SREE RENGA HOSPITAL
Quality in Service

ReMASK

An evidence-based method to decontaminate and re-use N95 face masks using Ultraviolet Germicidal Irradiation

Dr.Anuradha Pichumani

Executive Director

Sree Renga Hospital,Chengalpattu,TN

MC-3351

SREE RENGA HOSPITAL
Quality in Service

Peer-reviewed evidences of UVGI

UVGI quenches viruses on surfaces of N95 masks

Mills D et al "Ultraviolet germicidal irradiation of influenza-contaminated N95 filtering facepiece respirators." American Journal of Infection Control 46, no. 7 (2018): e49-e55.

Heimbuch BK et al "A Pandemic Influenza Preparedness Study: Use of Energetic Methods to Decontaminate Filtering Facepiece Respirators Contaminated with H1N1 Aerosols and Droplets", American Journal of Infection Control , 2010;38(1):3–8

.

UVGI does not alter usability of N95 masks after many cycles of decon

Viscusi AJ et al. "Impact of Three Biological Decontamination Methods on Filtering Facepiece Respirator Fit, Smell, Comfort, and Donning Ease." Journal of Occupational and Environmental Hygiene, Jan 2011;8(7):426–36.

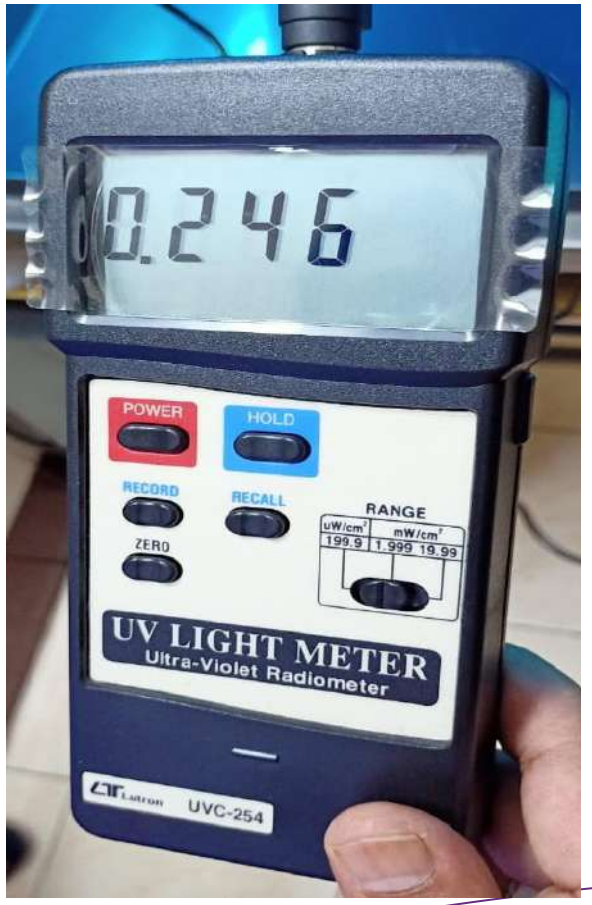
William G. Lindsley et al "Effects of Ultraviolet Germicidal Irradiation (UVGI) on N95 Respirator Filtration Performance and Structural Integrity", Journal of Occupational and Environmental Hygiene, 12:8, 509-517.

