

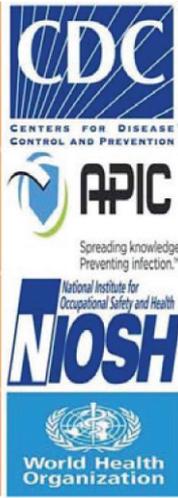


GermCure



# PLEASE READ

THIS DOCUMENT CONTAINS INFORMATION ON PROTOCOLS DEALING WITH EXPOSURE TO ANY TYPE OF VIRUS OR MICRO-ORGANISM (LEVEL I-IV). IT WAS DEVELOPED FROM INFORMATION FROM THE CDC, WHO, APIC AND NIOSH.



# GermCure

INNOVATIVE - INFECTION - PROTECTION

# \*V\_R\_S\*

## Only "I" & "U" Can Break The Chain

# #StayHome

Image: Courtesy of Victory Innovations Co

**THE PROBLEM**

**PATHOGEN CHEMICAL RESISTANCE**

**BIOSAFETY LEVELS I-IV  
PATHOGEN PREPAREDNESS PROTOCOL  
APRIL 2020**

## GERMCURE PROTOCOLS FOR CLEANING IN A BIOTOXIC ENVIRONMENT

### BACKGROUND INFORMATION

SA EMERGENCY HOTLINE  
0800 029 999

In the last several months Covid-19 has been working its way across the world, with a high fatality rate. In several countries across the globe the virus has left death and destruction in its wake. Most recently, the virus has also spread to South Africa. Visit [www.worldometers.info/coronavirus](http://www.worldometers.info/coronavirus) for updated figures.

#### PURPOSE

This bulletin establishes methods to properly handle cleaning of biotoxic situations. The intention of this document is to establish protocols for dealing safely with any pathogens including Covid-19.

Although Covid-19 is currently in the news, there are several pathogens that are equally as virulent. This article addresses the proper technique for dealing with prophylactic or preventative cleaning as well as post exposure cleaning.

These cleaning practices can be used to safely address situations involving biosafety level I-IV Pathogenic species. The use of the words "biosafety level" refer to the level of the biocontainment precautions that are required to isolate dangerous biological agents in an enclosed building.

**What is COVID-19?**  
On 31 December 2019, the World Health Organization (WHO) reported a cluster of pneumonia cases in Wuhan City, China. 'Severe Acute Respiratory Syndrome Coronavirus 2' (SARS-CoV-2) was confirmed as the causative agent of what we now know as 'Coronavirus Disease 2019' (COVID-19). Since then, the virus has spread to more than 100 countries, including South Africa.

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Some examples of the different types of pathogens and their corresponding Biosafety levels include: Biosafety Level I - non-infectious E. coli, Level 2-Influenza and Mumps, Level 3 - Tuberculosis and SARS, Level 4 - Haemorrhagic fevers and Lassa Virus.

Later in the bulletin we will also discuss changes that must be made in Exposure Control Plans. The intent, of these changes, are to include techniques, for dealing with Level I-IV pathogens.

It is not our purpose to seek out areas that are in need of sanitization from extremely virulent pathogens. Rather, these protocols have been developed as preventative measures. These protocols are in place for two reasons:

#### 1. A Known Exposure Incident.

If employees, or contractors are asked to perform disinfection from, or sanitization after or during a known biosafety level III or IV exposure incident; or

#### 2. As a Prophylactic Measure.

If a customer deems it appropriate for disinfection or sanitization when no documented biosafety level III or IV exposure exists.

## METHODOLOGY

Methods for proper cleaning have been established by GermCure International. When no determination is made as to the biosafety level of a pathogen, prophylactic and post exposure cleaning is performed using biosafety level IV precaution protocols. For purposes of developing working safety protocols for all pathogenic species, biosafety level=biosafety precaution protocol level.

