

Major research and policy interests for CREM are:

Treatment and disinfection of water for drinking: New models for water disinfection; comparative disinfection kinetics; low cost solutions for field use; point-of-use devices; appropriate technologies for developing countries.

Microbiological quality of potable and recreational waters: Microbial fate and transport; rapid detection of pathogens; microbial indicators of water quality; sources of contamination; effects of stressors and competition on survival of pathogens in water; biofilms and their control; novel methods for testing chronic aquatic toxicity.

Survival and inactivation of foodborne pathogens: Pathogen survival on fruit, vegetables and dairy products; decontamination in processing facilities; rapid methods for detection; safety of food preservation and presentation techniques, including modified atmosphere packaging; irradiation of foods to inactivate pathogens; guidelines for preventing spread of foodborne infections.

Antibiotic and germicide resistance: Evaluating antibiotic and germicide resistance in bacteria; environmental pressures for development of such resistance.

Standard methods: Development of standardized protocols; organization of collaborative studies of test methods; their presentation to standards-setting bodies for consideration; participation in standards-setting organizations - AOAC International, ASTM International, Canadian General Standards Board (CGSB), Canadian Standards Assoc. (CSA), Comité Européen de Normalisation (CEN), NSF International and the International Organization for Standards (ISO).

Environmental survival of pathogens: Development and application of quantitative methods to study the influence of environmental factors on the ability of pathogens to survive on porous and non-porous materials indoors.

Biomedical waste treatment modalities: Review of available technologies; optimization, testing and validation of methods; monitoring techniques.

Survival and transport of pathogens and microbial indicators in wastewaters and soils: Ground water contamination; efficiency of treatment of point source (sewage) and non-point source (storm water) pollution; application of biosolids to lands.

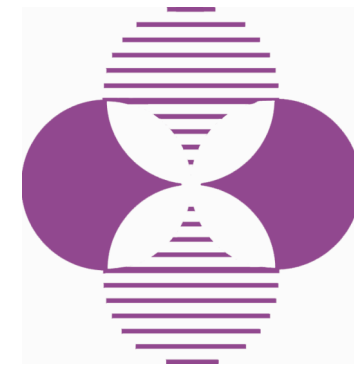
Role of air in spread of infections: The role of climatic conditions on the survival of microorganisms in aerosols to explain seasonality of disease outbreaks; comparative survival of different pathogens to assess potential for air-borne spread; air quality and sampling; air decontamination.

Application of molecular methods to the field of environmental microbiology: Rapid methods for the isolation, identification and enumeration of viable microorganisms from environmental samples including slow growing organisms such as mycobacteria.

Handwashing and its role in infection control: Compliance, protocols, products, prevention of microbial transfer to and from hands; in vitro, ex vivo and in vivo model systems for testing antiseptics.

Disinfection & sterilization in health-care: Safe and effective use of germicides; infection control; reprocessing of medical devices; environmental control; biological indicators for novel systems and processes; formulations safe for human health and the environment.

Physicochemical and biological factors in inactivation of pathogens: Environmental fate; disinfection; validation of industry processes in the pharmaceutical, healthcare and allied industries; investigations, development and optimization of novel inactivation processes; interaction of pathogens with microbial communities, including biofilms; understanding the effects of environmental stressors.



CREM

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**Centre for Research on
Environmental Microbiology**

**Centre de recherche en
microbiologie environnementale**

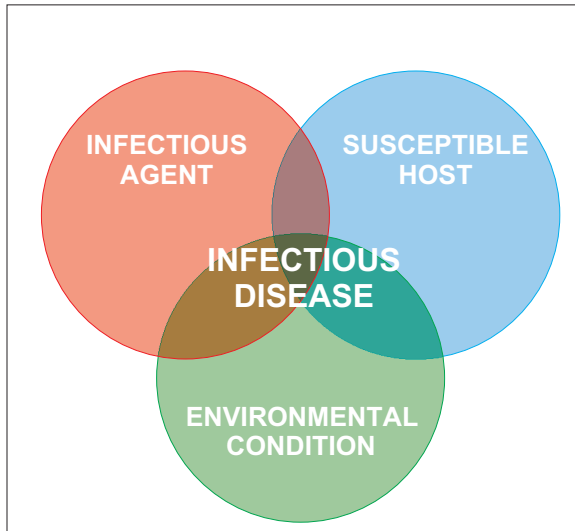
Faculty of Medicine
University of Ottawa
451 Smyth Rd.
Ottawa, Ontario, Canada K1H 8M5

