INTRODUCTION TO BIORISK MANAGEMENT

RISK ASSESSMENT

Assoc. Prof. Dr. Kenneth F. Rodrigues

Biotechnology Research Institute

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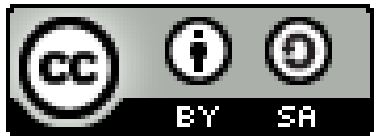


INTRODUCTION

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

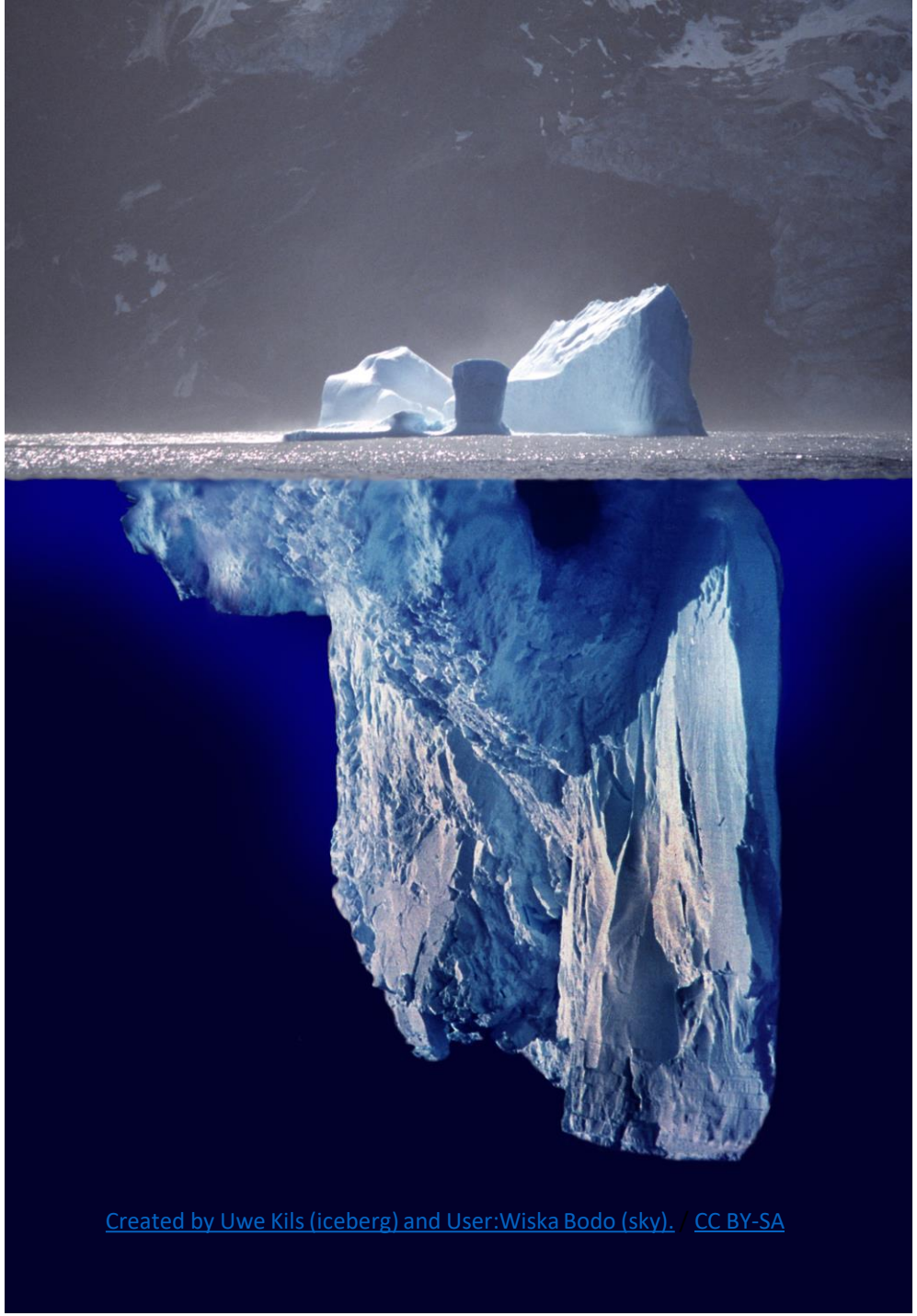
The objectives of this lecture are to:

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. Facilty: 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?		