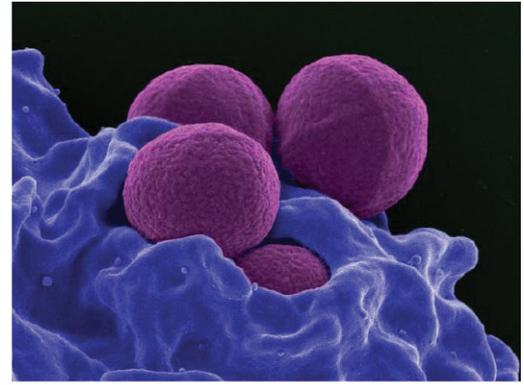
## TRAINING

Appropriate training is vital to prepare employees and contractors to deal with ANY level of pathogenic contamination. All personnel should be competent in:

#### 1. Proper donning (fitting) and doffing (removing) of PPE's.

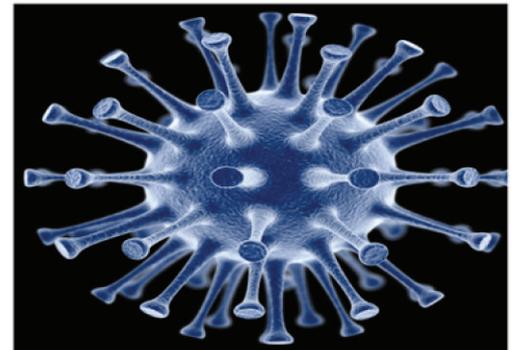
All personnel should have properly put on and taken off PPE's several times while being watched by a Trained Observer. Personnel should also know exactly what PPE's to wear based on biosafety level. When preparing to enter a level IV contaminated area the following PPE's shall be worn:

- Surgical Gown
- Face Shield
- Standard Patient Gloves
- Fitted N95 Respirator
- Duct Tape
- Scrubs
- Surgical Cap/Hair Cover
- Doffing Pad
- Surgical Boot Covers
- Long Cuff Nitrile Gloves
- Apron
- Plastic Washable Foot ware



#### Methicillin-Resistant Staphylococcus Aureus (MRSA) – How it Works

MRSA is a form of Staph infection that is resistant to almost all antibiotics and in severe cases can result in toxic shock, flesh eating pneumonia and open deep pus-filled boils.



#### Severe Acute Respiratory Syndrome (SARS) – How it Works

SARS is caused by the SARS Coronavirus. In its early stages, the symptoms of SARS are similar to the Flu. SARS can cause high fever and pneumonia. It is common during the aftermath of SARS Infection to experience bone collapse (Osteoporosis), destruction of joints and scarring of lungs.



#### Mycobacterium Tuberculosis - How it Works

TB is spread through the cough or sneeze of those who are infected with the disease. Symptoms of tuberculosis are varied as the disease can affect virtually every part of the body. The most common symptoms include chronic cough, blood tinged sputum, night sweats and weight loss.



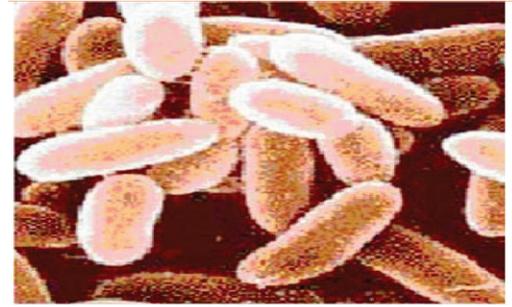
## 2. Proper use of chemicals for disinfection and sanitization.

All personnel who will clean any contaminated area must first be certified/trained. These personnel should also be able to demonstrate an understanding of the proper use of hospital grade disinfectants when cleaning. This demonstration should entail a verifiable understanding of proper dwell time as well as the correct method for applying the disinfectant.

## 3. Proper flow into and out of the contaminated area.

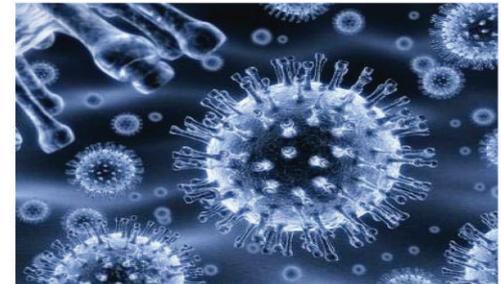
All personnel who will enter any level III - IV contaminated area must understand the flow of traffic into and out of the area being cleaned. In most cases, isolation areas will be set up by the healthcare facility where the work is performed. If this is not the scenario, set-up and corresponding dismantling of containment areas becomes the responsibility of the contractor. In accordance with protocols in place by Emory University, The World Health Organization and the Centre for Disease Control in Atlanta, the flow into and out of the contaminated area should follow these three steps:

