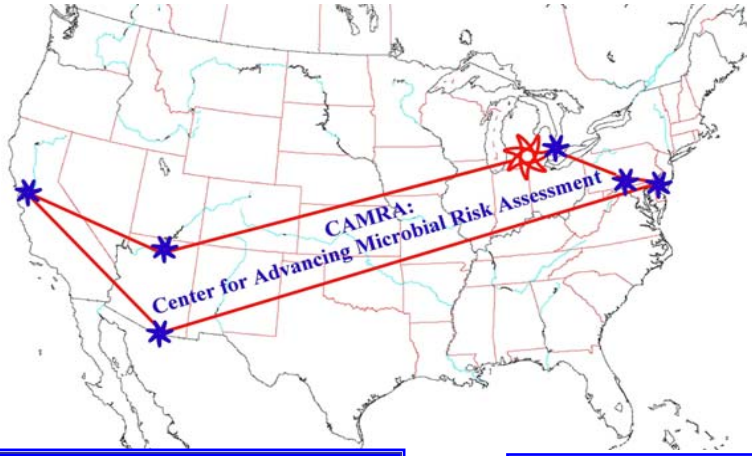
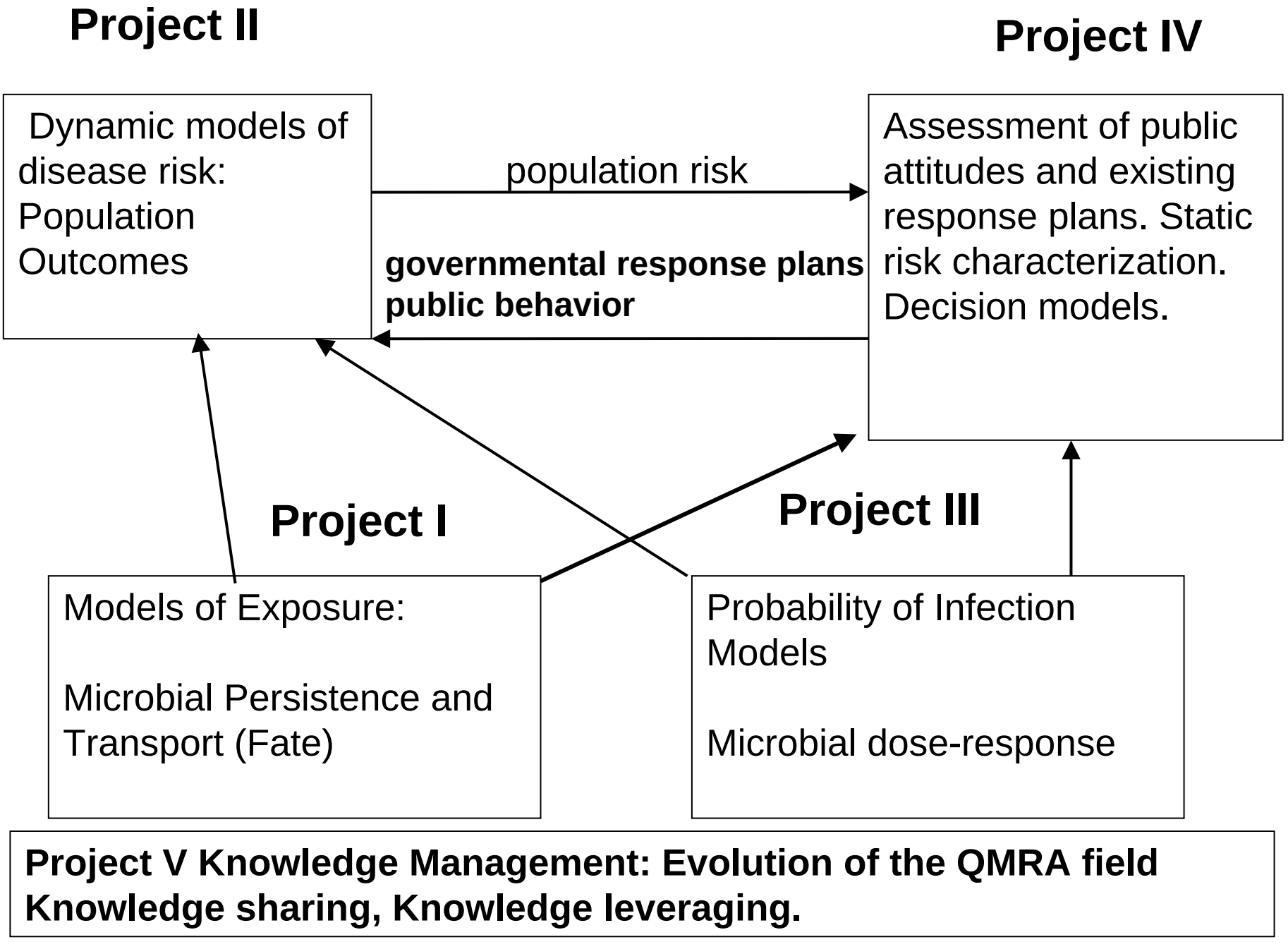


to build a national network for microbial risk knowledge management, learning and transfer, for the community of scientists, and students via educational programs and community of professionals in the field and in our communities.

