



Pathogen Safety Data Training Guide and Module: An All Pathogen Approach

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Worker Safety and Health Training**



**Give a man
a fish...**

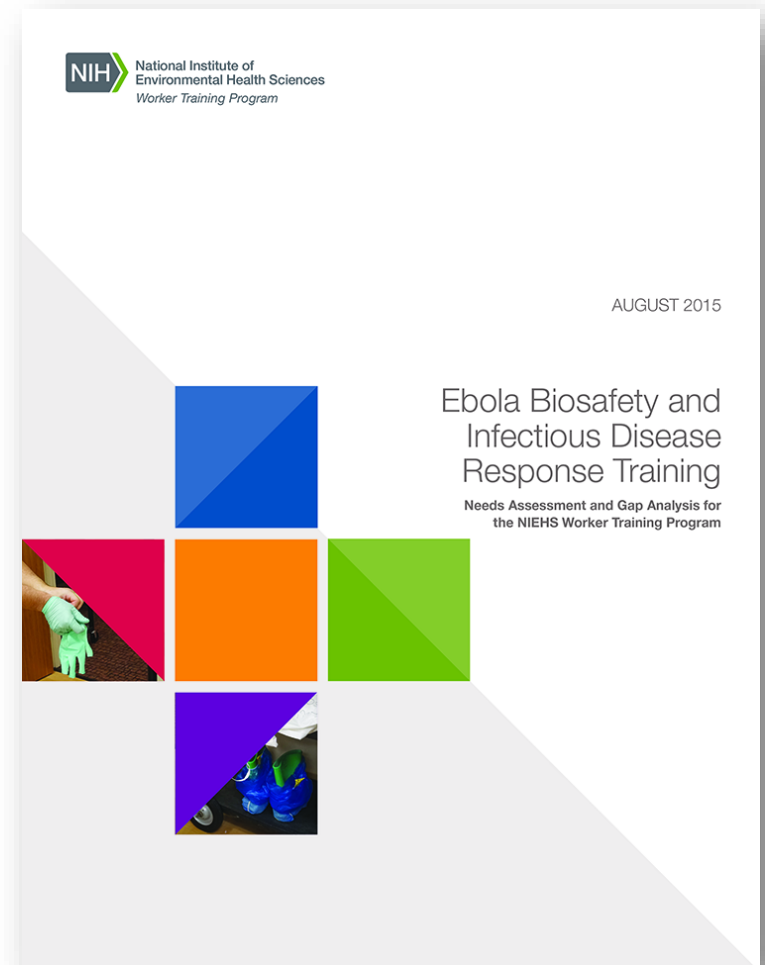
Introductions / Needs Assessment

- Developed during the Ebola crisis.
- Are you familiar with the PSD module? Have you used it?
- Let's use it to learn about COVID-19 or MERS.



NIEHS WTP Gap Analysis

- Guidance issued by federal authorities was inconsistent and left out key items that adversely affected worker safety and health.
- Resources on infectious diseases from trusted sources is sometimes conflicting or lacking in enough specificity to be immediately helpful.



PSD Guide Formats

NIEHS grantees and the safety and health community are encouraged to make use of NIEHS educational resources to strengthen their infectious disease training programs. The Guide can be integrated, adapted, and modified into existing training programs.