- Reporting worker should enter the designated changing area, remove street clothes and put on scrubs.
- Worker should then proceed to an anteroom that is set up as an enclosed area separate from the area being cleaned. Standing outside of the anteroom, a trained observer should watch as the worker puts on (Dons) PPE's. As the PPE's are donned, the trained observer will check off each item as it is completed in accordance with a Donning PPE's checklist. This will help to ensure that PPE's have been put on correctly. Once all PPE's have been put on correctly, the worker can enter the area to perform duties.
- After cleaning, disinfection, sanitization or other duties are completed, the worker will remove shoe covers and dispose of them while standing on a disinfectant mat at the door to the anteroom. After the outside pair of gloves has been sanitized, the worker will remove and discard them. Having completed this task, the worker will then sanitize gloves and step into the anteroom removing PPE's (doffing) while the trained observer watches. The trained observer will check off each item as it is removed. All items removed will be placed in a regulated biohazard trash receptacle. Once this process has been confirmed, the worker will sanitize hands, exit the anteroom, change out of scrubs, bag scrubs as biohazard, wash and sanitise hands again, and change into street clothes.



Bacillus Anthracis  
Anthrax-How it Works

Anthrax initially causes Flu-like symptoms which ultimately result in Pneumonia and respiratory collapse in humans. Other symptoms of Anthrax are vomiting of blood and necrotic ulcers of the skin. Anthrax is treatable only when it forms on skin, once in the human body, anthrax wields a powerful punch with three deadly toxins.



Marburg Virus-How it Works

Marburg Virus is a Haemorrhagic Fever similar to Ebola. Symptoms include nausea and vomiting, bloody diarrhoea, red eyes, raised rash, chest pain and cough, stomach pain, severe weight loss bleeding, usually from the eyes, and bruising (people near death may bleed from other orifices, such as ears, nose and rectum).



Hantavirus-How it works

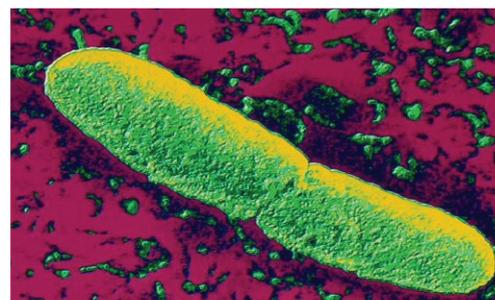
Hantavirus or in the US, Sin Nombre Virus is carried by deer mice. In rodents it poses no health threat. In humans, there are two ways that Hanta proves fatal, with kidney failure brought on by Haemorrhagic fever or by build-up of fluid in the air sacs of the lung (Pulmonary Edema)



## PROTOCOLS

The following seven protocols describe the methods to properly clean up or dispose of items or fluids. These protocols were developed based on information from the CDC, WHO and Emory Healthcare.

- A. Contaminated Bodily Fluids and Spills
- B. Collection of Disposable Items
- C. Decontamination of Reusable Items
- D. Decontamination of Cleaning Personnel and Reusable Supplies
- E. Regulated Waste and Disposable Item Removal
- F. Decontamination Mat Change Procedure
- G. Biosafety / Infection Control Protocols



### Yersinia Pestis Bubonic Plague - How it Works

An infectious disease that is transmitted to humans from infected rats by the oriental rat flea. Bubonic plague is named for the characteristic feature of buboes or painfully enlarged lymph nodes) in the groin, armpits, neck, and elsewhere.

## I. DECONTAMINATION PROTOCOLS

## PROTOCOLS A - G

### PROTOCOL A. CONTAMINATED BODILY FLUIDS AND SPILLS

It is possible that patients with productive cough, severe vomiting, diarrhoea or haemorrhaging may contaminate the environment. Personnel must make every attempt to contain this contaminated material and treat it with an EPA-registered environmental disinfectant. The disinfectant used should have a 1 minute or less required contact time for standard bacteria and viruses.

### PROTOCOL B. COLLECTION OF DISPOSABLE ITEMS

When an area being cleaned requires Level II-Level IV precautions to be implemented during clean-up, all disposable supplies will be collected in leak proof regulated waste biohazard bags or puncture proof, colour-coded containers labelled with biohazard stickers. Items that are collected should be immediately autoclaved, incinerated or disposed of with other infectious waste. Items included are PPE's: masks, gloves, boot and head covers and suits, mop heads, towels that are used to clean, etc.

