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# Occupational Biohazards

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# Learning Objectives

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## Define occupational biohazards

- Identify types of biological hazards
- Recognize routes of exposure
- Understand prevention and control measures

# Introduction

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**Occupational biohazards are biological agents**

- **They pose risks to workers' health**
- **Common in healthcare, labs, agriculture, waste sectors**

# Definition of Biohazard

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**Biological substances that threaten human health**

- **Include microorganisms and biological toxins**
- **May cause infectious diseases**

# Types of Biohazards – Bacteria

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## Example: *Mycobacterium tuberculosis*

- Can spread via airborne transmission
- Major risk in healthcare settings

# Types of Biohazards – Viruses

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**Example: Hepatitis B virus (HBV)**

- **Example: Human Immunodeficiency Virus (HIV)**
- **Transmitted via blood and body fluids**

# **Types of Biohazards – Fungi**

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**Example: Aspergillus species**

- **Cause respiratory infections**
- **Common in dusty environments**

# Types of Biohazards – Parasites

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## Example: Plasmodium species

- Transmitted through vectors
- Risk in tropical environments

# Biological Toxins

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**Produced by microorganisms**

- **Example: Endotoxins**
- **May cause inflammatory reactions**

# Routes of Exposure

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- **Inhalation**
  - **Direct contact**
  - **Needlestick injuries**
  - **Ingestion**
  - **Mucous membrane exposure**

# High-Risk Occupations

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- **Healthcare workers**
  - **Laboratory technicians**
  - **Waste management workers**
  - **Farmers and veterinarians**

# Healthcare Setting Risks

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- **Exposure to bloodborne pathogens**
  - **Improper sharps disposal**
  - **Lack of PPE compliance**

# Prevention – Personal Protective Equipment (PPE)

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- **Gloves**
  - **Masks and respirators**
  - **Protective gowns**
  - **Eye protection**

# Prevention – Vaccination

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- Hepatitis B vaccine
- Routine immunization programs
- Post-exposure prophylaxis

# Engineering Controls

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- **Biological safety cabinets**
- **Proper ventilation systems**
- **Sharps disposal containers**

# Administrative Controls

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- **Training programs**
  - **Standard operating procedures**
  - **Exposure control plans**

# Biosafety Levels (BSL)

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- **BSL-1: Minimal risk**
  - **BSL-2: Moderate risk**
  - **BSL-3: Serious airborne risk**
  - **BSL-4: High-risk dangerous pathogens**

# Risk Assessment

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- Identify hazards
  - Evaluate exposure likelihood
  - Implement control measures

# Emergency Response

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- Immediate wound washing
  - Report incident
  - Seek medical evaluation

# Conclusion

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- **Occupational biohazards are preventable**
  - **Safety measures reduce risk significantly**
  - **Continuous education is essential**

# References

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- **World Health Organization (WHO)**
  - **Centers for Disease Control and Prevention (CDC)**
  - **Occupational Safety and Health Administration (OSHA)**