## **BIOLOGICAL HAZARDS**

LCCC SAFE 225

PP 6

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## OBJECTIVES LEARN

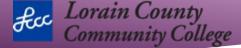
- Identify Biological Hazards to Employees
- Identify Protections for These Hazards



## BIOLOGICAL HAZARDS ONE TYPE OF HAZARD

All Hazards are One of These Four Types

- Physical
- Chemical
- Biological
- Ergonomic



### **BIOHAZARDS**

Organism Alive or Not or Its Products that Can Cause Disease or Other Harm to Workers



## WHAT ORGANISMS CAUSE BIOLOGICAL HAZARDS

- Virus
- Bacteria or Other Microorganisms
- Plants
- Fungi
- Animals



### TYPES OF COMMON HAZARDS

#### Common Hazards

- Bloodborne Pathogens
- Legionnaires Disease
- Lyme Disease
- Tuberculosis
- Hepatitis B



#### OTHER BIOLOGICAL HAZARDS

#### HealthCare

Infections

#### Research Facilities

- Q Fever
- Typhoid Fever

#### **Animal Care**

- Bites, Scratches
- Parasites

#### Wood Processing

• Fungi

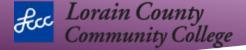
#### Childcare

- Measles
- Chickenpox (Shingles)
- Influenza



## LEGIONNAIRES' DISEASE

- First Found 1976 Legionnaire Convention
- Type of Pneumonia Caused by Bacteria
- Bacteria Found in Fresh Water



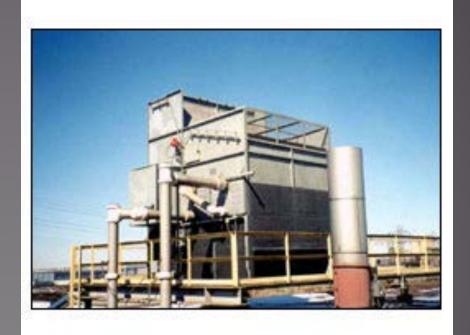
## SOURCES AND TRANSMISSION LEGIONELLA

- Contaminated Water Mainly 68°F -122°F
- Water Cooled Heat Transfer Systems
  - Cooling Towers Most Common
  - Fluid Coolers
  - Domestic Hot Water
  - Cooling Tanks

## MOST LIKE TO CAUSE LEGIONELLA TRANSMISSION

# Inhalation of Contaminated Water

- Aerosols
- Fine Sprays
- Mists
- Droplets

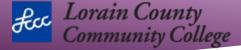


#### **SYMPTOMS**

#### Early – Mistaken for Flu

- Headache
- Mild Fever
- Body Aches
- Fatigue
- Loss of Appetite

- Later Pneumonia
  - High Fever
  - Cough
  - Shortness of Breath
  - Chills
  - Chest Pain



# WORKER EXPOSURE WORKERS WORKING NEAR

- Cooling Towers
- Evaporative Coolers
- Water Heaters
- Larger Plumbing Systems
- Pools, Hot Tubs
- Large Air Conditioning Systems

- Humidifiers
- Misting Systems
- Showers and Water Taps

Any Exposure to Water especially at Temperatures between 68°F -122°F



#### PREVENTION OF LEGIONELLA

- Maintenance of Circulated Water Systems
- Elimination of Standing Water
- Maintaining Water above 122°F or Below 68°F

Refer to:

Legionnaires' E-Tool



#### LYME DISEASE

- Black Legged (Deer Tick) Carries
   Bacteria Borrelia
   burgdorferi
- Bacteria Carried in Deer and Wild Rodents



Black Legged Tick

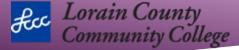
## LYME EARLY SYMPTOMS

- Characteristic Bullseye Rash 70-80% of Patients
- Fever
- Chills
- Headache
- Fatigue
- Swollen Lymph Nodes



#### LYME LATER SYMPTOMS

- Severe Neck and Headaches
- Arthritis Especially in Large Joints
- Facial Palsy (Droop of Facial Muscles)
- Body Aches
- Heart Palpitations
- Dizziness Shortness of Breath
- Nerve Numbness or Pain
- Short-Term Memory Problems



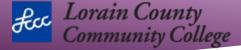
# LYME OCCUPATIONAL EXPOSURES

Outdoor Workers Especially in Areas With Higher Vegetation

- Forestry, Logging
- Construction
- Clearing Brush
- Park Work

#### LYME PREVENTION

- Avoid Higher Vegetation Especially April-September
- Permethrin 0.5% on Long Clothing
- Insect Repellents on Skin
- Examine and Remove Crawling Ticks on Skin and Clothing
- Shower Within 2 Hours
- Dry Outdoor Clothing on High Heat for 10 Minutes



## **TUBERCULOSIS**

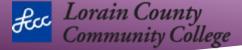
Mycobacterium tuberculosisBacteria

Spread Through the Air –
Cough, Sneeze, Breathing



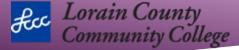
### TUBERCULOSIS SYMPTOMS

- Productive Cough
- Chest Pain
- Coughing Up Blood
- Fatigue
- Weight Loss
- Night Sweats



#### TB HAZARDOUS EXPOSURES

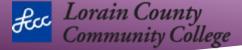
- Health Care
- Long Term Care Facilities
- Correctional Facilities
- Homeless Shelters
- Drug Treatment
- Long Term Disaster Facilities



#### TB CONTROLS

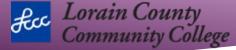
- Early Identification
- Medical Surveillance
- Case Management of Employees
- Worker Education and Training
- Isolation/Engineering Controls

OSHA Tuberculosis Page



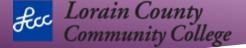
## HEPATITIS B (HBV)

- Virus that Attacks the Liver
- Can Become Lifelong Infection
- Cirrhosis (Scarring) of Liver
- Liver Failure
- Liver Cancer
- Can be Fatal



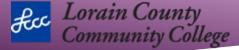
# SOURCES OF EXPOSURE BLOOD OR BODY FLUIDS

- Needle Sticks
- Injectable Drug Use
- Tattoos and Body Piercing
- Sharing Items Such as Razors or Toothbrushes
- Bites from Infected Person



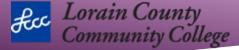
### SYMPTOMS OF HBV

- Fatigue
- Loss of Appetite
- Vomiting/Diarrhea
- Joint Pain
- Dark Urine/Light Colored Stools
- Jaundice



#### EXPOSED EMPLOYEES

- Healthcare Workers
- First Aid Staff
- Medical Laboratories
- Dental Care
- Funeral Home Workers
- Police and Fire Responders





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