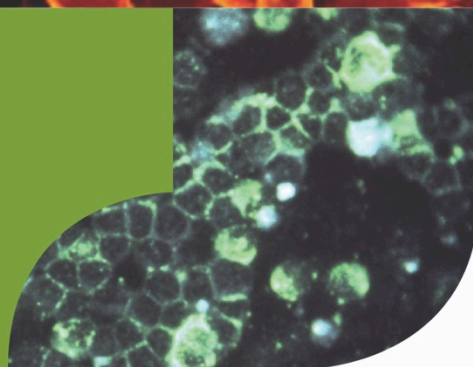
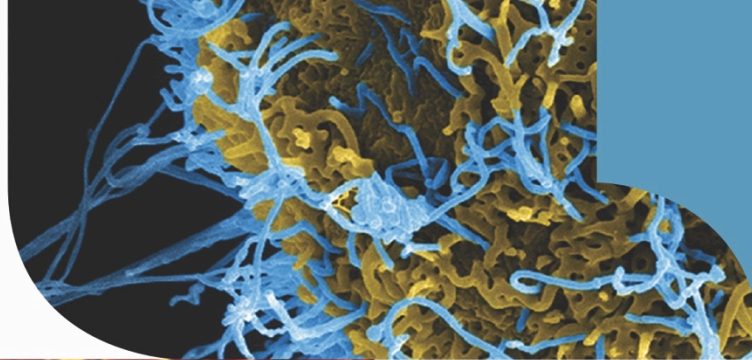
Website Materials

1. Agenda
2. PPT presentation (English/ Spanish)
3. Participant worksheet and answer guide
4. The PSD Guide
5. Glossary
6. Four case studies
7. Instructor guide

<https://tools.niehs.nih.gov/wetp/index.cfm?id=2554>



National Institute of
Environmental Health Sciences
Worker Training Program



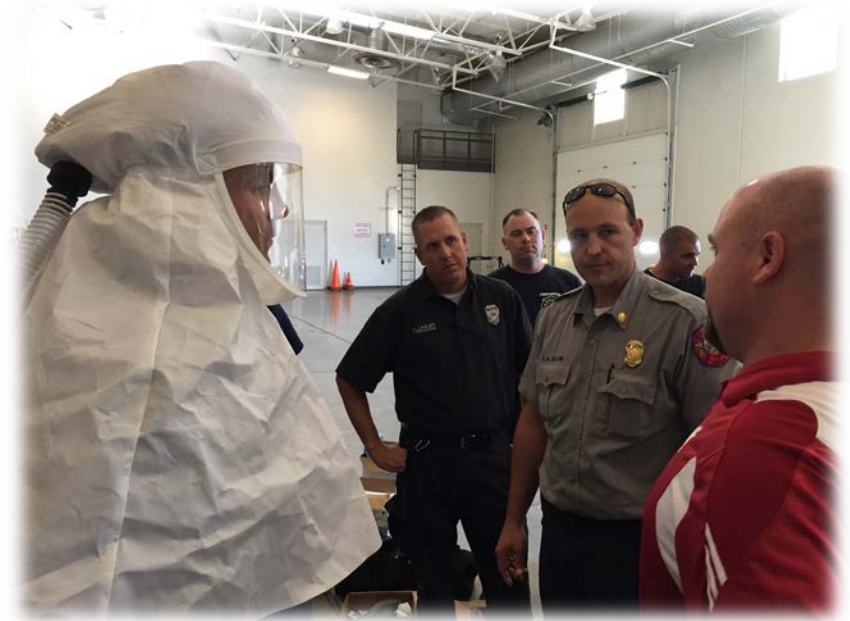
Pathogen Safety Data (PSD) Guide Training Module

OCTOBER 2016

NOTE: This module should not be used as a comprehensive stand alone safety & health training module on infectious diseases. Rather, users are encouraged to adapt and incorporate this module into new and existing programs. Also, the Trainer notes below each slide contain important information that should be reviewed prior to using this module.

Program Design

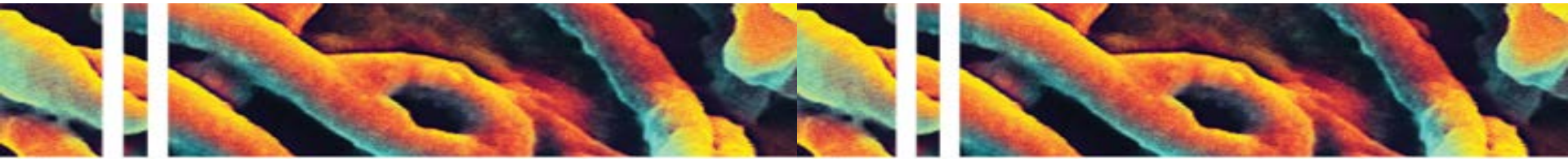
- Interactive
- Adult training techniques
- Designed for workers and community
- All hazards approach
- Structured training materials
- Piloted in NYC, Atlanta, Nebraska



Objectives

Upon taking this module, participants will be able to:

1. Access and use existing resources for pathogen safety data.
2. Look up key terminology used in pathogen safety data resources.
3. Explain the use of pathogen safety data resources in risk assessment and infection prevention and control activities.



