

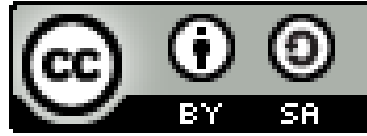
INTRODUCTION TO BIORISK MANAGEMENT

RISK ASSESSMENT

Assoc. Prof. Dr. Kenneth F. Rodrigues

Biotechnology Research Institute

LICENSE



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).

Attribution — You must give [appropriate credit](#), provide a link to the license, and [indicate if changes were made](#). You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the [same license](#) as the original.



INTRODUCTION

Hazard identification and risk assessment constitute the first two steps in the biorisk management cycle. This lecture will focus on risk assessment for a **known biological agent** based on the guidelines presented in the WHO Laboratory Biosafety Manual. We will also learn about the **Pathogen Safety Data Sheets (PSDS)**.



LEARNING OBJECTIVES

The objectives of this lecture are to:

- 1. Introduce you to the process of risk assessment for a known biological agent.**
 - 2. Discuss the key points that must be addressed during risk assessment.**
 - 3. Discuss the Pathogen Safety Data Sheets (PSDS).**
-



LEARNING OUTCOMES

Upon completion of this module you should demonstrate the ability to:

1. Design and develop a **questionnaire for risk assessment** for a known biological based on the **WHO LBM**.
 2. Address **specific criteria** pertaining to risk assessment of a known biological agent.
 3. Apply the information from the **Pathogen Safety Data Sheets** to assess the risk posed by a known biological agent.
-

SCOPE

Risks that are within the scope of assessment.

Risks that are beyond the scope of assessment.



MICROBIOLOGICAL RISK ASSESSMENT

WORLD HEALTH ORGANIZATION: LABORATORY BIOSAFETY MANUAL



MICROBIOLOGICAL RISK ASSESSMENT

1. **Pathogenicity** of the biological agent and infectious dose.
 2. **Potential outcome** of exposure.
 3. Natural **route** of infection.
 4. Other **routes** of infection, resulting from laboratory manipulations.
 5. **Stability** of the biological agent in the environment.
 6. **Concentration** and culture volume of the biological agent.
-



MICROBIOLOGICAL RISK ASSESSMENT

7. Presence of a suitable **host**.
 8. **Information** available from animal studies and reports of laboratory-acquired infections or clinical reports.
 9. **Laboratory procedures** which increase the risk of exposure.
 10. Any **genetic manipulation** of the organism (Gain of Function).
 11. Local **availability of effective prophylaxis** or therapeutic interventions.
-

| QUESTION | YES | NO |
|--|-----|----|
| 1. Has the biological agent (BA) been reported to be a pathogen? | | |
| 2. Does exposure to the BA lead to morbidity? | | |
| 3. Is the route of infection via inhalation? | | |
| 4. Is the route of infection via contact? | | |
| 5. Is the BA stable in the environment? | | |
| 6. Has the BA been genetically modified? | | |
| 7. Is treatment readily available? | | |

| QUESTION | YES | NO |
|---|-----|----|
| 1. Has adequate training been provided to the laboratory workers? | | |
| 2. Have adequate contingency plans been put into place? | | |
| 3. Facility: equipped with essential equipment based on risk group? | | |
| 4. Personnel Protective Equipment: available? | | |
| 5. Facility equipped with waste disposal system / effluent disposal ? | | |
| 6. Facility: secure? | | |
| 7. Specific SOPs to manage the pathogen? | | |

A close-up photograph of several petri dishes containing bacterial cultures. The cultures show varying degrees of growth, with some appearing as thin, translucent layers and others as more dense, opaque masses. The lighting is soft, highlighting the textures of the media and the edges of the dishes. The background is blurred, showing more laboratory equipment.

PATHOGEN SAFETY DATA SHEETS



Government
of Canada

Gouvernement
du Canada

[Français](#)

Search Canada.ca



MENU ▾

[Canada.ca](#) > [Health](#) > [Health risks and safety](#) > [Biosafety and biosecurity](#)

Pathogen Safety Data Sheets

Important Note: Pathogen Safety Data Sheets (PSDSs) are technical documents used by individuals working with pathogens in the laboratory. To obtain any other information about infectious diseases, please visit [Infectious Diseases](#)

Laboratory Biosafety and Biosecurity

- [Biosecurity](#)
- [Licensing Program](#)



Pathogen Safety Data Sheets

Health Canada | Santé Canada Books & Reference

★★★★★ 32

3+

 This app is compatible with all of your devices.