### PROTOCOL C. DECONTAMINATION OF REUSABLE SUPPLIES

All supplies that are not meant for disposal, such as mop handles, mop buckets, pails, dustpans, etc. will be properly labelled and immediately collected for disinfection or sterilization. All equipment contaminated with blood or other body fluids shall be decontaminated, if possible, or labelled as contaminated, prior to internal or external disposal/repair/maintenance or sanitization.

### PROTOCOL D. DECONTAMINATION OF CLEANING PERSONNEL AND REUSABLE SUPPLIES

If any surface of personal protective equipment is soiled, it will be treated with an EPA-registered hospital disinfectant. The crew will then proceed to disinfect the reusable supplies with an EPA-registered hospital disinfectant. Upon completion of proper disinfection of all reusable supplies, team members will doff their protective equipment as prescribed. Disposable protective equipment will be managed as noted under protocol b: Collection of Disposable items.



## PROTOCOL E. REGULATED WASTE AND DISPOSABLE ITEM REMOVAL

Following the cleaning of any area where any individual is required to use Level II- Level IV Precautions, all disposables will be placed in red biological contamination bags to be autoclaved, incinerated or disposed of with other biohazard regulated waste. Contamination bags are to be filled to, at most, half of their volume. If the individual was potentially infected with a Level IV pathogen, the red biological contamination bags will, in turn, be placed in specially designated, clear plastic biohazard bags in such a way as to avoid contamination of the outside of the clear plastic bags. The clear plastic bags will then be processed in the isolation unit at the healthcare facility. The disinfectant should preferentially have a 1 minute or less required contact time for standard bacteria and viruses.

## PROTOCOL F. DECONTAMINATION MAT CHANGE PROCEDURE

Mats for decontaminating shoes will be placed on floors in the anteroom where cleaning personnel will be required to perform Donning/Doffing routines of PPE's.

1. If cleaning is to remain ongoing in the facility, Mats will be changed every day at the beginning of the shift.
2. To change a mat, remove tape and discard both tape and mat in the trash.
3. Replace mat with a new donning mat and tape down with 2-inch duct tape.
4. Mix an **EPA registered hospital disinfectant** and pour onto mat.
5. The use of disinfectant can cause floors to become sticky. If this occurs, when infection has been eradicated, floors will need to be scrubbed and neutralized.

## PROTOCOL G. BIOSAFETY / INFECTION CONTROL PROTOCOLS

### LEVELS I-IV

This final section of protocols were developed to address infection control of Level I-IV biosafety level pathogens. Each precaution level corresponds to the classification level of a pathogen. (In other words a level I pathogen would require level I precautions, a Level IV pathogen would require Level IV precautions etc.) **In all cases of cleaning, prophylactic or documented level I-IV contamination, a determination will be made based on the type of pathogen as to what biosafety precaution protocol should be used.** In the event that there is no determination as to the type of infection that is being prophylactically addressed, safety dictates that the pathogen will be considered a level IV pathogen, and level IV precautions will apply. Biosafety protocols for levels I-IV are outlined below.

## BIOSAFETY Level I: Standard or Universal Precautions Protocol

### STANDARD PRECAUTIONS:

1. Hand hygiene after touching potentially contaminated materials, regardless of whether gloves were worn. Using soap and water, wash any skin area that has come into contact with blood or other potentially Infectious material.
2. Wear gloves when touching potentially contaminated materials. Remove soiled gloves after a task is completed.
3. Wear mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient care activities that are likely to produce potentially infectious splashes or sprays.
4. Wear a gown to prevent soiling of clothing during procedures and patient care activities that are likely to produce infectious splashes or sprays.
5. Handle patient care equipment soiled with potentially infectious material in a manner that prevents secondary transmission.
6. Routinely perform environmental surface cleaning and disinfecting with an **EPA-registered hospital disinfectant effective against bacteria and viruses.**



## BIOSAFETY Level II: Contact Precautions Protocol

This level of protection will be used in addition to Standard Precautions for cleaning after individuals who are known to be or suspected of being infected with a pathogen that can be transmitted by contact with skin or other contaminated surfaces. For patients infected with a viral haemorrhagic fever pathogen, Contact Precautions will be combined with Droplet Precautions, Airborne Precautions, or both.