Course Agenda

1. Introduction and Background
2. Pathogen Safety Data and Occupational Hazards and Risks
3. Existing Sources of Pathogen Safety Data (PSD)
4. Occupational Exposure and Risk Assessment for Infectious Diseases
5. Infection Prevention and Control: Best Practice Example and Additional Resources
6. Selection of Control Measures

List of Activities

1. Introductions: 3 questions	SGAM	25
2. Terms and Definitions (using the Glossary)	SGAM or Individual	20
3. Characterizing Infectious Disease Hazards	SGAM	30
4. Occupational Risk Exposure Assessment and Selection of Controls	SGAM	25
5. Brainstorm, Action Planning and Realistic Implementation Approach	SGAM	25

4 Scenarios: C Diff, Ebola, N Meningitidis, MERS.
Can be used to supplement or instead of 3. and 4.

Existing Pathogen Safety Databases



Public Health
Agency of Canada

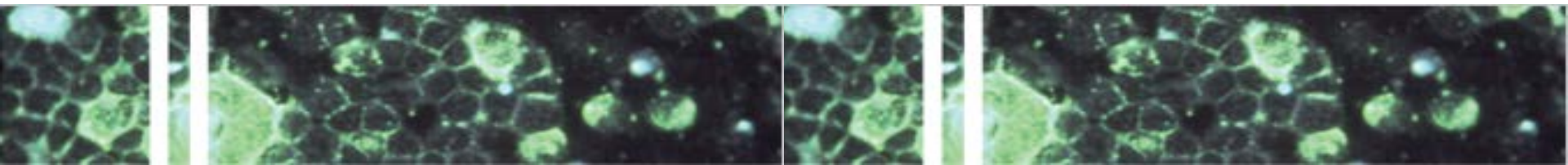
Agence de la santé
publique du Canada



National Institute of
Allergy and
Infectious Diseases

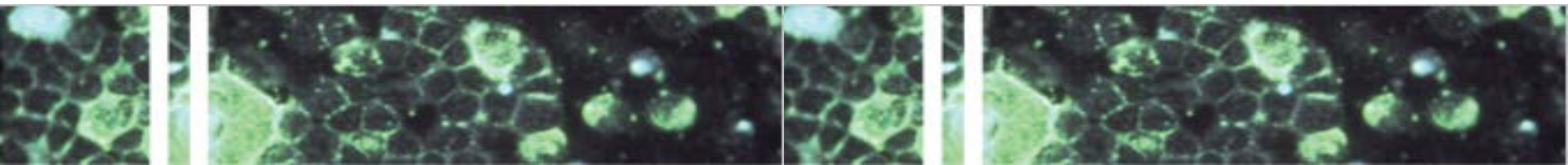


World Health
Organization



Public Health Agency of Canada

- **PHAC PSD website:** <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/index-eng.php>
- Download the app to your iPhone, Smart phone, or blackberry
- **Target Audience:** Clinical Laboratory Workers
- **Review Strengths and Weaknesses:**
Go to page 12 in the Guidebook



Public Health Agency of Canada



Public Health Agency of Canada
www.publichealth.gc.ca

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Home > Laboratory Biosafety and Biosecurity > Pathogen Safety Data Sheets and Risk Assessment > Ebolavirus

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EBOLAVIRUS

For more information about Ebola, visit [Ebola Virus Disease](#)

PATHOGEN SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Ebolavirus

SYNONYM OR CROSS REFERENCE: African haemorrhagic fever, Ebola haemorrhagic fever (EHF, Ebola HF), filovirus, EBO virus (EBOV), Zaire ebolavirus (ZEBOV), Sudan ebolavirus (SEBOV, SUDV), Ivory Coast ebolavirus (ICEBOV), Tai Forest ebolavirus (TAFV), Ebola-Reston (REBOV, EBO-R, Reston Virus, RESTV), Bundibugyo ebolavirus (BEBOV, BDBV), and Ebola virus disease (EVD) [1](#) [2](#) [3](#) [4](#).