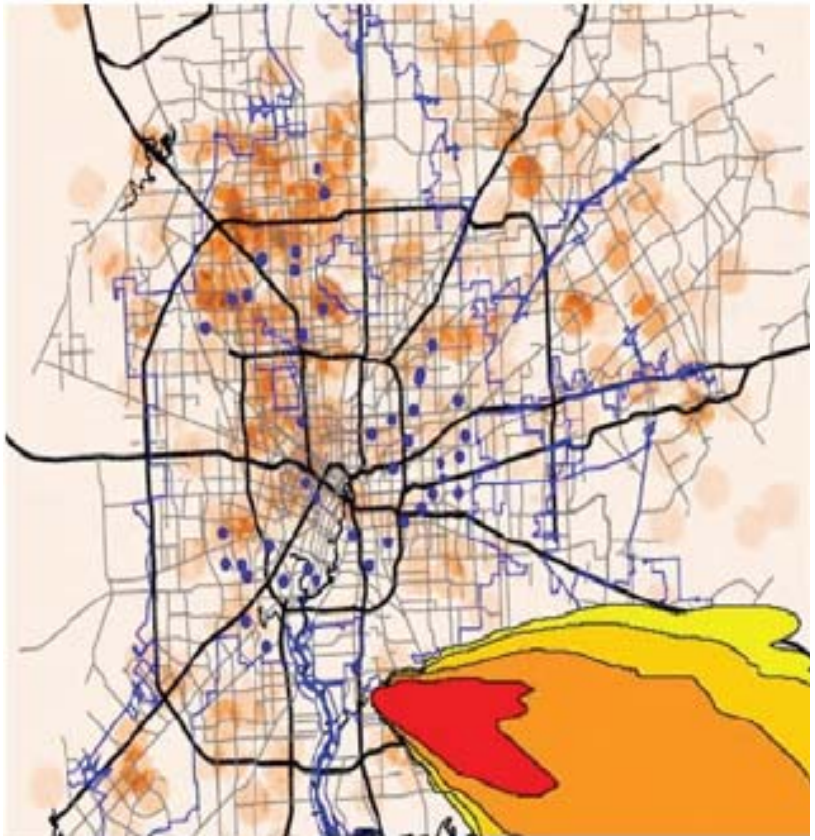
to develop models, tools and information that will be used in a credible risk assessment framework to reduce or eliminate health impacts from deliberate use of biological agents of concern in the indoor and outdoor environment.


Project II
Project IV
Dynamic models of disease risk: Population Outcomes
population risk
governmental response plans
public behavior
Assessment of public attitudes and existing response plans. Static risk characterization. Decision models.
Project I
Project III
Models of Exposure:
Microbial Persistence and Transport (Fate)
Probability of Infection Models
Microbial dose-response
Project V Knowledge Management: Evolution of the QMRA field
Knowledge sharing, Knowledge leveraging.