EFFECTIVELY USED AT NEBRASKA UNIVERSITY , USA

MC-3351

SREE RENGA HOSPITAL
Quality in Service

ReMASK - The UV decontamination box



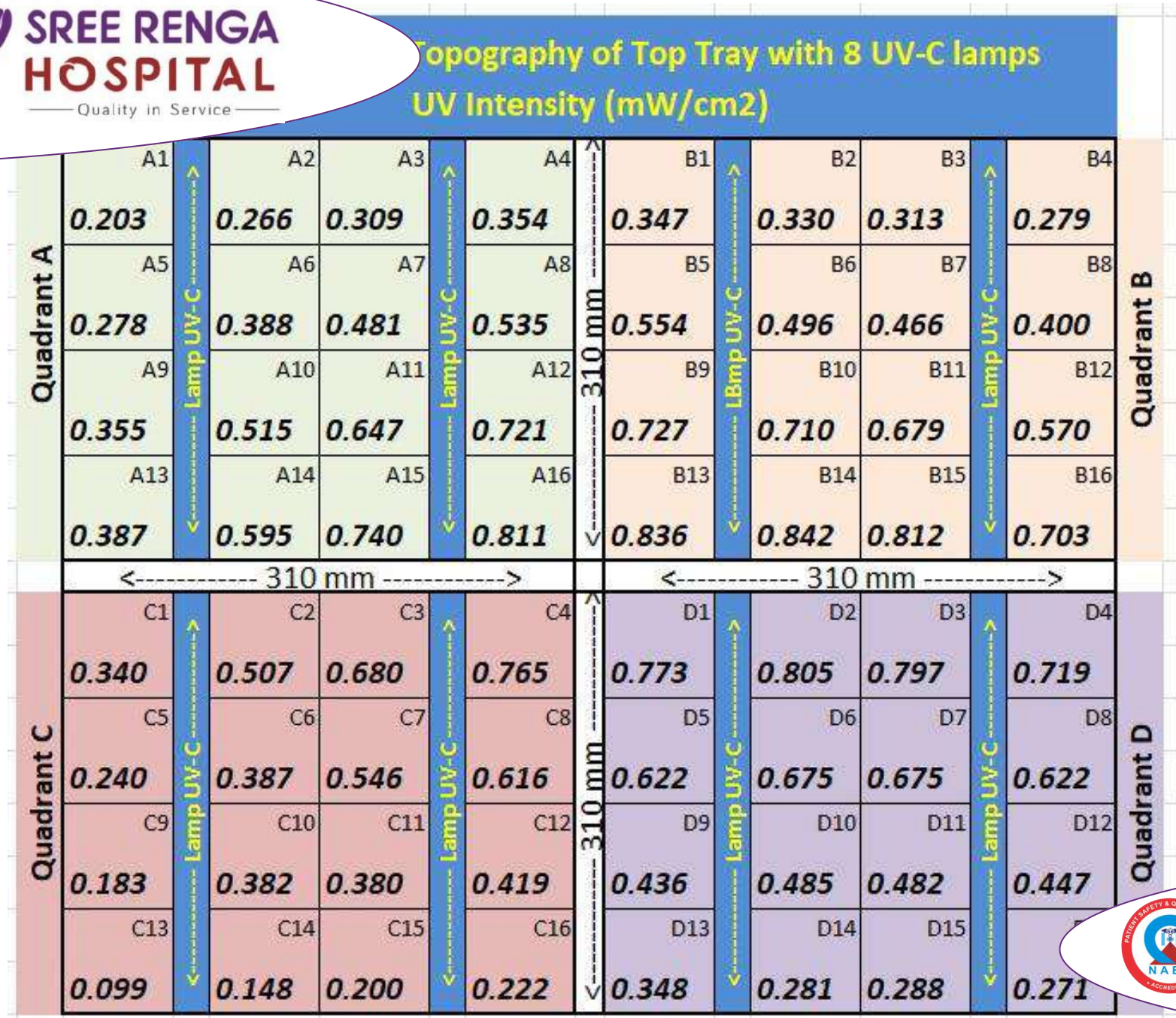
Threshold value

1 J/cm^2

MC-3351

SREE RENGA HOSPITAL
Quality in Service

UVGI Heat Map



Spearman-Kärber formula

UV dose (J/cm^2) = Irradiance $(W/cm^2) \times$ Time (s)

MC-3351

SREE RENGA HOSPITAL
Quality in Service

Microbiological tests

- Evaluated at NABL Laboratory –
- Anderson Lab,& CMC Vellore

anderson Diagnostics & Labs

Certificate of Inactivation of Microorganisms Using Ultraviolet Germicidal Irradiation (UVGI)

30-May-2020

Name of the Organisation	Sree Renga Hospital
Address	12 Varada Reddy Street, Vedachala Nagar, Chengalpattu,Tamilnadu 603001.
Date of testing	30-May-2020
Test(s) conducted	Inactivation of microorganisms using Ultraviolet Germicidal Irradiation (UVGI).
Samples tested	a) E.Coli ATCC 25922 on plate b) Pseudomonas aeruginosa ATCC 27853 on plate c) Spores (Bacillus stearothermophilus) on tube d) E.Coli ATCC 25922 smeared and injected on to the inner and outer surface of an N95 mask – four unique test conditions e) Pseudomonas aeruginosa smeared and injected on to the inner and outer surface of an N95 mask – four unique test conditions.
Method(s) used	Open plate, Colony count by spread plate technique
Site of testing	Anderson Diagnostic Laboratories, Chennai.
Description of Instrument	The Ultraviolet Decontamination Box, delivering 1J/cm^2 of Ultraviolet Germicidal Irradiation (UVGI), custom-designed by Sree Renga Hospital.
Observations	a) A 5 log reduction in all the microorganisms tested was recorded. b) The Ultraviolet Germicidal Irradiation (UVGI) process achieved 99.999% reduction in the destruction of the pathogens. c) The Ultraviolet Germicidal Irradiation (UVGI) energy generated by the UV Box is sufficient to destroy 99.999% of the infectious microorganism load.