<http://environmental-microbiology.ca>
crem@uottawa.ca

Université d'
University of
Ottawa

WHAT IS CREM?

CREM conducts research on all aspects of human health-related environmental microbiology. In particular, it investigates factors that influence the fate of microbial pathogens in the environment and the potential of various vehicles for spreading infections.



CREM offers:

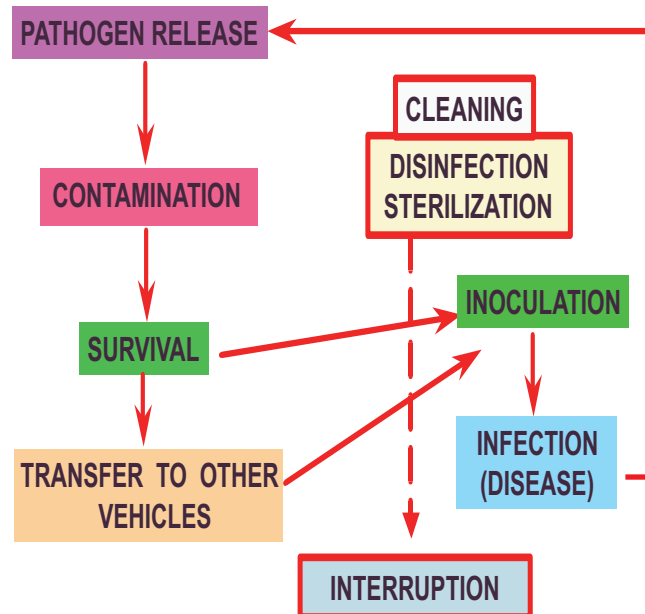
- qualified and experienced personnel
- fully equipped laboratories
- method development
- fully documented protocols
- quality assurance and
- a research & testing environment for:
 - enteric and respiratory viruses
 - mycobacteria
 - vegetative bacteria including *Legionella*
 - bacterial spores
 - Fungi
 - *Cryptosporidium* and *Giardia* spp.

MICROBIAL CONTROL

Research on cleaning, disinfection and sterilization to control microbial contaminants in healthcare settings, manufacturing establishments and service facilities is a key focus of CREM's activities.

Quantitative methods developed at CREM to assess the germicidal activities of chemicals form the basis for several national and international standards. Investigations at CREM have also led to the introduction of standardized protocols to evaluate the role of chemical germicides in interrupting the spread of infections in institutional and domestic settings.

INDIRECT SPREAD OF PATHOGENS & ITS INTERRUPTION



CREM'S ACTIVITIES

Fundamental and applied research: Independently, or in conjunction with academic, industrial or government partners, to understand the fate and control of human pathogens in air, water, soil or indoor environments, as well as their interactions with microbial communities and their response to stressors.

Advisory and consulting services: To governments, research foundations, hospitals and industry.

Training in laboratory techniques: Provides hands-on training in quantitative microbiology for research on pathogens in the environment, and use of indicators in evaluating means for microbial control and sterilization.

State-of-the-art reviews: Critical reviews of published literature on emerging or controversial issues in environmental microbiology.

Professional development courses: In biosafety, environmental control, germicide test methodologies, and sterilization

Organization of lectures and symposia: On topics of current and emerging interest in environmental microbiology.

Tele-lectures: In collaboration with industrial partners, CREM offers a series of tele-lectures on topics related to infection control.