Principal Investigators

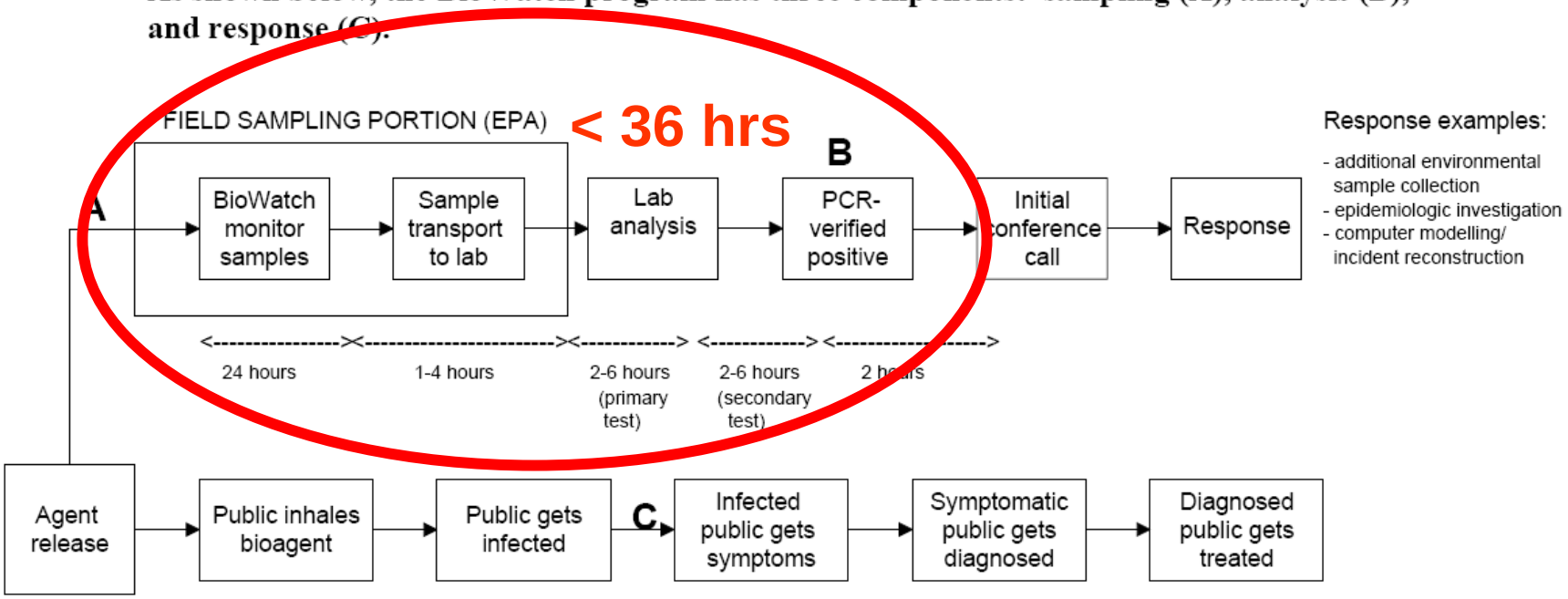
- Co-Directors: Joan Rose & Chuck Haas (MSU and Drexel: Lead Institutions)
- Project I: Chuck Gerba, Chris Choi, Ian Pepper, Syed Hashsham, Mark Nicas, Paul Keim.
- Project II: Joe Eisenberg, Jim Koopman
- Project III: Chuck Haas, Carole Bolin
- Project IV: Patrick Gurian, Liz Casman
- Project V: Rosina Weber & Ewen Todd

BioWatch Program



BioWatch Program Model

As shown below, the BioWatch program has three components: sampling (A), analysis (B), and response (C).



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A USA TODAY investigation finds:

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Lax oversight raises ta

THE INDEPENDENT

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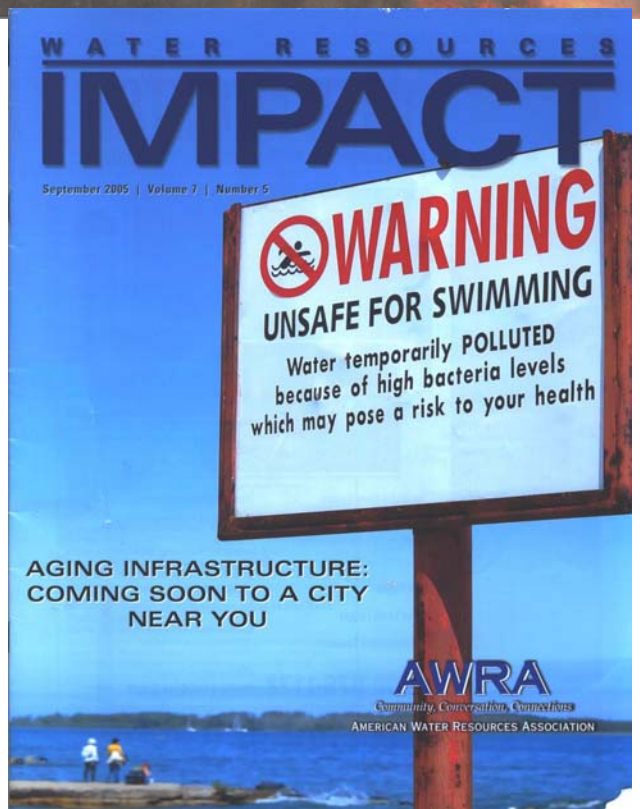
GENERATION SEX

