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INTERNATIONAL ENVIROGUARD

VIRAL AND HCID SAFETY GUIDE

Your guide to infection control, prevention, and protective clothing.

www.int-enviroguard.com

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DISCLAIMER

The information provided is based on technical data and research that International Enviroguard believes to be reliable. All information is subject to revision as further knowledge becomes available. It is the user's responsibility to determine toxicity levels and the proper personal protective equipment needed. This information reflects the laboratory performance of fabrics under controlled conditions, not of complete "as-sold" garments. This information is intended for use by individuals with the technical expertise to evaluate their specific end-use conditions, at his or her own discretion and risk. Anyone using or intending to use this information should first check that a garment is suitable for the intended use.

Customers of International Enviroguard are solely responsible for conducting their own Hazard Risk Assessment to identify safety hazards in their work environment. Customers of International Enviroguard are solely responsible for selecting appropriate garments and personal protective equipment for their employees based upon known or potential hazards. Employers must ensure end-users properly use, care, and maintain their garments and personal protective equipment. An end-user should stop using a garment if the fabric becomes torn, punctured, or worn to avoid potential exposure to hazards.

As working conditions and other factors vary, International Enviroguard does not make or provide any warranties, expressed or implied, including but not limited to fitness for a particular use or purpose, and does not make any representation that these garments will protect end-users from injury. INTERNATIONAL ENVIROGUARD DOES NOT ASSUME ANY LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION OR ITS PERSONAL PROTECTIVE PRODUCTS AND GARMENTS.

WE INNOVATE A BETTER EXPERIENCE

International Enviroguard designs and manufactures an extensive assortment of disposable protective clothing and surface protection for a wide array of industries such as oil and gas, pharmaceuticals, controlled environments, nuclear, healthcare, and more.

We are passionate about safeguarding what matters through innovation. Design thinking, flexible operations and an empowered culture drive our team to continually identify and solve new challenges. From optimal fitting garments and cooler fabrics, to advanced protection and user-driven product features, we engineer comfort and productivity in every inch.

WE CREATE A MORE COMFORTABLE WORKDAY

Comfort matters in the workplace. We design garments that shield you from pathogens, contaminants and grime while giving you the comfortable dexterity you need to do your job with confidence. Our innovative materials keep you cool, while our thoughtful design and sizing improve fit, wearability and ultimately, protection.

WE DELIVER AFFORDABLE CONFIDENCE

International Enviroguard delivers engineered protection for the best total cost. We safeguard your people with a comfortable fit, performance and quality that can reduce waste and increase safety. We deliver more than products, we give you the power to reduce total costs, while enhancing protection and productivity.

WE KNOW PROTECTION

International Enviroguard is the go-to supplier after a crisis. Our expertise in assessing protective needs and our nimble ability to deliver, has kept several essential teams safe after natural and man-made disasters. We are called in to support teams as they work on hurricane clean-up, infectious disease outbreaks and oil spills. Our ability to quickly identify and deliver the best protection for the job extends beyond these disasters to our entire operation.

UNDERSTANDING VIRUSES

What is a virus?

A virus is a microorganism that infects cells. Viruses contain either RNA or DNA as their genetic material. A virus survives by replicating its DNA or RNA within the cells of living organisms. A virus cannot replicate alone; it must infect living cells of another organism (a host) and use components of the host cell to make copies of itself.

Viruses infect all life forms, from animals and plants to microorganisms, including bacteria.

How are viruses treated?

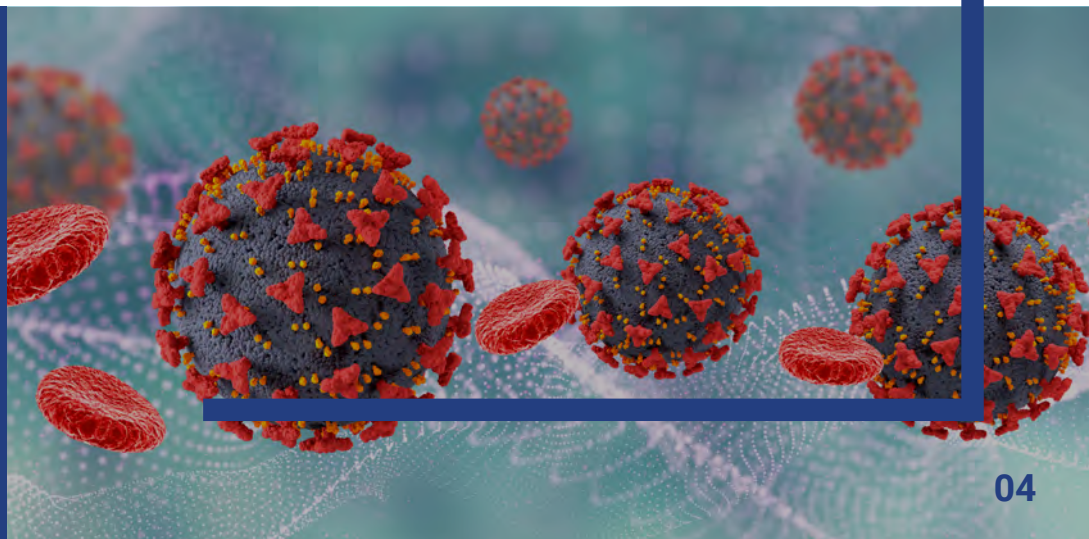
Viral infections are typically treated by managing the symptoms. Most viral infections go away on their own within 10 to 14 days.