CHARACTERISTICS: Ebola was discovered in 1976 and is a member of the Filoviridae family (previously part of Rhabdoviridae family, which were later given a family of their own based on their genetic structure). Five Ebola species have been identified: Zaire ebolavirus (ZEBOV), which was first identified in 1976 and is the most virulent; Sudan ebolavirus (SEBOV); Tai Forest ebolavirus (formerly Ivory Coast ebolavirus); Ebola-Reston (REBOV), originating from the Philippines; and Bundibugyo ebolavirus (BEBOV), the most recent species discovered ([1](#) [3](#) [5](#) [6](#) [7](#)).

Ebola is an elongated filamentous virus, which can vary between 800 - 1000 nm in length, and can reach up to 14000 nm long (due to concatamerization) with a uniform diameter of 80 nm [2](#) [5](#) [8](#) [9](#). It contains a helical nucleocapsid (with a central axis), 20 - 30 nm in diameter, and is enveloped by a helical capsid, 40 - 50 nm in diameter, with 5 nm cross-striations [2](#) [5](#) [8](#) [9](#) [10](#). The pleomorphic viral fragment may take on several distinct shapes (e.g., in the shape of a "6", a "U", or a circle), and are contained within a lipid membrane [2](#) [5](#). Each virion contains a single-strand of non-segmented, negative-sense viral genomic RNA [5](#) [11](#).

SECTION II - HAZARD IDENTIFICATION

PATHOGENICITY/TOXICITY: Ebola virions enter host cells through endocytosis and replication occurs in the cytoplasm. Upon infection, the virus affects the host blood coagulative and immune defence system and leads to severe immunosuppression [10](#) [12](#). Early signs of infection are non-specific and flu-like, and may include sudden onset of fever, asthenia, diarrhea, headache, myalgia, arthralgia, vomiting, and abdominal pains [13](#). Less