 Add to Wishlist

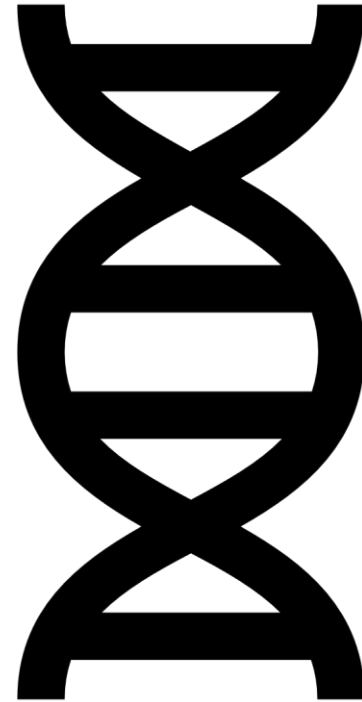
Install



Section I

Infectious Agent

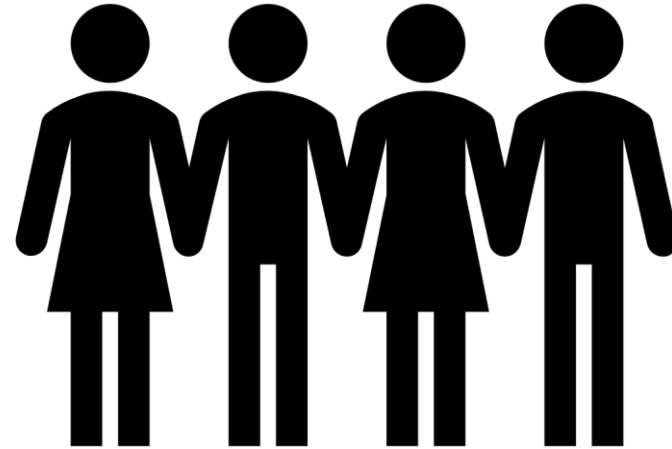
- Name.
- Agent Type.
- Taxonomy.
- Synonyms.
- Characteristics.
- Brief description.
- Properties.



Section II

Hazard Identification

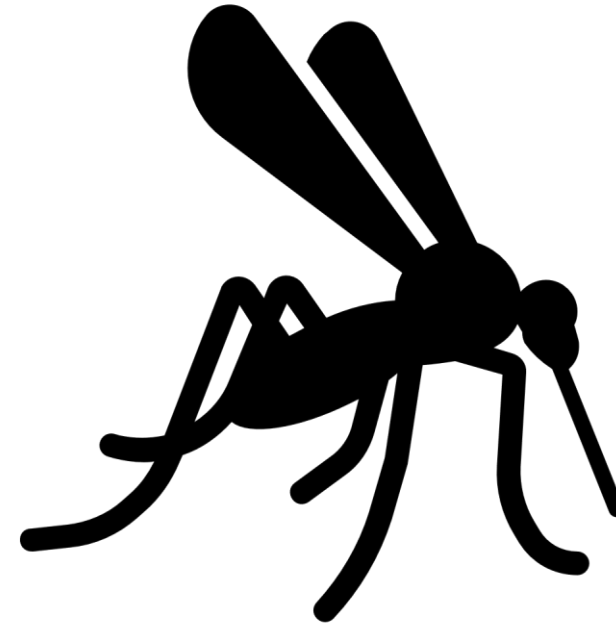
- Pathogenicity / Toxicity.
- Communicability.
- Epidemiology.
- Host Range.
- Infectious dose.
- Incubation.



Section III

Dissemination

- Reservoir
- Zoonosis / reverse zoonosis.
- Vectors.



Section IV

Stability and Viability

- Drug susceptibility.
- Drug resistance.
- Susceptibility to Disinfectants.
- Physical inactivation.
- Survival outside the host.



Section V

First Aid and Medical

- Surveillance
- First Aid / Treatment.
- Vaccination
- Prophylaxis



Section VI

Laboratory Hazards

- **Laboratory-Acquired Infections.**
- **Sources / specimens.**
- **Primary Hazards.**
- **Special Hazards.**



Section VII

Exposure Controls and Personal Protection

- **Risk Group Classification.**
- Containment Levels.
- Protective clothing.
- Other protection.



Section VIII

Handling and Storage

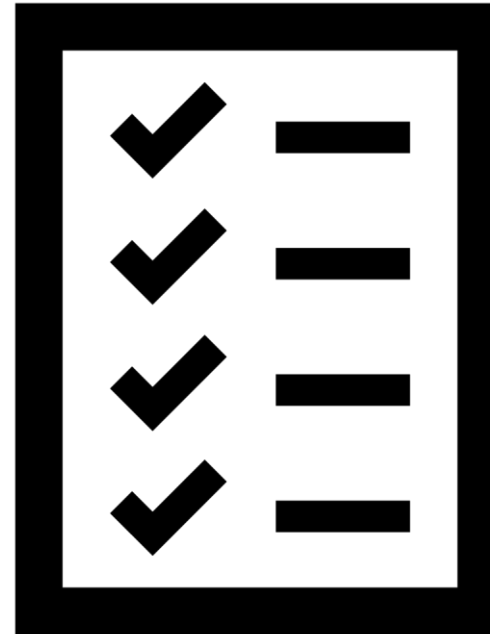
- Spills.
- Disposal.
- Storage.



Section IX

Regulatory and Other Information

- Regulatory information.
- Updated by.
- Prepared by.
- Current references.





SUMMARY

- Microbiological risk assessment (WHO).
- **Scope** of risk assessment.
- Pathogen Safety Data Sheets (PSDS).
- **Developing** your own specific risk assessment.



THANK YOU