Dr. Mallai, Ph.D.
Consultant Microbiologist
Date : 30.05.2020

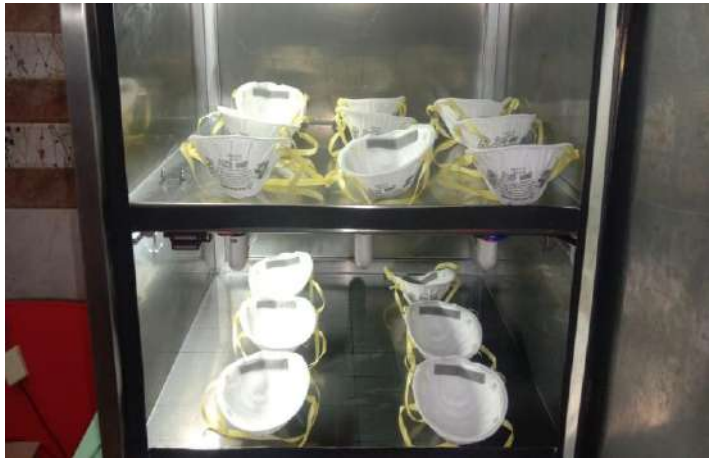
No.150, Poonamallee High Road, (Opp to Swarnprakash Hotel), Chennai-600 084.
No.143, Uthamar Gandhi Salai, Nungambakkam, (Opp to Park Hotel), Chennai-600 034.
Helpline No. : 044-4353 9444 | Email : info@andersondiagnostics.com
www.andersondiagnostics.com

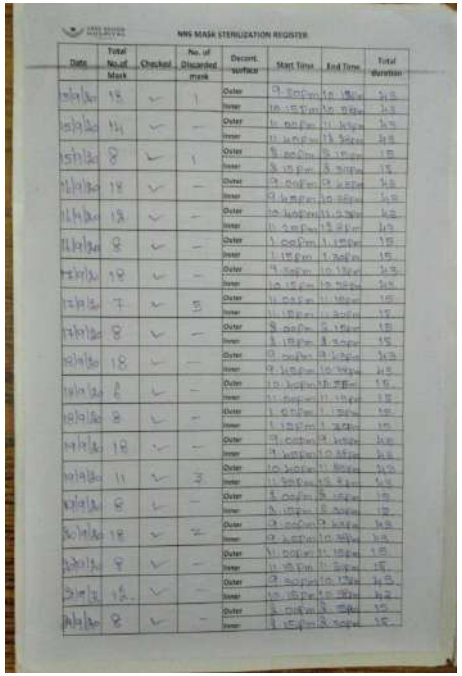
Samples tested	a) E.Coli ATCC 25922 on plate b) Pseudomonas aeruginosa ATCC 27853 on plate c) Spores (Bacillus stearothermophilus) on tube d) E.Coli ATCC 25922 smeared and injected on to the inner and outer surface of an N95 mask – four unique test conditions e) Pseudomonas aeruginosa smeared and injected on to the inner and outer surface of an N95 mask – four unique test conditions.
Method(s) used	Open plate, Colony count by spread plate technique
Site of testing	Anderson Diagnostic Laboratories, Chennai.
Description of Instrument	The Ultraviolet Decontamination Box, delivering 1J/cm^2 of Ultraviolet Germicidal Irradiation (UVGI), custom-designed by Sree Renga Hospital.
Observations	a) A 5 log reduction in all the microorganisms tested was recorded. b) The Ultraviolet Germicidal Irradiation (UVGI) process achieved 99.999% reduction in the destruction of the pathogens. c) The Ultraviolet Germicidal Irradiation (UVGI) energy generated by the UV Box is sufficient to destroy 99.999% of the infectious microorganism load.

MC-3351

SREE RENGA HOSPITAL
Quality in Service

Process flow to decontaminate and re-use an N95 mask





Efficiency

- Compact
- Non-toxic
- Easy to use, maintain
- Point of Care use, small & large hospitals
- Extensively studied and reported
- Proven decontamination of different microorganisms

MC-3351

SREE RENGA HOSPITAL
Quality in Service

Tangible and intangible results

- Cost savings Rs.1,75,000/- per month
- Cost savings on BMW disposal

- HCW morale ↑
- HCW Absenteeism ↓

TEAM

Dr.K.P.Pichumani,
MD
SRH

Dr.Anuradha Pichumani,
ED
SRH

Mr.Sathish,
CIO
SRH

Mr.Sravankumar
IIT-Madras
(Alumni)

Mr.Vijay Krishna
IIT – Kharagpur
(Alumni)

MC-3351