### CONTACT PRECAUTIONS:

1. Standard precautions apply.
2. Double gloving is required.
3. Specialized footwear is required. The footwear will be capable of being disinfected or disposable. Footwear that is permeable, such as footwear made from canvas, will not be worn.
4. Patient care equipment will be disinfected or properly disposed of after use as specified in Protocols C and D.

## BIOSAFETY Level III: Contact and Droplet Precaution Protocol

This level of protection will be used in addition to Standard Precautions for cleaning after individuals who are known to be, or suspected of being infected with a pathogen recognized to be transmitted by physical contact or by droplets generated during coughing, sneezing and talking, as well as during the performance of certain procedures. Transmission occurs when droplets containing micro-organisms generated from the infected person are propelled a short distance through the air and are deposited on the host's eyes, nose or mouth. This level of precaution will be utilized in all cleaning areas where patients with pneumonic plague and symptomatic viral haemorrhagic fevers, such as advanced EVD (EXTERNAL VENTRICULAR DRAIN) infection have been in the absence of respiratory symptoms.

### DROPLET AND CONTACT PRECAUTIONS:

1. Standard precautions apply.
2. Double gloving is required.
3. Biohazard coverall is required.
4. Face shield or goggles and surgical mask or the equivalent are required.
5. Specialized footwear capable of being disinfected or disposed of is required. Footwear that is permeable, such as footwear made from canvas, will not be worn.
6. Patient care equipment will be disinfected or disposed of following transport as specified in Protocols C and D.

## BIOSAFETY Level IV: Contact, Droplet and Airborne Precautions Protocol

This level of protection will be used in addition to Standard Precautions for cleaning after individuals who are known to be or suspected of being infected or colonized with a pathogen recognized to be transmitted by physical contact or by fine aerosols generated during coughing, sneezing and talking, vomiting or defecation. Airborne transmission occurs by dissemination of airborne evaporated droplets containing micro-organisms that are suspended in the air for long periods of time or dust particles containing the infectious agent. Micro-organisms carried in this manner can be widely dispersed by air currents and may be inhaled by a susceptible host within the same room or over a longer distance from the source patient depending on environmental factors. This level of precautions will be utilized for cleaning after patients with symptomatic smallpox, Severe Adult Respiratory Syndrome (SARS);



severe viral haemorrhagic fevers, such as advanced EVD or Marburg virus infection with respiratory symptoms; newly-isolated influenza viruses of unknown virulence; as well as the transport of personnel with illnesses or respiratory symptoms due to an undetermined pathogen.

#### CONTACT, DROPLET AND AIRBORNE PRECAUTIONS:

1. Standard precautions apply.
2. Double gloving is required.
3. Biohazard coverall is required.
4. Fitted N-95 respirator with face shield or hood assembly with Powered Air Purifying Respirator (PAPR) is required.
5. Specialized footwear capable of being disinfected or disposed of is required. Footwear that is permeable, such as footwear made from canvas, will not be worn.
6. The patient will wear a surgical mask if tolerated.
7. Patient care equipment will be disinfected or properly disposed of after use as specified in Protocols C and D.

## II. CHANGES TO EXPOSURE CONTROL PLANS

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Exposure Control Plans (ECP) must be updated continuously to accommodate new protocols.

#### CHANGES TO EXPOSURE CONTROL PLANS (ECP) MUST INCLUDE:

1. Addition of verbiage to deal with all Biosafety Levels of Pathogens such as Covid-19.
2. Changes in verbiage to include definitions of technical terminology to allow the document to be more readable.
3. Addition of a Disclaimer.
4. Addition of several new sections of the document relating to exposure incidents.
5. Addition of several forms and check lists.

The following table lists specific items that must be added to the Exposure Control Plans (ECP).

## EXPOSURE CONTROL PLAN ADDITIONS

- Disclaimer
- Sharps Injury Log.
- Possible Exposure List.
- Expected Exposure List.
- Post Exposure Evaluation.
- Initial Reporting of Exposure.
- Personal Protective Equipment/Task List.
- Cleaning and Decontamination Schedule.
- Donning and Doffing Biological PPE for Patients.



COMPILED BY F. Viljoen GermCure Int.  
Operations & Training

# SOUTH AFRICA COVID-19 RESOURCES

<https://coronavirus.datafree.co>  
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