

PROTOCOL | VIRUS 100 | DISINFECTION



- **HEAT DESTROYS VIRUSES**
- **ABOVE 56°C / 133°F FOR 30 MINUTES**

VIRUS DISINFECTION WITH HEAT

PROTOCOL FOR VIRUS 100 INDUSTRIAL HEATERS

- **VIRUS EASILY DESTROYED BY HEAT**
 - The coronavirus named SARS 2 COVID-19, is causing enormous damage
 - Thousands of lives have been lost and millions have been infected around the world
 - The damage to the economy worldwide is in trillions of dollars
 - The virus though ferocious in infection, is physically a weak virus
 - This virus can be easily destroyed by chemical disinfectants and or heat
 - The purpose of this protocol is to recommend how to use heat to destroy the virus found on surfaces of rooms in buildings, furniture and even PPE for reuse stored in buildings
 - Typical situations will include rooms in hospitals, hotels, schools and any enclosed room
- **DISCLAIMER**
 - This protocol is not for the prevention or cure or for disease management in humans. It is solely for treating rooms in buildings
 - **AVOID LONG TERM EXPOSURE TO THE HEATED ROOM AS THIS CAN RESULT IN DEATH!**



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- **THE EVIDENCE**

- ✓ *“The virus is sensitive to heat and can effectively inactivate the virus when it reaches a temperature of 56°C for 30 minutes.” (1)*
- ✓ *Dr. Peter P. Tsai, University of Tennessee Research Foundation states “There has been a dire shortage of face masks since the emergence of COVID-19, and many questions about the sterilization and reuse of these masks have been raised. Exposing the masks to air at elevated temperatures such as 70 °C for 30 minutes allows the charges to be retained. With this method, it is important to suspend the masks in air without contacting or approaching a metal surface because the metal temperature is much higher than that of the hot air leading to a severe charge decay or damage of the mask material.” (2)*
- ✓ *“Professor Sally Bloomfield of the London School of Hygiene and Tropical Medicine has said that “To actively kill the virus, you need temperatures of around 60 degrees [Celsius]” and that currently it is not known if hot weather can inactivate COVID-19.” (3)*
- ✓ *“We and others have reported that infectivity of SARS CoV (SARS coronavirus) was lost after heating at 56°C for 15 minutes but that it was stable for at least 2 days following drying on plastic.” (4)*
- ✓ *“Coronaviruses (MERS-CoV) died when under environmental circumstances of 56 degrees Celsius (132°F) for 25 minutes. Increasing the temperature to 65°C (149°F) was even better and only one minute was needed to kill viruses. No killing was observed after 2 hours at 25°C (77°F).” (5)*
- ✓ *“Based on the team’s studies, it is revealed that the Wuhan virus, which is in itself a coronavirus, cannot survive temperatures of above 57°C and will die in such environments in 30 minutes.” (6)*

VIRUS DISINFECTION WITH HEAT PROTOCOL FOR VIRUS 100 INDUSTRIAL HEATERS



- **EQUIPMENT YOU WILL NEED**
- Colorado Tri-Flo Systems in the USA manufacture specialized commercial electric heaters. The heaters can effectively and easily heat any space to 60–74°C / 140–165°F — greater than the temperature needed to kill the Coronavirus. This means that, with a commercial electric heater from Tri-Flo, you can turn hospital rooms, hotel rooms, bedrooms, public transportation vehicles, and other spaces exposed to the Coronavirus into your own heat chamber to kill the virus.
- **HEAT IS SHOWN TO KILL VIRUSES. WHETHER YOU NEED TO DECONTAMINATE A ROOM OR YOUR PPE EQUIPMENT FOR POSSIBLE REUSE, PLEASE CONSIDER USING THE SIMPLICITY OF HEAT**
- Colorado Tri-Flo Systems have a selection of commercial electric heaters that can efficiently and effectively tackle the Coronavirus. The virus solution packages use proven commercial grade electric heaters to effectively heat any space to 70°C / 158°F. The VIRUS-100-I electric heaters carry the CE Mark and run on any 240-volt system in the world.
- **VIRUS 100 -I** is a package of choice and includes two 230V commercial electric heaters, two fans, and a laser infrared thermometer so you can tackle any virus with heat. It is designed for a room size of 30 square meters / 75 cubic meters. The heaters come with a two-year warranty along with our training and certification program. This means that you can learn how to easily and safely operate your new electric heater, making you the expert who can start destroying the Coronavirus and disinfect any infected areas today!