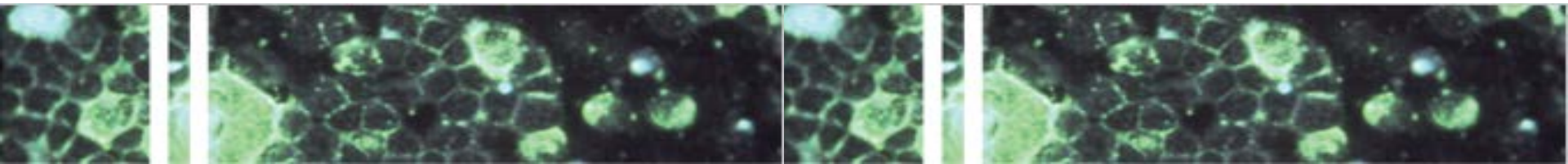


Comparison of Elements in Safety Data Sheet to Pathogen Safety Data Sheet

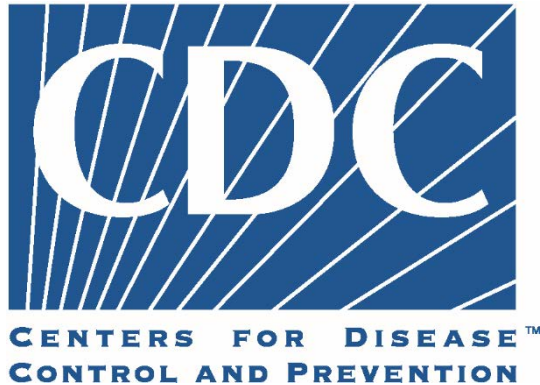
Element (Examples)	SDS	PSDS
Hazard Identification	Chemical or Product	Infectious Agent
Composition	Name, components, CAS#, concentration	Name, Taxonomy
Hazard Characterization	Toxicological information (e.g., LD50, carcinogenicity)	Pathogenicity, infectious dose, communicability, etc
Stability	Chemical stability, reactivity, incompatible materials	Drug susceptibility/resistance, survival outside the host
First aid	First aid measures	First aid measures, prophylaxis, immunization
Exposure controls	Exposure limits, protective equipment, engineering controls	Containment requirements (physical and operational controls), protective equipment
Handling and Storage	Safe handling and storage, including incompatible chemicals	Spills, disposal, and storage
Physical and chemical properties	Odor, pH, flash point, etc.	N/A

Sections of the PHAC PSDS

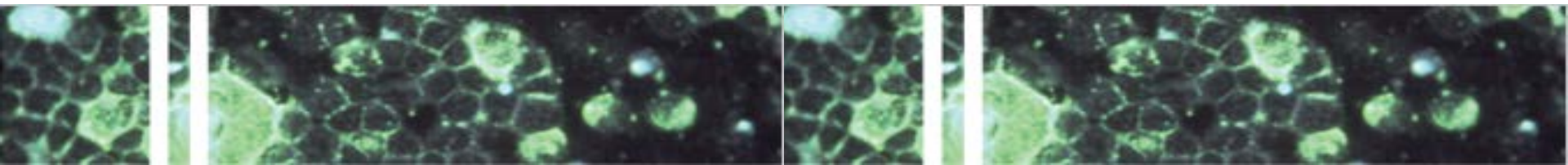
- I. Infectious Agent
 - II. Hazard Identification
 - III. Dissemination
 - IV. Stability and Viability
 - V. First Aid/ Medical
 - VI. Laboratory Hazards
 - VII. Exposure Controls/
Personal Protection
 - VIII. Handling and Storage
 - IX. Regulatory and Other
Information
- Date of Last Update, Name
and Institution of Preparer,
and References



U.S. Centers for Disease Control and Prevention (CDC)

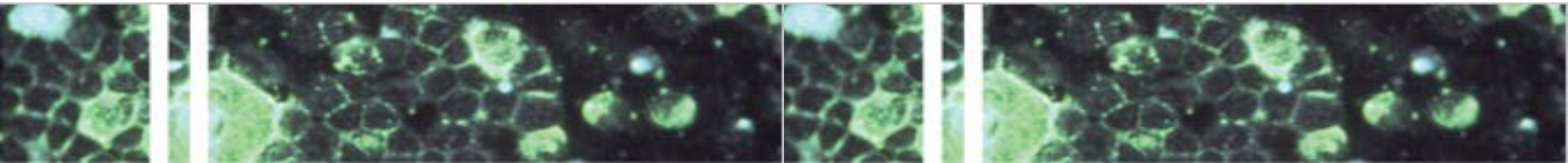


National Center for Immunization and Respiratory Diseases (NCIRD)



U.S. Centers for Disease Control and Prevention (CDC)

- **CDC website:** <http://www.cdc.gov/>
- **NIOSH website:** <http://www.cdc.gov/niosh/>
- CDC's infectious disease pages contain links to detailed guidance documents on topics such as:
 - Countries with confirmed patient cases
 - US patient case profile
 - People who may be at increased risk
 - Guidance for travel and related materials
- **Audience:** Clinical Healthcare Workers
- **Review Strengths and Weaknesses:** Go to page 14 in the Guidebook



Small Group Activity

- Divide into small groups.
- Select a recorder/reporter.
- Complete the worksheet activity 3 and 4 if you are assigned to COVID-19. Complete the questions at the end of Case Study 3 if you are assigned to that. You can divide up the work within the group.
- Report back on the results.

Report Back

- Discuss findings from small groups.
- Discuss future use of PSD module for COVID-19 and other infectious disease outbreaks.
- Discuss use of PSD for preparedness training.