WHY THE OVER 40s ARE BRITAIN'S MOST SATISFIED WOMEN PAGES 34&35

Contaminated waters threaten an environmental disaster

THE TOXIC TIMEBOMB



WATER RESOURCES IMPACT

September 2005 | Volume 7 | Number 5

WARNING

UNSAFE FOR SWIMMING

Water temporarily POLLUTED because of high bacteria levels which may pose a risk to your health

AGING INFRASTRUCTURE: COMING SOON TO A CITY NEAR YOU

AWRA

Community, Conversation, Connections

AMERICAN WATER RESOURCES ASSOCIATION

TIMES WORLD NEWS

www.timesonline.co.uk/world

ITALY

An invasion of foreign architects is upsetting the local talent

PAGE 43

JAPAN

Voters choose between 'beauty and beast' in Sunday's snap election

PAGE 47

'Get out' order as killer diseases spring from the putrid waters

Thousands refuse to leave as five hurricane survivors die from bug that causes cholera, reports Tim Reid

FIVE survivors of Hurricane Katrina have died after becoming infected with a bacterium that causes cholera, and officials say that outbreaks of other diseases are emerging from the putrid floodwaters in New Orleans.

With a health disaster looming in a city awash with toxic and stinking effluent, Mayor Ray Nagin ordered police and National Guard troops yesterday to remove forcibly the estimated 10,000 people still in their homes, many of whom are still refusing to leave.

Officials confirmed that high levels of *E. coli* and coliform bacteria had been found in New Orleans's stagnant waters,

Young and elderly in danger of infection

By Sam Lister, Health Correspondent

THE STAGNANT, heavily polluted floodwaters still covering much of New Orleans provide a fertile breeding ground for countless infectious bacteria.

Of the diseases likely to be present, several samples of dangerous Gulf Coast bacteria have already been detected in water testings and the wounds of those caught in the floods.

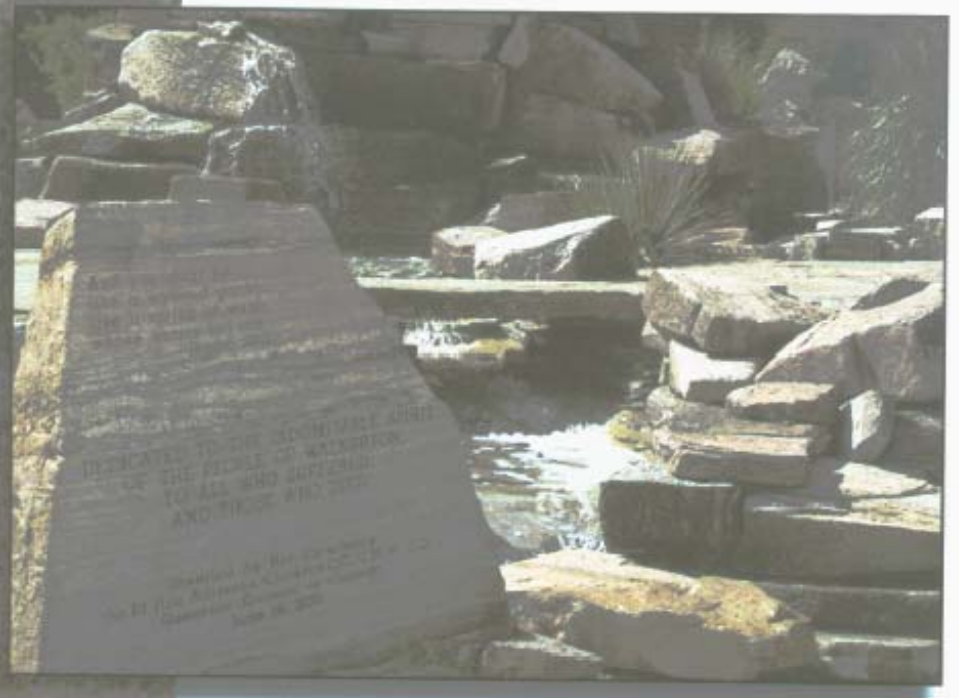
Some of the most dangerous waterborne diseases such as cholera, dysentery and typhoid, which are often associated with the aftermath of natural disasters in the developing world, are likely to pose less of

Vol. 31, No. 6 June 2005

Walkerton — 5 years later

Tragedy Could Have Been Prevented

by Steve E. Hrudey and Richard Walker



In May 2000, several serious flaws in the Walkerton, Ont., municipal drinking water system aligned to permit a breakthrough of *E. coli* O157:H7 and *Campylobacter* bacteria, causing seven deaths and more than 2,300 cases of waterborne disease. These included 27 cases of hemolytic uremic syndrome, a serious kidney ailment with potential lifelong implications. Most of the cases of kidney disease were among children aged one to four. Other Walkerton residents have also reported enduring illness.