Antibiotics do not treat viruses.
Viruses are different than bacteria; they have a different structure and a different survival method. Viruses don't have cell walls that can be attacked by antibiotics; instead, they are surrounded by a protective protein coat. Antibiotics work by destroying bacterial cell membranes and bacterial replication. Because viruses are not cells, they do not have cell membranes. This means antibiotics are ineffective against viruses and cannot penetrate their protein coating.

Using antibiotics to treat a virus can cause undesirable side effects.
Every antibiotic has side effects. Some of the most common are diarrhea and nausea. Some antibiotics are hard on your kidneys, liver, or other body parts.

Using antibiotics to treat viruses causes superbugs.
Superbugs are bacteria that become resistant to antibiotics. Antibiotic resistance happens when antibiotics are inappropriately used to treat viral infections. When a person gets an infection caused by a superbug, antibiotics don't work.

> Viruses cannot be treated using antibiotics.



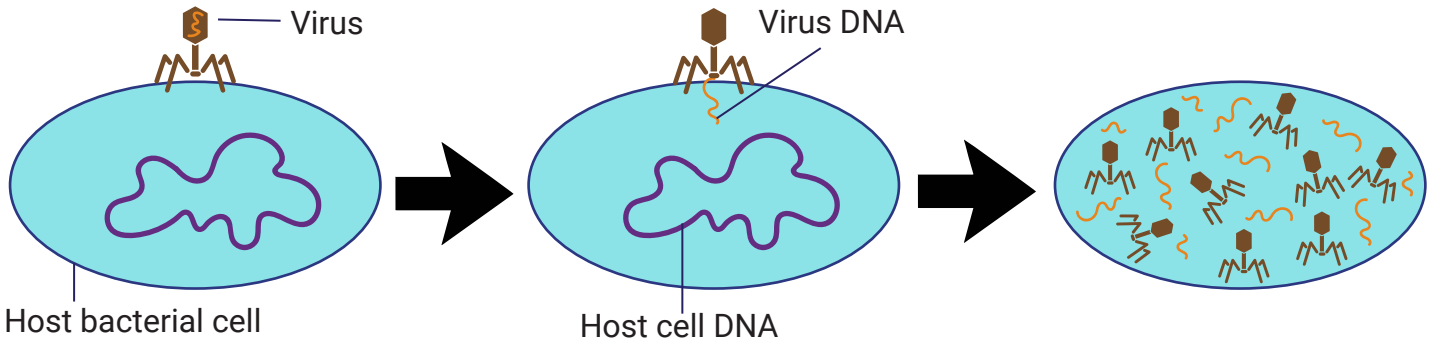
UNDERSTANDING VIRUSES

How are viruses contracted and spread?

Common ways you can get viral infections include:

From other people: Some viruses can travel within mucus or saliva droplets that are released when an infected person breathes, talks, coughs, or sneezes. The virus is passed on when those respiratory droplets land in the mouth or nose of someone else. Viruses can also spread through sexual contact.

From surfaces or objects: Viruses can spread when an infected individual touches something like a counter top, doorknob, light switch, or a phone.



1. Attachment

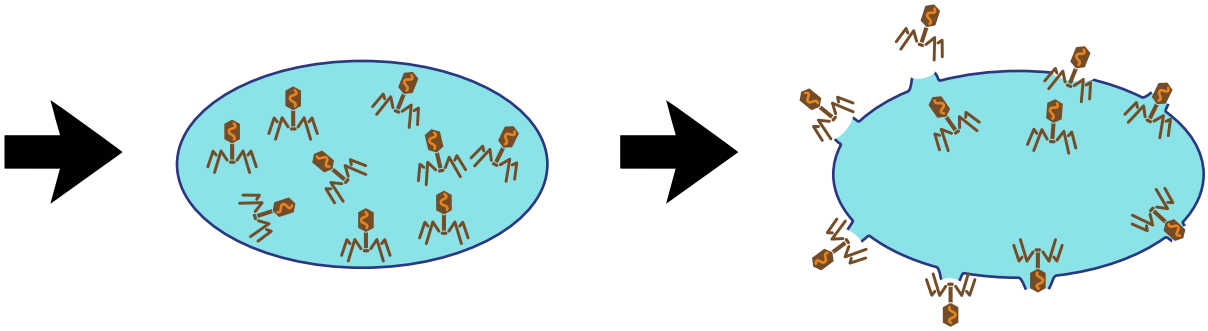
The virus (phage) attaches to the surface of the host cell.

2. Penetration

The viral DNA is injected and enters the host cell.

3. Biosynthesis

Virus DNA replicates & virus components are made for the assembly of new virus particles.



4. Maturation

New virus components are assembled and mature.

5. Lysis

The host cell lyses, releasing the newly made virus particles so they can infect more host cells.

UNDERSTANDING
VIRAL HEMORRHAGIC FEVERS

What is a Viral Hemorrhagic Fever (VHF)?

The term “viral hemorrhagic fever” refers to an illness that affects numerous organ systems of the body, damages the cardiovascular system, and reduces the body's ability to function on its own. Viral hemorrhagic fevers are caused by a group of viruses which come from four distinct viral families. The four viral families known to cause VHFs include:

- *Filoviridae*, which includes the Ebola and Marburg viruses
- *Arenaviridae*, which includes the Lassa, Junin, and Sabia viruses
- *Bunyavirales*, which includes Nairovirus, known for causing a disease called Crimean-Congo hemorrhagic fever
- *Flaviviridae*, which includes the Yellow Fever and Dengue viruses

Despite belonging to distinct viral families, all viruses that cause VHFs share several common features and characteristics, according to the Centers for Disease Control and Prevention (CDC):

1. They contain genetic material known as ribonucleic acid (RNA), which can change quickly over time
2. They are encased by an outer layer of lipoprotein (molecules made of protein and fat) and therefore are easier to destroy with physical and chemical methods (e.g., heat, sunlight, bleach, detergents, solvents)
3. Their natural hosts are animals (e.g., monkeys) and insects (e.g., mosquitoes, ticks) and are generally restricted to geographical areas where the host animals live
4. They are zoonotic, meaning they can spread from an infected animal or insect to a person—and some can then spread from person-to-person (the specific route of viral transmission is exposure to bodily fluids or excretions of infected organisms, such as blood, urine, feces, vomit, and respiratory droplets)

UNDERSTANDING
HCIDs

What is a High Consequence Infectious Disease (HCID)?

