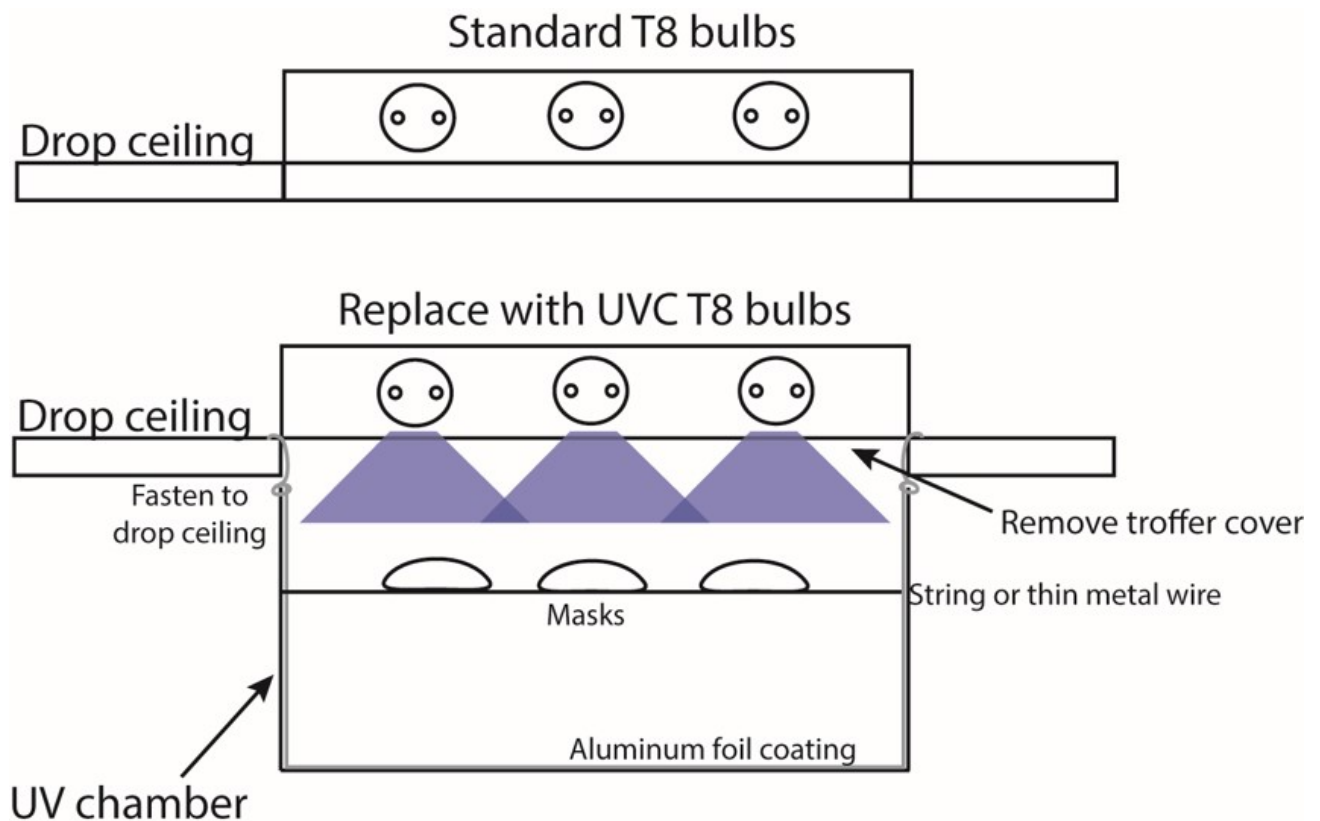


Use an existing ceiling light fixture with new or existing UVGI bulbs

Rationale: Many UVGI bulbs are on backorder because of the increased demand for them. However, in the coming months if bulbs become more readily available, existing fluorescent fixtures in the ceiling can be replaced with UV bulbs. The following protocol will be very variable depending on the type/dimensions of the ceiling fixture. Further testing needs to be done to optimize this protocol. Please follow the advice of local electrical component experts in your region.



Safety Note: UV exposure can cause skin and eye damage. The light assembly should not be turned on unless all occupants have adequate eye protection and there is no exposed skin. We recommend that personnel leave the room during the decontamination cycle. If this is not possible, occupants must always wear personal protective equipment (PPE) including UV safety goggles, UV face shields, tightly woven clothes, and gloves.

Important Factors to Consider Before Decontaminating:

1) Higher UV required for higher humidity levels

- Important when considering condition of the mask—each mask should be allowed to dry so water vapor from breathing is not left on mask at the time of decontamination.
- Decontamination should not be conducted in a particularly humid environment, otherwise mask irradiation should be adjusted accordingly. [\[1\]](#)

2) UVGI is less effective at decontaminating mask straps

- Recommend additional decontamination using a disinfectant wipe on the straps, which is NOT an appropriate option for the filtering part of the mask. [\[2\]](#)



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- 3) **UVGI does not penetrate the interior of the mask** [\[2\]](#)
 - a. The recommended doses will only provide surface decontamination. This still presents major benefits to HCWs to prevent further spread of the virus between patients, and to themselves, and other HCWs.
 - b. Higher UVGI doses can allow for deeper penetration, but the stability of the mask materials can degrade and the number of decontamination cycles possible will be reduced.
- 4) **US CDC, NIOSH, and FDA currently do not recommend N95 decontamination** [\[3\]](#)
 - a. Decontamination during this unprecedented pandemic should be done carefully with the understanding that UVGI has not been firmly tested to rigorous standards, but could help stop the spread of the virus caused from re-donning a contaminated mask.

Protocol:

NOTICE: After construction of the UVGI lamp assembly, UV-C output must be measured with the appropriate UV-C meter (attenuation $\lambda=254\text{nm}$) in order to determine the required decontamination/irradiation times. UV-C output should be measured at essential points in the mask decontamination area. Please refer to our website (<https://gleghornlab.com/uvgi-decontamination>) for specific details. Further questions or feedback can be submitted via query in our webform (<https://forms.gle/qmhKNax5eR15hMuC8>)

Step 1: Remove the troffer cover on the existing light fixture to gain access to the fluorescent bulbs. Replace the existing bulbs with the UV-C bulbs. This should be a one-to-one replacement with the bulbs. Do not replace the troffer cover, it is critical that the UV-C bulbs are exposed. **Do not turn on the lights while still in the room to prevent exposure to UV.**

Step 2: Construct a cardboard UV chamber to be attached to the fixture so that masks can be placed inside while providing protection to users from the UV-C bulbs. Find a box that is large enough to cover the light fixture. Alternatively, the lights can be used without a box cover but ensure that no personnel are in the room when the light is in use. If using the box method, tape aluminum foil to cover all internal surfaces of the box. Be sure to tape so that the shiny side of the aluminum foil is facing up and will reflect the UV light. Use string or wire to run a length through the middle of the box. Run lengths in parallel to hold masks up and fix the ends of this to the outside of the box. Once masks are placed in the box, fasten the box to the ceiling using string, wires, or other hanging equipment. **The light can be turned on while the room is vacant or the correct UV safety PPE is being worn.** The amount of time to expose masks in this set up will depend on several factors and should be validated before using this method. The finished product should be tested for UV-C output using a UV-C meter ($\lambda=254\text{nm}$).