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1. INSPECTION

- Inspection of the room to be heat disinfested is the first step. Prior to going for the inspection, you are expected to read The Bed Bug Eradication Field Guide from the manufacturers of the Virus 100- I package. Be thoroughly familiar with the guide as the treatment protocol is similar. In this protocol we cover only what is specific to the virus disinfection.
- Wear approved PPE. As you are inspecting a room that could possibly have virus and or bacteria, you must ensure you wear the appropriate PPE (Personal Protection Equipment) that is designed for such purpose. The CDC in the USA and in your country the counterpart organization for disease management will have specifications for such PPE.
 - ✓ When inspecting the room, look out for insulation quality, number of windows and doors, and construction material that may affect heating capability of the VIRUS 100 package.
 - ✓ Take measurement of the length of width and height of the room. If it exceeds 30 square meters / 75 cubic meters you may need more heaters and fans. Refer to the [online calculator](#) on our website, www.tri-flo.com, or contact us to build a package for your requirements.
 - ✓ Look for power availability in the room. You will need Two 13-15-amp power points to run each heater. And one power point 5-10-amp to share the two fans that can be connected to each other. Usually there are AC points and or suitable points at the kitchen or laundry in commercial premises. Alternatively use of an industrial generator will be most appropriate,
 - ✓ Refer to our Bed Bug Field Eradication Guide to identify items that may require to be removed from the room prior to the treatment. These should be chemically disinfected with the appropriate formulation before they are taken out and treated again once they are brought back to the room.
 - ✓ Draw a plan of the room showing door, window, furniture and equipment. Mark the items for removal. Mark points that may allow heat loss.



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2. ASSESSMENT

- With your inspection findings make an assessment:
 - ✓ If the VIRUS 100 package is enough to treat the room
 - ✓ Determine where you will place the heaters and fans for maximum impact
 - ✓ How are you going to seal any openings that may result in heat loss? The space under a door can be simply covered with a towel. Gaps along windows can be duct taped.
 - ✓ Assess if you need a generator or if there is enough power for the circuit breaker to use the VIRUS 100 package
 - ✓ Ensure your insurance company is aware and cover your new treatment method

3. COMMUNICATION

- Communicate with the client your findings and assessment:
 - ✓ Ensure they understand you are carrying out a surface and space disinfection of the room and furniture
 - ✓ Ensure you are in no way warranting there will be no future presence of virus by introduction
 - ✓ Ensure they understand your treatment only destroys virus present at the time of treatment, and you offer no residual warranty