HCID stands for “High Consequence Infectious Disease”. Many Viral Hemorrhagic Fevers are classified as HCIDs such as Ebola Virus Disease (EVD), Marburg Virus Hemorrhagic Fever, Lassa Fever, and Crimean-Congo Hemorrhagic Fever.

HCIDs can be classified into two groups–contact and airborne.

- **Contact HCIDs**: Typically spread by direct contact with an infected individual or infected fluids, tissues, and other materials, or by indirect contact with contaminated materials.
- **Airborne HCIDs**: Spread by respiratory droplets or aerosol transmission, in addition to contact routes of transmission

High consequence infectious diseases (HCID) are a range of infectious diseases typically characterized by the following:

They are an acute infectious disease

Acute diseases have a rapid onset and last for a short duration. They have distinct symptoms requiring urgent or short-term care.

Typically have a high case-fatality rate

Case Fatality Rate (CFR) measures the number of confirmed deaths among confirmed diagnosed cases of a particular disease.

There may not be effective treatment

There may not be effective prophylaxis or treatment for the specific disease.

May be difficult to recognize and detect rapidly

HCIDs require an enhanced individual, population, and systemic response to ensure it is managed effectively, efficiently, and safely

Can spread within community & healthcare settings

HCIDs can spread through airborne respiratory droplets, contact with objects touched by an infected patient, or through contact with bodily fluids from the infected individual.

Require individual, population, & systemic responses

HCIDs require an enhanced individual, population, and systemic response to ensure it is managed effectively, efficiently, and safely

COMMON
VIRUS, VHF, HCID EXAMPLES

Common Viruses
- Influenza (the flu), including bird and swine flus
- Viral Meningitis
- Viral Pneumonia
- Chicken Pox and Monkeypox
- Rabies
- Human Immunodeficiency Virus (HIV)
- Herpes
- Smallpox
- Measles
- Infectious mononucleosis (Mono)
- Zika Virus

Common VHFs
- Ebola Virus Disease (EVD)
- Marburg Virus (MVD)
- Dengue Fever
- Lassa Fever
- Yellow Fever
- Hantaviruses
- Crimean-Congo Fever
- Rift Valley Fever

Common HCIDs
- Middle East Respiratory Syndrome (MERS)
- Ebola Virus Disease (EVD)
- Marburg hemorrhagic fever (Marburg HF)
- Lassa Fever
- Crimean-Congo Hemorrhagic Fever (CCHF)
- Nipha Virus (NiV)
- Monkeypox

> Many Viral Hemorrhagic Fevers are classified as HCIDs (High Consequence Infectious Diseases).

LEARN ABOUT
DETECTION & TREATMENT

Viruses, VHF, and HCIDs Safety

Early diagnosis can be difficult, especially since VHFs and HCIDs often present like other illnesses. The following method may help personnel on the front line.

All patients should be screened for:
- Respiratory Symptoms
- Fever
- Rash
- Travel history in the last 30 days

The three “I’s” of HCID and VHF Preparedness

1. **Identify**: Consider a person's symptoms, travel history, and exposure history. Initiate all necessary precautions as soon as a patient is suspected to have VHF.
2. **Isolate**: Follow all regulatory guidelines regarding patient quarantine/isolation, PPE use including donning and doffing, caregiver roles and responsibilities, and other factors that are relevant to your organization's specific administrative, environmental, and engineering constraints.
3. **Inform**: Immediately alert the appropriate stakeholders (including your organization's infection control team and local health department) of any suspected or confirmed VHF cases.

The CDC recommends the following PPE categories for VHF management of patients with confirmed or suspected cases:

- Full body coverage (such as coverall/gown, boot covers, and head covers) made with materials that feature specific ASTM and ANSI/AAMI blood and viral penetration resistance levels
- Isolation gown
- Full face shield or goggles with circumferential protection
- Respiratory protection
- Gloves
- The specific type of PPE that is needed while caring for individuals with VHF depends on several factors:
  - The level of risk (e.g., severity and stage of the infectious disease)
  - The type of virus causing the infection
  - The type of job duties performed (e.g., endotracheal intubation, lab centrifugation, etc.).

VHF and Virus Screening Guide (Following page)

- A suggested framework to help with the Identify, Isolate, and Inform components of HCID preparedness
- Guidance for front desk staff, triage nurses, and for medical providers after a patient has been roomed
- Impact not limited to HCIDs; designed to prevent spread of both common and rare infections
- Emphasizes respiratory safety
- 4 short questions for all patients with 1 additional question in some circumstances

VIRUS AND HCID
SCREENING GUIDE

All patients should be screened for cough, respiratory symptoms, fever, rash, and travel history

Symptom questions[a]	**Travel Question**[a]
1. New cough, other respiratory symptoms? 2. Recent fever, or fever documented at the healthcare facility? 3. New rash?	Did the patient travel internationally during the past 30 days?
Determine the need for respiratory safety: Implement and maintain respiratory safety[b] measures throughout remainder of health care encounters for all patients with either: 1. Cough or other respiratory symptoms, or 2 & 3 Fever and Rash	Document presence or absence of travel, including destinations and dates in chart.