PATHOGEN SAFETY DATA SHEETS

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

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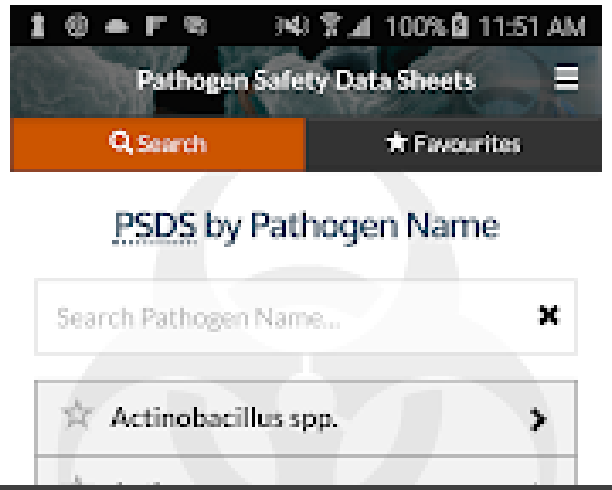
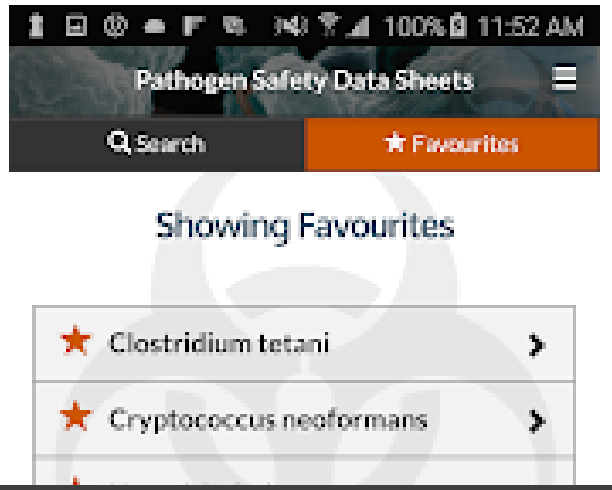
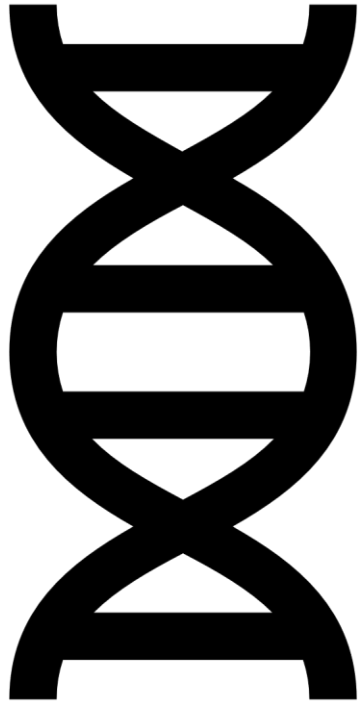




Section I

Infectious Agent

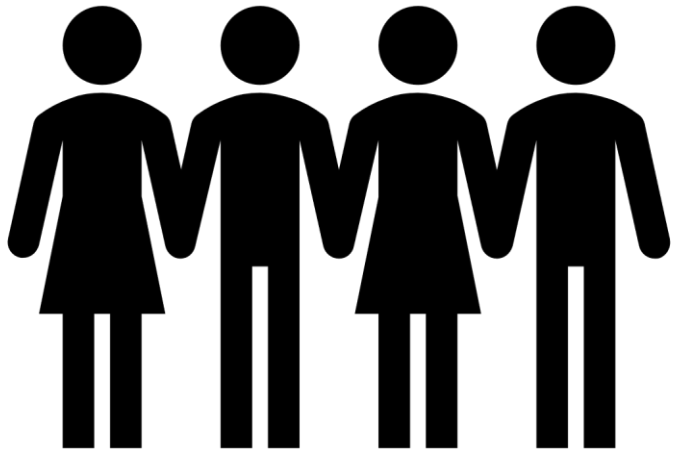
- **Name.**
- **Agent Type.**
- **Taxonomy.**
- **Synonyms.**
- **Characteristics.**
- **Brief description.**
- **Properties.**