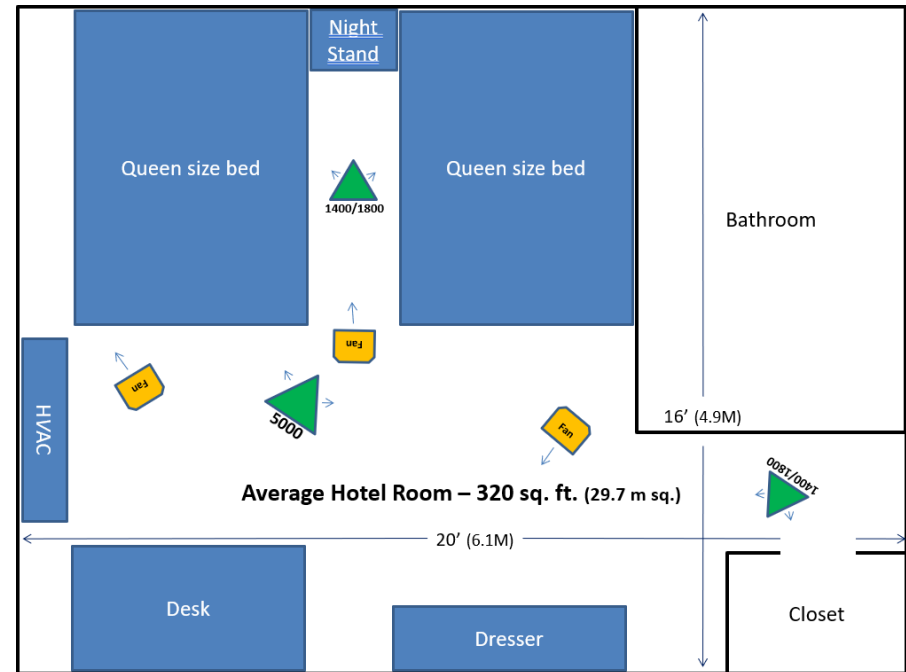


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4. SITE PREPARATION

- Prepare site as outlined in the Bed Bug Field Eradication Guide of Manufacturer
 - ✓ Remember to wear full PPE for virus protection before entering the room
 - ✓ Remove items listed in the Guide and the items you identified during your inspection. Ensure they are treated appropriately before removing and after they are returned with chemical disinfectant spray or wipe as approved
 - ✓ Determine where you will place the heaters and fans for maximum impact
 - ✓ Seal any openings that may result in heat loss, the space under a door can be simply covered with a towel. Gaps along windows can be duct taped.
 - ✓ Ensure the wires / cables from generators to heaters and fans or from the wall do not pose a hazard like accidental tripping. You can tape them down for example.
 - ✓ Note the room temperature before you begin
 - ✓ If the room has a heater or reverse cycle AC, then turn heat on to reach room temperature of about 30°C
 - ✓ Switch off the room heaters / reverse cycle AC
 - ✓ Cover all sprinklers with a stop gun or suitable cover, turn off smoke alarms and remove the battery. Block air vents



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5. DISINFECTION

- Once the site preparation is completed with equipment placement done
 - ✓ Switch on the heaters to maximum heat position. Do not switch on the fans
 - ✓ Every 30 minutes to one hour take temperature readings from inside the room
 - ✓ **Avoid long term exposure to the heated room as this can result in death**
 - ✓ Use the infrared thermometer provided to take readings and identify cool spots and move the heaters and fan direction where needed for better distribution of heat
 - ✓ You can also use remote sensor thermometer system to take readings of the room from outside
 - ✓ You can also use a thermal camera to identify cold spots and areas of heat loss and take remedial action
 - ✓ Once the room temperature reaches 56°C / 135°F, leave the room closed with heaters and fans on for the final 30 minutes. Take a temperature reading and confirm it is above 56°C
 - ✓ Some clients particularly hospitals may want to take a swab test before your treatment and after. Please let them make their own arrangements with their lab to do that
 - ✓ After the treatment, remember to have your PPE and you cleaned out appropriately
 - ✓ Close the room and after the first 30 minutes carry out a temperature reading
 - ✓ Switch on the fans to maximum speed



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6. REFERENCES

1. *"The virus is sensitive to heat and can effectively inactivate the virus when it reaches a temperature of 56°C for 30 minutes.*
<https://cntechpost.com/2020/01/28/does-the-sun-kill-the-new-coronavirus-expert-explains/>
2. *Dr. Peter P. Tsai, University of Tennessee Research Foundation states "There has been a dire shortage of face masks since the emergence of COVID-19, and many questions about the sterilization and reuse of these masks have been raised. Exposing the masks to air at elevated temperatures such as 70 °C for 30 minutes allows the charges to be retained. With this method, it is important to suspend the masks in air without contacting or approaching a metal surface because the metal temperature is much higher than that of the hot air leading to a severe charge decay or damage of the mask material." Click [here](#) for more.*
3. *Professor Sally Bloomfield of the London School of Hygiene and Tropical Medicine has said that "To actively kill the virus, you need temperatures of around 60°C" and that currently it is not known if hot weather can inactivate covid19."*
<https://www.dramalina.com/blog/5r0x5esqa4quyx1lj85lnizwpo3194>
4. *We and others have reported that infectivity of SARS CoV (SARS coronavirus) was lost after heating at 56°C for 15 minutes but that it was stable for at least 2 days following drying on plastic."*
<https://www.hindawi.com/journals/av/2011/734690>
5. *Coronaviruses (MERS-CoV) died when under environmental circumstances of 56 degrees Celsius (132 degrees F) for 25 minutes. Increasing the temperature to 65 degrees Celsius (149 degrees F) was even better and only one minute was needed to kill viruses. No killing was observed after 2 hours at 25°C / 77°F"*
<https://saunamarketplace.com/can-sauna-kill-coronavirus>
6. *"Based on the team's studies, it is revealed that the Wuhan virus, which is in itself a coronavirus, cannot survive temperatures of above 57 °C and will die in such environments in 30 minutes."*
<https://www.worldofbuzz.com/experts-say-deadly-wuhan-virus-can-be-killed-by-alcohol-high-temperatures/>

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DISCRETELY SOLVE YOUR VIRUS PROBLEM

- HEAT KILLS VIRUSES THAT DIE UNDER 60°C
- HIGHLY EFFECTIVE
- NO PESTICIDES
- ENVIRONMENTALLY FRIENDLY
- COVERED BY PRODUCT LIABILITY INSURANCE

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Colorado Tri-Flo Systems, LLC, is the manufacturer of the VIRUS 100 line of industrial heaters based in Longmont, Colorado, USA. Contact us to learn more about how we can solve your virus issues, save money, and make you more profitable with our proactive solutions. VIRUS 100 heaters are safe, effective, environmentally friendly, and bear the CE Mark. Using airflow technology our heaters deliver the heated airflow necessary to kill viruses