Subjective or documented fever?

No

Yes

Fever (No rash or respiratory symptoms) and travel?

No

Yes

Vomiting or diarrhea?

No

Yes

Does patient appear to have any signs or symptoms of viral hemorrhagic fever?

No

Yes

Fever & Rash and travel?

No

Yes

Exposed to measles, chickenpox, or zoster (shingles) in past 30 days?

No

Yes

Does patient appear to possibly have measles, chickenpox, zoster (shingles), smallpox, or meningococcal infection?

No

Yes

Fever & Respiratory symptoms (No rash) and travel?

No

Yes

Close contact with a person with febrile (fever symptoms) respiratory illness that developed within 14-days of returning from international travel?

No

Yes

Is patient part of an epidemiologically-linked group of patients presenting with severe acute respiratory illness of unknown etiology, or does provider have any other suspicion for a HCID or tuberculosis?

No

Yes

All patients assessed by front desk staff or triage nurse

Assessed by medical provider after patient has been roomed

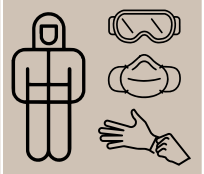
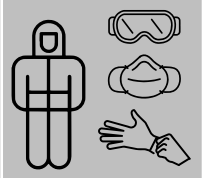
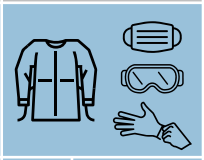
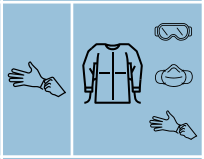
*** Follow routine Standard Precautions practices**
No HCID risk identified

- Move patient to private room with closed door or to an airborne infection isolation (AII) room & control access to patient; post appropriate isolation signage
- Assess possible infections based on travel history, clinical presentation, or exposures to ill persons who have recently traveled internationally
- Viral hemorrhagic fever may need to be considered even in the absence of specific travel alerts[c]

Yes → **Suspect HCID or other highly infectious disease?**

1. Implement airborne or droplet for meningococcal disease or plague and contact precautions. Control access to patient.
2. Providers should don appropriate PPE before entering room[d].
3. Notify infection prevention and Department of Health.
4. Screen persons accompanying the patient for symptoms & collect information on other contacts.

SELECTION CRITERIA FOR
VHF PROTECTIVE CLOTHING

Virus Family	Illness Caused	Common Geography	Vector or Source	Person-to-person spread	Precautions	PPE	Comments
Filoviridae	Ebola Virus Disease	Central, Sub-Saharan Africa	Presumed bat (?)	YES	Contact, Droplet/Airborne, Eyes		Dry phase = impermeable gown to mid-calf Wet phase = Full body coverage
	Marburg Virus		Fruit bat				
Arenaviridae	Lassa fever	West Africa	Rodents	YES	Contact, Droplet/Airborne, Eyes		Dry phase = impermeable gown to mid-calf Wet phase = Full body coverage
	Junín Machupo (Bolivian HF) Guanarito (Venezuelan HF) Sabia (Brazilian HF)	South America					
Bunyaviridae	CCHF – Crimean Congo Hemorrhagic Fever	Europe, Mediterranean, Middle East, Africa, India, China	Tick, infected livestock	YES	Contact, Droplet [1], Eyes		[1] Add respiratory protection (N95 or ↑) for centrifugation
	Hantaviruses (HPS/HFRS*) (Sin Nombre, Andes virus)	Worldwide	Rodent	Possible	Standard Precautions unless Andes Virus suspected		Contact, Droplet/Airborne, Eyes for potential Andes Virus or contact/clean-up of rodent droppings
	Rift Valley Fever	All of Sub-Saharan Africa	Mosquito	No	Standard Precautions		
Flaviviridae	Yellow Fever	Tropics	Mosquito	Blood [2]	Standard Precautions		[2] Potential risk of Yellow Fever transmission in blood transfusion, or immediately post vaccination 
	Dengue Fever	Tropics	Mosquito	No			
	Kyanasur	India	Tick	No			
	Omsk	Siberia					

HPS* - Hantavirus Pulmonary Syndrome | HFRS* - Hemorrhagic Fever with Renal Syndrome

CCHF - [1] Droplet precautions unless performing lab centrifugation, then add respiratory protection (N95 or higher) as Airborne

Yellow Fever - [2] Transmission of the vaccine strain of Yellow Fever can occur through blood transfusion & breast milk. Blood donation & breastfeeding should be avoided for 2 weeks after vaccination.

PPE Legend

 **Full-body coverage**

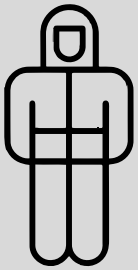
 **Respiratory protection; N95 or higher**

 **Medical or surgical mask**

 **Gloves**

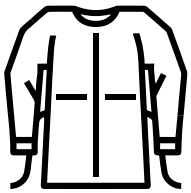
 **Eye protection**

PRECAUTIONS AND PPE FOR
VIRAL HEMORRHAGIC FEVERS

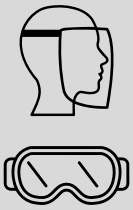


Full-body coverage includes: Coverall or gown, shoe or boot covers, and a head cover, hood, or shroud. This is used for "wet" patients—individuals who are diaphoretic, vomiting, bleeding, or have diarrhea.

Blood and viral penetration resistance:
Gown = ANSI/AAMI PB70 Level 4 or
Coverall = ASTM F1671 or EN14126



Isolation gown: Select gowns based on risk.
AAMI PB70 Level 1 – 3 have increasing levels of resistance to fluids, and Level 4 is tested for viral penetration.



