**UV-C CABINET**

This cabinet is not certified by any regulatory body and use must be approved by national, regional or facility authorities, according to the local context. No warranties are implied and workflows are used at your own risk.

### UV-C BASICS

1. UV-C inactivates pathogens by altering DNA and RNA
2. Wavelength for antimicrobial activity (254nm)
3. Surface decontamination with UV-C common in healthcare settings - to kill C. DiR, MRSA, VRE and Ebola
4. At least 1J/cm² to inactivate SARS-CoV-2 & similar viruses on N95 & surgical mask material

### HEALTH & SAFETY GUIDELINES

1. **AVOID UV-C EXPOSURE**
   - Exposure to UV-C can cause damage to skin & eyes.
   - Confirm doors are closed and sealed.
   - Utilize interlocks to prevent doors openings during cycle
2. **AVOID OZONE**
   - Avoid using bulbs intended to produce ozone.
   - Keep cabinet doors closed to prevent escape of ozone (UV-C light will breakdown ozone within cabinet)
3. **WEAR PPE**
   - Avoid self-contamination and exposure of UV-C to eyes and skin by wearing the right PPE (gown, gloves, eye protection, surgical mask)

### DECONTAMINATION PRINCIPLES

1. Preserve mask* fit & filtration
2. Reduce bioburden (3-log reduction in SARS-CoV-2 for decontamination)
3. Avoid harmful residues
4. *Mask denotes an N95 respirator. Surgical masks may be substituted but supporting evidence is sparse or unpublished

### DECONTAMINATION WAVELENGTHS

- **OZONE GENERATING UV**
  - 100-220NM
- **GERMICIDAL UV-C**
  - 200-280NM
- **MINIMAL GERMICIDAL UV-B**
  - 280-320NM
- **NOT GERMICIDAL UV-B**
  - 320-380NM
- **VISIBLE**
  - 380-720NM

- **UV-C LAMP PEAK**
  - 254 NM (DNA, RNA max uv absorption at 260 nm)

### DESIGN PRINCIPLES FOR CORRECT DOSE APPLICATION

1. **MEASURE DOSE ROUTINELY**
   - With photodiode or photochromic strips that are specific to UV-C and can measure >1 J/cm²
2. **IRRADIATE BOTH SIDES**
   - Bulb array facing front & back of masks. Inside of cabinet lined with reflective material
3. **IRRADIATE UNIFORMLY**
   - Distance between bulbs = distance from bulb to mask, to apply >1 J/cm² to all surfaces
4. **AVOID SHADOWING**
   - Avoid shadowing from other masks, straps, or any objects between bulbs and mask
5. **SECONDARY STRAP DECONTAMINATION**
   - Straps are resistant to UV-C decontamination and must be wiped with compatible disinfectant solution. Do not wipe facepiece.

### O95DECON UV-C TECHNICAL REPORT

- **N95DECON UV-C CABINET DESIGN**
  - **UVCABINET**
  - **AVOID UV-C EXPOSURE**
  - **AVOID OZONE**
- **WEAR PPE**
- **DECONTAMINATION WAVELENGTHS**
  - **OZONE GENERATING UV**
  - **GERMICIDAL UV-C**
  - **MINIMAL GERMICIDAL UV-B**
  - **NOT GERMICIDAL UV-B**
  - **VISIBLE**
- **UV-C LAMP PEAK**
- **O95 RESPIRATOR**
- **SURGICAL MASK**

### CITATIONS:

- [https://www.n95decon.org/uvc](https://www.n95decon.org/uvc)
- [https://www.covidppeguide.com/uvc-decon](https://www.covidppeguide.com/uvc-decon)

~5,000 MASKS/ DAY

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~10 MINS PER CYCLE**

~$1,500 PER CABINET

** Cycle time = dependent on bulb irradiance to ensure ≥1J/cm² dose is applied to masks

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