TIME
WILL CLINTON TESTIFY?
THE CAPITOL HILL GUNMAN
THE KILLER GERM
It's turning up everywhere: in your water, your food, the pool. How to protect yourself from
E.COLI


TALES FROM THE CRYPT
GOOD LORD, JENKINS, DON'T OPEN IT! REMEMBER THE CURSE OF MILWAUKEE!!
H_2O

By kgw.com Staff

FAIRFAX COUNTY

Senior Community Hit by Possible Norovirus

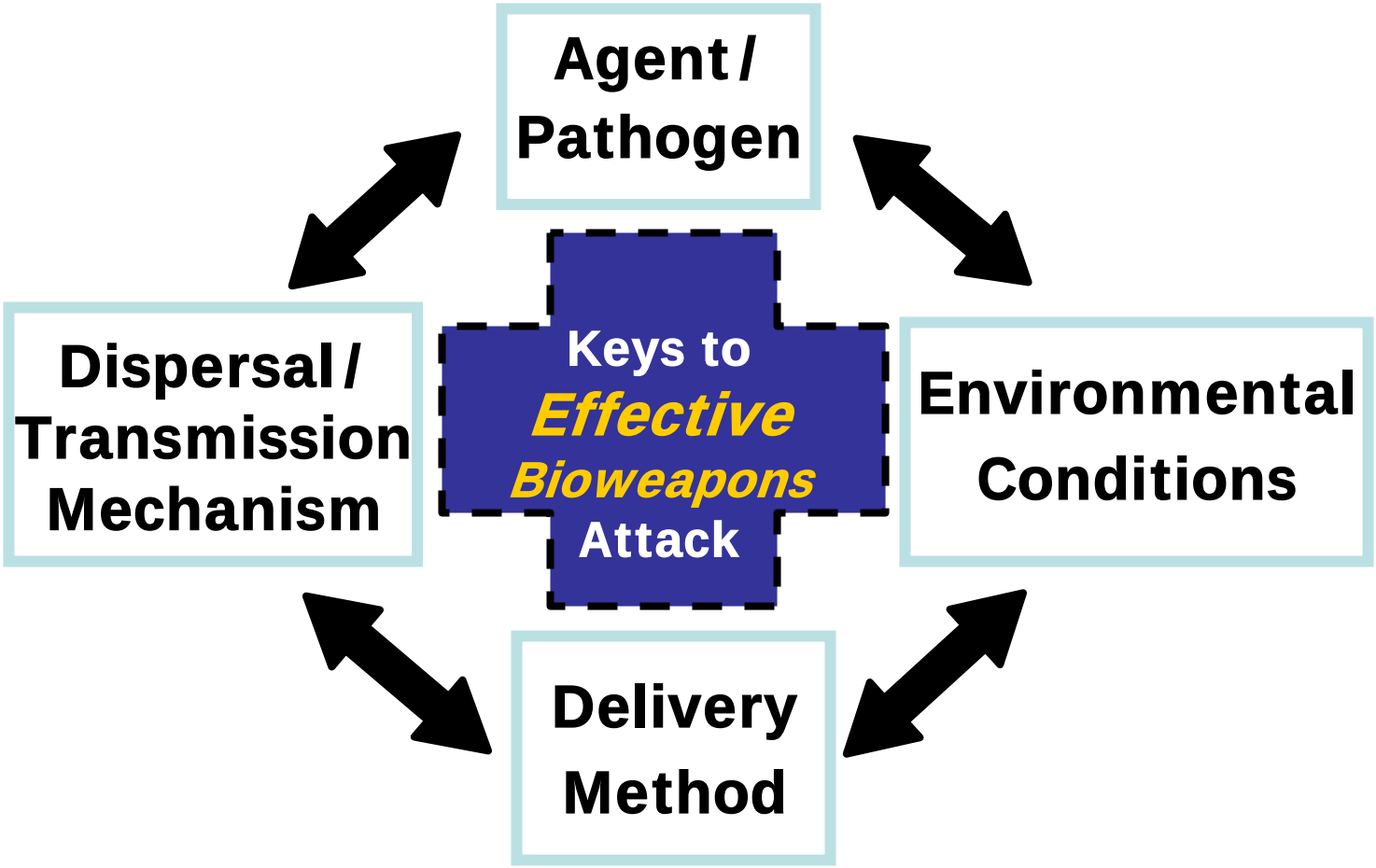
By Leef Smith
Washington Post Staff Writer
Saturday, March 10, 2007; Page B02