Eye Safety: Full face shield or goggles with circumferential protection.

Medical or Surgical Mask: For protection against droplets or source protection only. They do not provide sufficient respiratory protection.

Hand Protection / Gloves: Non-sterile medical exam gloves. Double gloving and using gloves with an extended cuff may be advised.

Respiratory Protection: N95 or higher filtering face piece respirator or PAPR (powered air purifying respirator).

INTERNATIONAL ENVIROGUARD
EBOLA CRISIS PRODUCTS

EBOLA PPE GUIDANCE

for Health Care Workers

INTERNATIONAL ENVIRO GUARD ViroGuard®

INTERNATIONAL ENVIRO GUARD Soft Scrubs™

INTERNATIONAL ENVIRO GUARD ViroGuard® 2

In the fall of 2014, the world-wide Ebola crisis erupted creating a focus on the intensive care of the patient and the critical protection of the healthcare worker. During that period, CDC guidelines regarding PPE changed rapidly to include the new learning on Ebola response.

In August of 2015, the CDC updated the guidance on Personal Protective Equipment (PPE) again to protect workers and other patients with confirmed Ebola or Persons Under Investigation (PUIs) for Ebola.

Our ViroGuard® and ViroGuard® 2 suite of products, along with Soft Scrubs™, were designed to help healthcare facilities stay up to date with the latest safety standards.

INTERNATIONAL ENVIROGUARD
VIROGUARD® AND VIROGUARD® 2

RESPTC TOP CHOICE
ViroGuard® 2 is one of the preferred PPE choices for Regional Ebola and Special Pathogen Treatment Centers (RESPTCs), and several top assessment facilities.

CDC PPE COMPLIANCE
All garments align with CDC PPE guidelines for healthcare workers providing care to unstable, "wet" patients or "dry" patients:

"Wet" patient: diagnostically confirmed and clinically unstable, who are presenting with bleeding, vomiting, and diarrhea

"Dry" patient: considered clinically stable and a person under investigation (PUI), who are presenting without bleeding, vomiting, or diarrhea

ViroGuard®

ViroGuard® is designed to protect healthcare workers at facilities that are evaluating PUIs for Ebola who are clinically stable and do not have bleeding, vomiting, or diarrhea i.e. a dry patient.

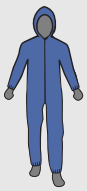
In this case, the CDC guidance is that a disposable coverall should be at least be fluid resistant which indicates that the material have demonstrated resistance to water or synthetic blood.

ViroGuard® 2

ViroGuard® 2 is designed to protect healthcare workers at facilities that provide care to a patient with confirmed Ebola or PUI who is clinically unstable or has bleeding, vomiting , or diarrhea. i.e. a wet patient

In this case, the CDC guidance is that a disposable coverall should be impermeable. Impermeable indicates that the material and construction have demonstrated resistance to synthetic blood and simulated blood-borne pathogens. The coverall must be made with fabric and seams that pass ASTM F1671 or ISO 16604.

ViroGuard® Coveralls



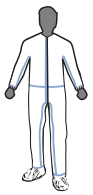
Blue Coverall with Hood only. Elastic Wrists & Back. Front Zipper with Sealable Storm Flap.
25/cs

#2407
Medium - 4X

Blue Coverall with Attached Hood & Boots. Elastic Wrists and Back. Front Zipper with Sealable Storm Flap.
25/cs

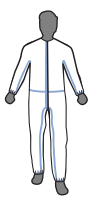
#2404
Medium - 4X

ViroGuard® 2 Coveralls



Coverall with Boots Only. Latex-Free Elastic Wrists & Ankles. Thumb & Middle Finger Loops. Zipper Front with Sealable Storm Flap. Double-sided tape at wrists for glove adhesion. Mandarin collar with Velcro closure. Red fabric pull tab on zipper. Taped Seams.

#W2501
Medium - 4X



Standard Coverall. Latex-Free Elastic Wrists & Ankles. Thumb & Middle Finger Loops. Zipper Front with Sealable Storm Flap. Double-sided tape at wrists for glove adhesion. Mandarin collar with Velcro closure. Red fabric pull tab on zipper. Taped Seams.
25/cs

#W2502
Medium - 4X

INTERNATIONAL ENVIROGUARD
EBOLA CRISIS PRODUCTS

ViroGuard® 2 Coveralls

Features developed with healthcare workers' input:

Thumb & Finger Loops
Prevents sleeves from riding up to prevent skin exposure.

Double-sided tape around the wrists
Helps keep gloves in place.

Large zipper pull with red fabric pull tab
Easier to see and grab with gloved hands.

Mandarin collar with Velcro® closure
Adjustable collar creates a better seal around the neck.

Zipper front with sealable storm flap - has starter tab for tape
Easier for a gloved hand to pull & expose the tape for sealing storm flap.

Visible sizing tag
Helps materials management teams identify size easily when suits are removed from the box.

Coverall Features

ASTM 1670 (blood) and ASTM 1671 (blood-borne pathogens): The fabric and seams of all garments pass for blood and blood-borne pathogen resistance.

Taped Seams: Blue taped seams seal off seams to prevent liquid penetration.

A large zipper with a red pull tab is easy to see when wearing a PAPR and easy to pull with gloved hands.

Front zipper with sealable storm flap: Includes a starter tab for tape to make it easier for a gloved hand to grab the tape and seal the storm flap.

Double-sided tape around wrists keeps gloves securely in place.

Thumb and finger loops sewn into the sleeves help keep sleeves from riding up to prevent skin exposure.