Section II

Hazard Identification

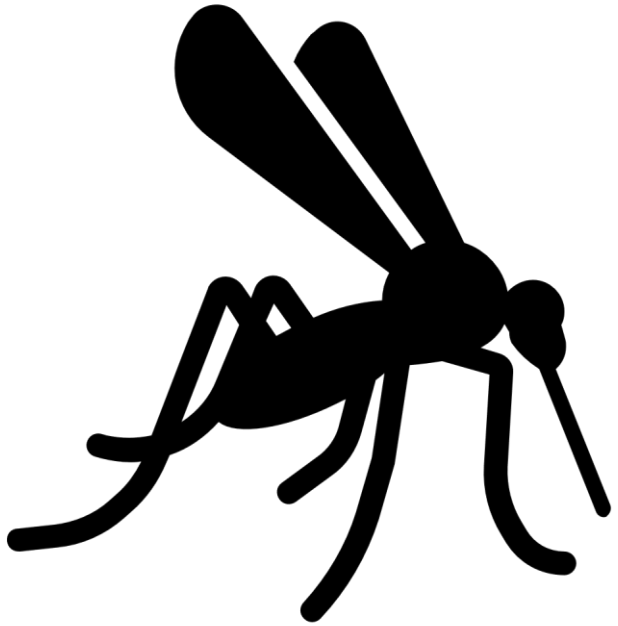
- **Pathogenicity / Toxicity.**
- **Communicability.**
- **Epidemiology.**
- **Host Range.**
- **Infectious dose.**
- **Incubation.**



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

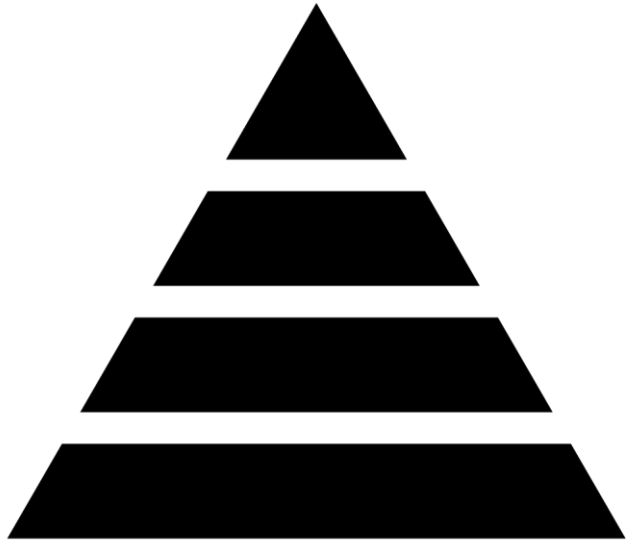
Laboratory Hazards

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

Section VII

Exposure Controls and Personal Protection

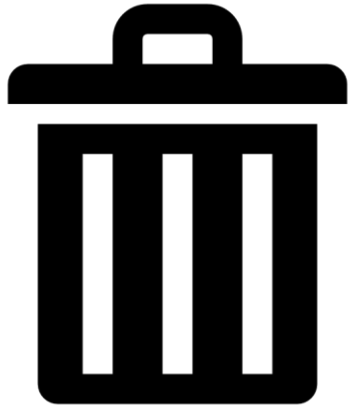
- **Risk Group Classification.**
- Containment Levels.
- Protective clothing.
- Other protection.



Section VIII

Handling and Storage

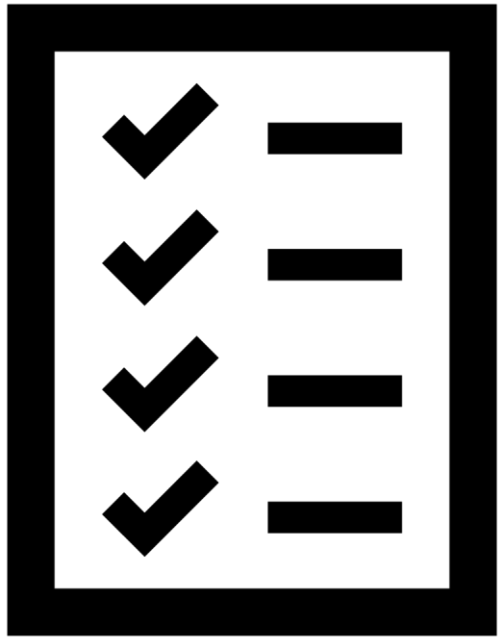
- Spills.
- Disposal.
- Storage.



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