Washington-area hotel closes for cleaning after norovirus sickens dozens of guests

The Associated Press

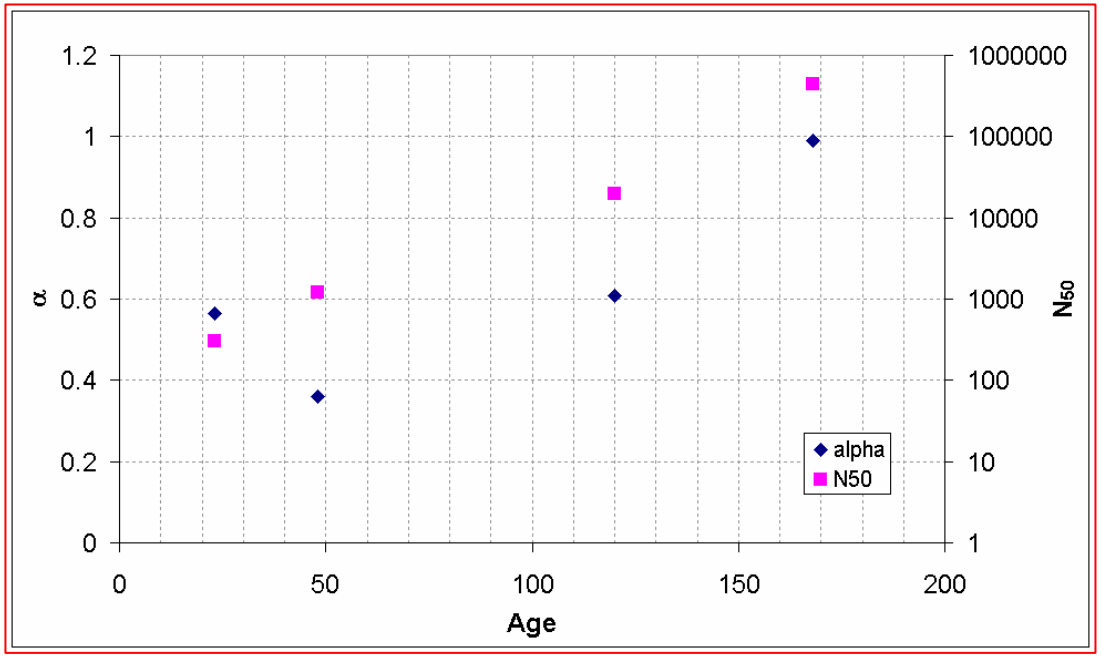
Published: March 2, 2007 **ARLINGTON, Virginia:** A hotel near a Washington, D.C., airport was closed for cleaning after as many as 150 guests were sickened by the highly contagious norovirus, hotel and county health officials said.

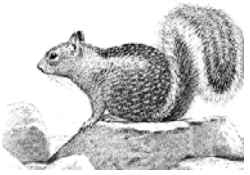
Critical Microbial Risk Variables: Deliberate (BT) *or* Natural Outbreaks



Adapted from Sidell at al., *Janes Chem-Bio Handbook*, 2nd ed.

Building Dose-Response Models





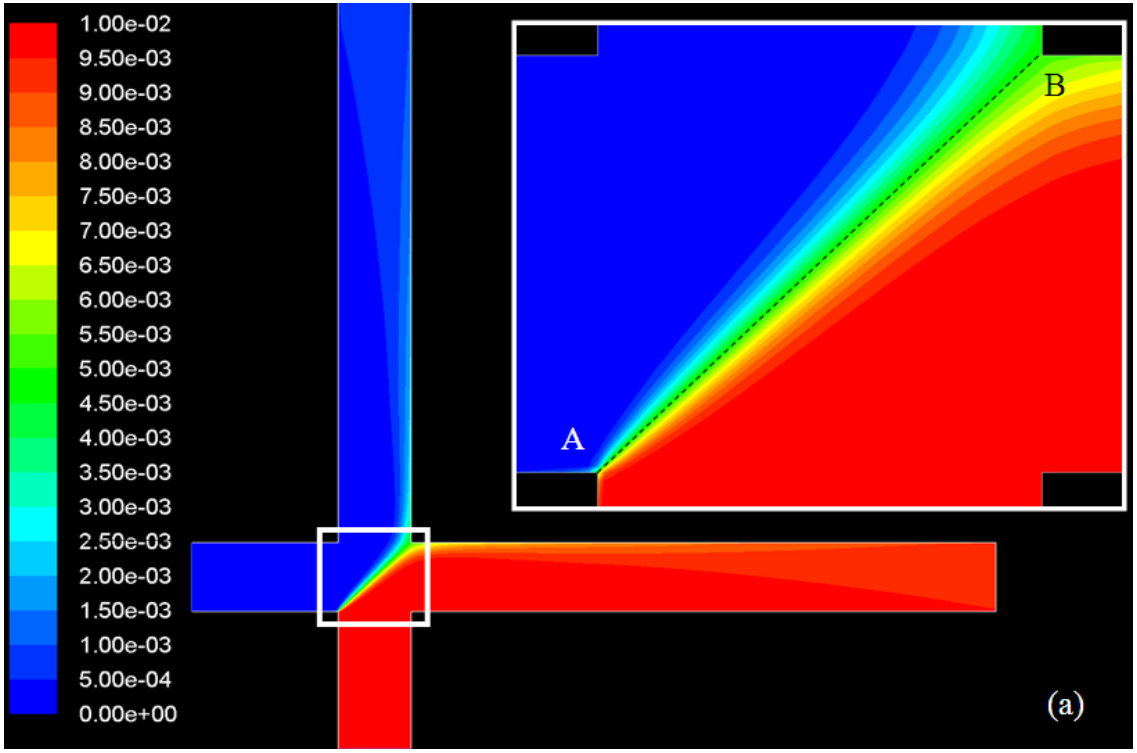
Key Finding: Lower Median infectivity For the Young