Adjustable hook and loop closure at the collar for an improved neck seal.

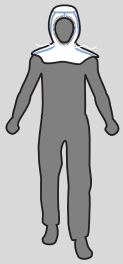
Full product line: Two coverall styles (with/without attached hood and/or boots), hood, and boot covers available.

INTERNATIONAL ENVIROGUARD
EBOLA CRISIS PRODUCTS

ViroGuard® 2 Accessories & Testing

If a surgical hood is used, CDC guidance states that it should cover all of the hair and ears, and extend past the neck to the shoulders.

CDC guidance also includes boot covers if a coverall without integrated boots is worn.



White Hood, Taped Seams, Latex-Free Elastic Face, Hook & Loop closure

#W2561
Universal size
100 per case

White Boot Cover, Latex-Free Elastic Top & Ankle, Skid-Resistant Sole, Taped Seams

#W2505-L
Height: 17”
100 per case

#W2506-XL
Height: 23”
100 per case

PHYSICAL PROPERTY	TEST	RESULT
Weight	ASTM D3776	2.7 oz/y²
Tensile Strength, Machine Direction	ASTM D5034	37.1 lbs
Tensile Strength, Cross Direction	ASTM D5034	27.5 lbs
Tear Strength, Machine Direction (Trapezoid)	ASTM D1117	12.8 lbs
Tear Strength, Cross Direction (Trapezoid)	ASTM D1117	6.8 lbs
Ball Burst Strength	ASTM D3787	35 lbs
Air Permeability	ASTM D737	<0.55 cfm

AGENT	TEST	COMPONENT	RESULT
Synthetic Blood	ASTM F1670	Fabric	Pass
Blood-borne Pathogens	ASTM F1671	Fabric	Pass
Synthetic Blood	ASTM F1670	Seams	Pass
Blood-borne Pathogens	ASTM F1671	Seams	Pass

INTERNATIONAL ENVIROGUARD
EBOLA CRISIS PRODUCTS

ViroGuard® Testing

Physical Properties

TEST CONDUCTED	TEST METHOD	RESULTS
Tensile Strength - Machine Direction	ASTM D5034	46 lbs
Tensile Strength - Cross Direction	ASTM D5034	79.1 lbs
Trapezoidal Tear - Machine Direction	ASTM D5587	13.2 lbs
Trapezoidal Tear - Cross Direction	ASTM D5587	5.4 lbs
Elongation - Machine Direction	ASTM D5034	19.90%
Elongation - Cross Direction	ASTM D5034	154.20%
Mullen Burst	Method D3786	33.6 psi

Agent Testing

AGENT	TEST METHOD	TEST TIME	TEST RESULTS
Carbon Disulfide (99%)	ASTM F 903	> 60 minutes	Pass
Dichloromethane (99%)	ASTM F 903	> 60 minutes	Pass
N-Hexane (99%)	ASTM F 903	> 60 minutes	Pass
Sodium Hydroxide (50%)	ASTM F 903	> 60 minutes	Pass
Sodium Hypochlorite (6%) (Household Bleach)	ASTM F 903	> 60 minutes	Pass
Sulfuric Acid (97%)	ASTM F 903	> 60 minutes	Pass
Tetrahydrofuran (99%)	ASTM F 903	> 60 minutes	Pass

BARRIER PROPERTIES	TEST METHOD	RESULTS
Hydrohead	AATCC-127	255.2 cm
Synthetic Blood Penetration	ASTM F1670	PASS
Blood-borne Pathogens	ASTM F1671	PASS

Benefits

Superior Fabric
Fabric passes ASTM F1670 and F1671 tests for protection against blood, bodily fluids, and blood-borne pathogens.

High MVTR
Fabric helps prevent heat stress with enhanced moisture vapor transmission. This allows heat and vapor to escape the suit so it isn't trapped near the body.

Seamless Shoulders
Seamless shoulder areas allow for less rip outs and more movement.

Gusseted Crotch
A wider, gusseted crotch gives the wearer more room to move, bend, and crouch in all directions without ripping fabric.

Tear- & Abrasion-Resistant
Tear and abrasion-resistant fabric protects against scrapes and scratches.

Storm Flap Zipper Cover
All garments come with a storm flap over the zipper to help prevent liquids and other contaminants from entering through exposed zipper seams.

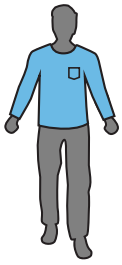
Versatile Use
Possible applications include emergency response, category 3 black water, tank cleaning, crime scene remediation, animal research, and more.

INTERNATIONAL ENVIROGUARD
EBOLA CRISIS PRODUCTS

Soft Scrubs™ provides modesty with complete “no show through” coverage. This clothing can be worn as a protective undergarment where sterile gowning is used. After each use, clothing can be disposed of to help reduce the spread of germs, bio-burdens, or contagions. All garments are anti-static.

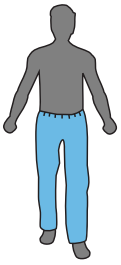
Denim Blue Short Sleeve Shirt, Round Hemmed Neck, Left Chest Pocket, Right Front Hip Pocket, Cloth Loop for Hanging

#2055B
Small - 4XL
30 per case



Denim Blue Long Sleeve Shirt, Round Hemmed Neck, Left Chest Pocket, Elastic Wrists, Cloth Loop for Hanging

#2054B
Small - 4XL
30 per case



Denim Blue Pants, Elastic Waist, Right Rear Hip Pocket, Open Ankles, Reinforced Crotch, Cloth Loop for Hanging

#2052B
Small - 4XL
30 per case

PHYSICAL PROPERTY	TEST	RESULT
Weight	ASTM D3776	1.1 oz/y²
Tensile Strength, Machine Direction	ASTM D5034	17 lbs
Tensile Strength, Cross Direction	ASTM D5034	25.9 lbs
Tear Strength, Machine Direction (Trapezoid)	ASTM D1117	6.1 lbs
Tear Strength, Cross Direction (Trapezoid)	ASTM D1117	9.3 lbs
Ball Burst Strength	ASTM D3787	21 lbs
Air Permeability	ASTM D737	66 cfm

PHYSICAL PROPERTY	TEST	RESULT
Electrostatic Properties	EN 1149-5:2008	Pass

CDC guidance states that “safety and comfort are both critical for healthcare workers wearing PPE while caring for patients with Ebola.”

Standardized attire under PPE (e.g., surgical scrubs or disposable “garments”)...helps the donning and doffing process and eliminates concerns of contaminating personal clothing.

Soft Scrubs™ enhance overall body protection when used as an undergarment to protect underlying clothing.

UNDERSTANDING
BIOSAFETY LEVELS

Biological Safety Levels (also called BSL or biosafety levels) are a series of clearly defined, closely regulated standards for laboratories throughout the world. These standards specifically apply to the lab/facility design, lab safety procedures, access restrictions, training and expertise, use of containment equipment, safety methods for managaging infectious materials, and personal protective equipment (PPE) that must be used in biosafety labs.

As noted by the U.S. Department of Health and Human Services (HHS), the BSL classification system ensures that appropriate precautions are taken in order to protect workers, the public, and the environment from potentially harmful pathogens found in that setting.

Biosafety level requirements apply to a variety of industries, including biomedical research, pharmacological, ecological, environmental, and biological.

The 4 BSL Levels

There are four BSL levels that range from BSL-1 to BSL-4. A lab's BSL level is primarily based on the agents or organisms found within that particular lab. Additional factors that should be considered when determining lab levels include:

- The severity of a potential infection or contamination by a given organism or agent
- The origin of the organisms
- Possible routes of exposure to the agents or organisms
- Risks related to containment
- The nature of the work being conducted by laboratory staff

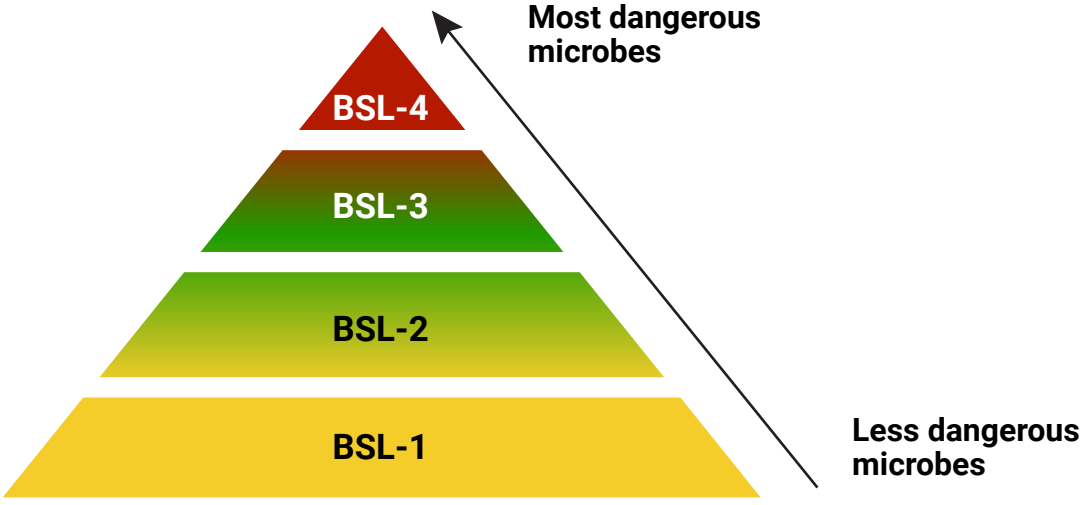
Classifying Biohazards

There are two primary biohazard classifications: Risk Groups and Biosafety Levels.

- **Risk Groups** classify microorganisms.
- **Biosafety Levels** classify biohazard controls for containment such as facility design, PPE for the risk group, and equipment safety practices.

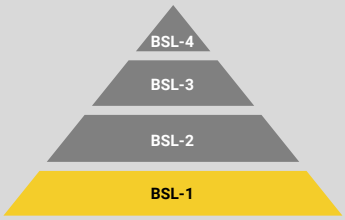
The four Biosafety Levels align with the respective Risk Groups:

- Risk Group 1 (RG-1) aligns with Biosafety Level 1 (BSL-1)
- Risk Group 2 (RG-2) aligns with Biosafety Level 2 (BSL-2)
- Risk Group 3 (RG-3) aligns with Biosafety Level 3 (BSL-3)
- Risk Group 4 (RG-4) aligns with Biosafety Level 4 (BSL-4)



UNDERSTANDING
BIOSAFETY LEVELS

BSL-1 including RG-1



Laboratories designated as BSL-1, the lowest of the four biosafety levels, involve work with agents or organisms that pose a minimal threat to personnel and the environment.