Dr. Chuck Haas, Drexel University

Mixing patterns along the interface

KEY FINDING: Microbial Contaminant transport in water distribution systems Will be higher in key parts of the system

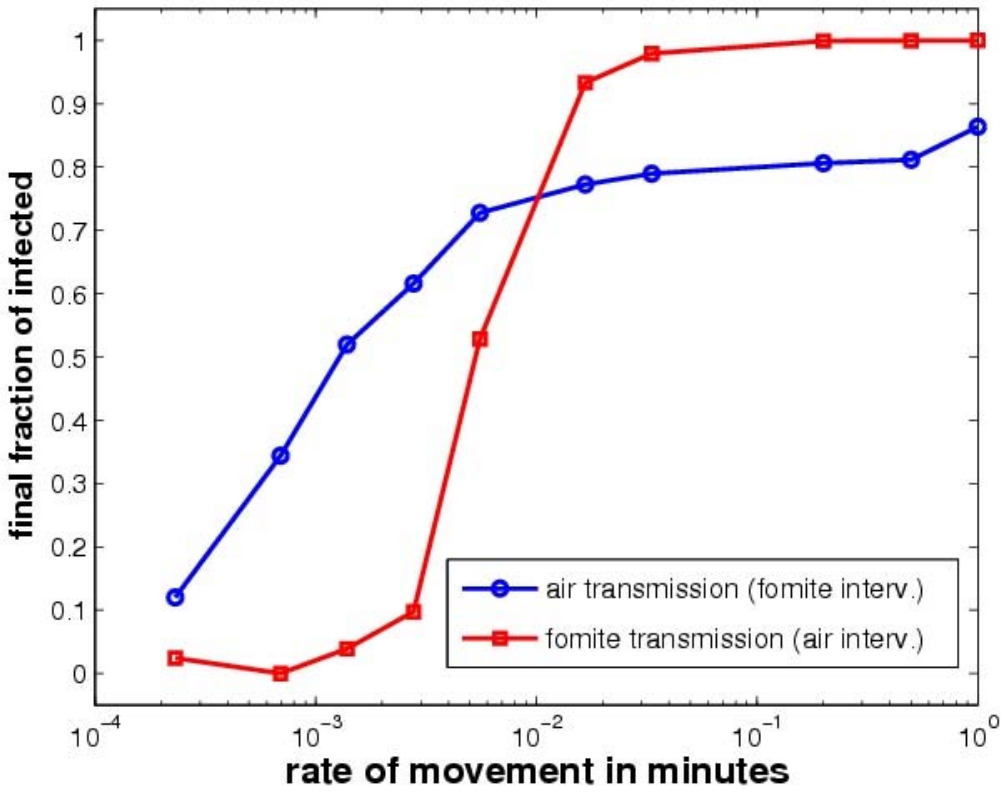
Dr. Chris Choi
University of Arizona



Model Development:
Mode of Transmission and Movement

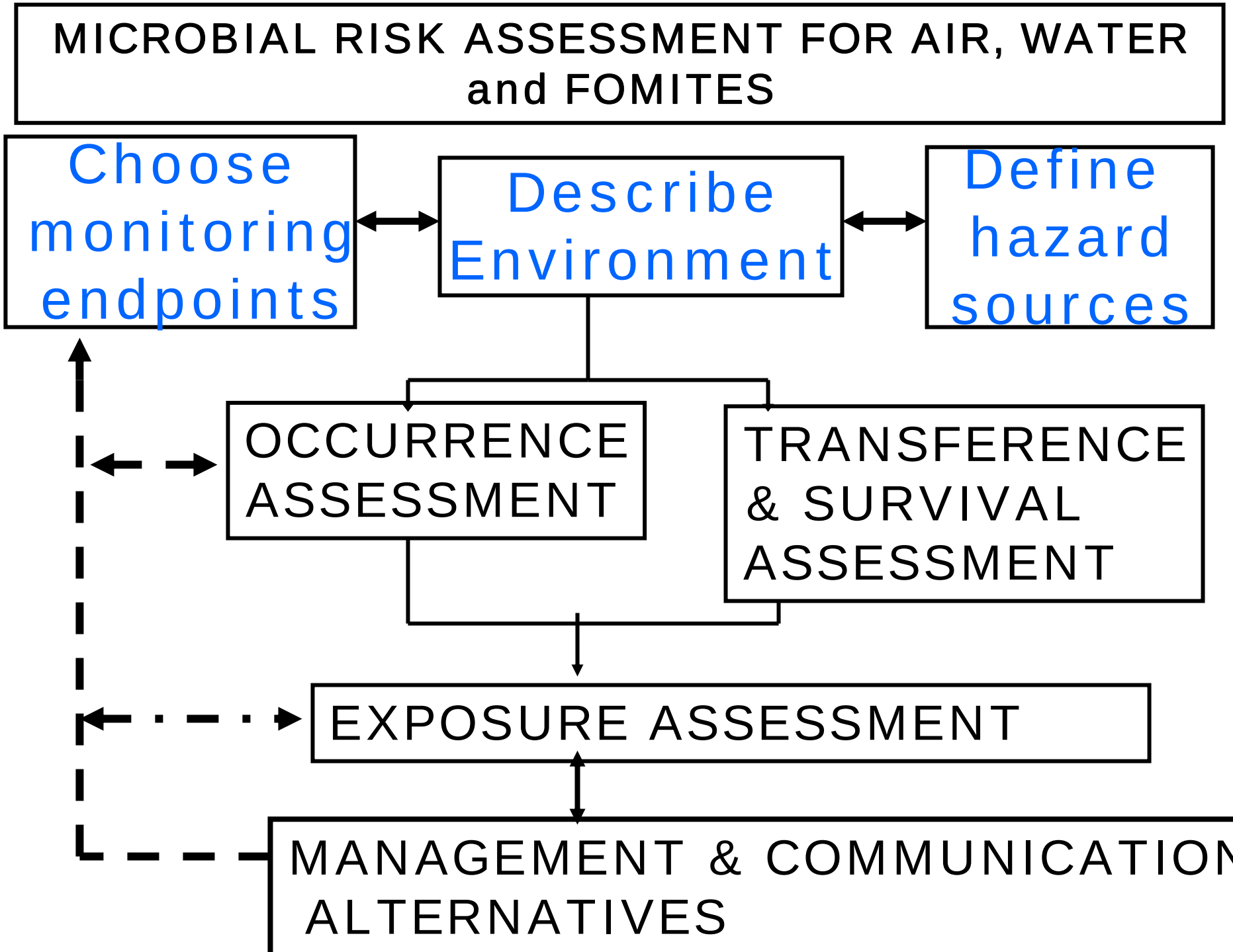
- Key Finding:

Infection over time Changes from Air to Fomite Risks.



Dr. Joe Eisenberg
And Dr. Jim Koopman
Univ. Michigan

Use of Markoff Chain model for microbe air-fomite interaction (Rachel Jones Univ. Calif. Berkeley)


MICROBIAL RISK ASSESSMENT FOR AIR, WATER and FOMITES
Choose monitoring endpoints
Describe Environment
Define hazard sources
OCCURRENCE ASSESSMENT
TRANSFERENCE & SURVIVAL ASSESSMENT
EXPOSURE ASSESSMENT
MANAGEMENT & COMMUNICATION ALTERNATIVES

Outcomes

- Improved standard operating procedure for sampling
- Set of methods criteria and algorithms for addressing the interpretation of a negative
- Ability to better define outcomes with dose and response
- Models for air/surface/hand and water disease transmission risks
- Estimate intervention effects
- Apply above concepts to emerging problems eg. norovirus transmission
- Improved understanding of the science of QMRA and ability to communicate microbial risks.