Safety Practices

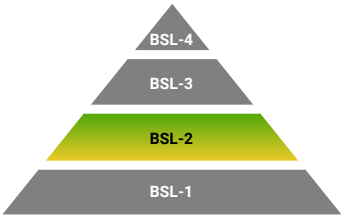
Only standard microbial practices are required at BSL-1 lab facilities, which include the following:

- Work can be performed on a table or open lab bench
- All spills should be immediately decontaminated
- All sharps must be safely handled and disposed of
- Infectious materials should be decontaminated prior to being disposed, typically with the use of an autoclave (autoclaves are machines that use superheated steam under pressure to kill microorganisms)
- Activities must be performed in ways that minimize the risk of splashes and spills
- People must practice basic hand hygiene, including before and after performing job functions and before leaving the laboratory
- Eating, smoking, drinking, putting on cosmetics, and handling contact lenses or clear aligners is absolutely not permitted in the laboratory area
- All pipetting must be done with mechanical pipette devices (no mouth pipetting)
- Appropriate biohazard signage must be used

Common Pathogens Studied or Job Functions Performed

An example of an organism that could be studied in a BSL-1 lab would be the nonlethal agent E. coli.

Understanding BSL-2 and RG-2



Laboratories designated as BSL-2 involve work with agents or organisms that are associated with human disease and pose moderate hazards to personnel and the environment.

Safety Practices

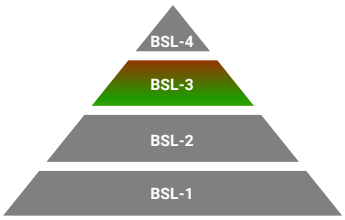
- In addition to standard microbial practices, BSL-2 labs will also have additional safety practices in place:
- Any procedure that can cause infection from aerosolized particles or splashes should be done inside a biological safety cabinet (BSC)
- Autoclaves or other methods of decontamination must be made available for waste disposal

Common Pathogens Studied or Job Functions Performed

Organisms that might be studied in a BSL-2 lab include eastern equine encephalitis (EEE), human immunodeficiency virus (HIV), and Staphylococcus aureus. This also includes bloodborne pathogens.

UNDERSTANDING
BIOSAFETY LEVELS

BSL-3 and RG-3



Laboratories designated as BSL-3 involve work with agents or organisms that are considered indigenous or exotic, agents that present a potential for aerosol transmission, and agents that can cause serious or potentially fatal diseases.

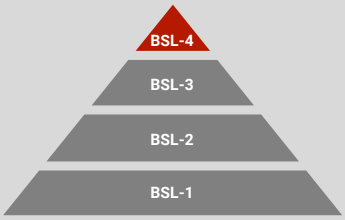
Safety Practices

In addition to following standard microbial practices, people working in BSL-3 labs are medically supervised and may be required to receive immunizations for the organisms or pathogens they work with. All work with organisms must be done within a BSC and autoclaves are generally used.

Common Pathogens Studied or Job Functions Performed

Organisms that might be studied in a BSL-2 lab include yellow fever, West Nile virus (WNV), and tuberculosis (TB). These agents are generally under strict control and registration by governmental agencies.

BSL-4 and RG-4



Laboratories designated as BSL-4 have the most stringent level of protection because they involve work with dangerous and exotic agents that pose a high risk of aerosol-transmitted infections and life-threatening illnesses. There are currently only 13 BSL-4 labs (planned or in operation) in the United States, and only 59 BSL-4 labs in the entire world.

Safety Practices

- Labs designated with BSL-4 must fulfill all BSL-3 considerations, and must also have daily facility and equipment inspections as well as Class III Biological Safety Cabinets for all work involving organisms.
- Personnel must be closely monitored for signs and symptoms of illness. Logs must be kept of the dates and times of all personnel, equipment, and supplies entering and leaving containment areas. All materials leaving the lab space must be thoroughly decontaminated.
- Finally, laboratory personnel must change their clothes prior to entering the lab and must shower prior to exiting the lab space.

Common Pathogens Studied or Job Functions Performed

Organisms that might be studied in a BSL-4 lab include Ebola virus and Marburg virus. BSL-4 labs are often the setting of riskier activities, including gain of function (GOF) research. GOF research is a type of medical research used to genetically modify a microorganism, typically to make the microorganism more transmissible, virulent, or immunogenic (able to provoke an immune response in a human or animal).

BSL-3 labs are also permitted to perform GOF research.

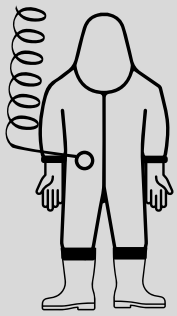
UNDERSTANDING
BIOSAFETY LEVEL PPE

Biosafety PPE: Using the Right Personal Protective Equipment for The Right Level

Personal protective equipment is required for use in all BSL facilities. However, the specific type of PPE required will vary depending on the biosafety level and activities performed.

Personal protective equipment for biosafety labs can be categorized as follows:

BSL-1: Lab coats, gloves, and eye protection should be worn as needed
BSL-2: Lab coats, gloves, eye protection, and face shields
BSL-3: Lab coats, gloves, eye protection, face shields, and possibly respirators
BSL-4: Personnel in this setting must wear full body, air-supplied, positive pressure suits

BSL-1	BSL-2	BSL-3	BSL-4
Lowest safety level - Non-pathogenic microbe	Moderate danger if inhaled, swallowed, or via skin exposure	Severe or potentially lethal disease	Highest safety level - Life-threatening disease
 Lab coat	 Lab coat	 Lab coat	
 Gloves	 Gloves	 Gloves	Full body, air-supplied, positive pressure suit • Internal ventilation system with built-in HEPA filters and air lines • Outer protective gloves are attached to the suit on a hard wrist cuff • Suits can come with integrated booties, welded boots, or attached safety boots depending on the use of the suit • Built in air pressure and exhaust valves
 Eye protection **as needed**	 Eye protection	 Eye protection	
	 Face shield	 Face shield	
		 Respirator **as needed**	