A walk-through of the study: “Ultraviolet -C (UVC) monitoring made ridiculously simple: UVC dose indicators for convenient measurement of UVC dosing”

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Shadowed areas and areas far away may be exposed to lower radiation levels compared to areas in direct line and/or areas close by. Colour changing dosimeters can be a cost effective tool to monitor UVC exposure of a specific surface and several studies in the last years have mentioned and showed on the benefits of using such dosimeters as an easy to use tool to quality assure UVC exposure. [1, 3,4,5]

In October 2019 a study was published by Jennifer Cadnum, Dr Curtis Donskey et.al [1] which specifically looked at colour changing dosimeters and its functionality with UVC disinfection equipment in a lab setting.

Methods:
- In a laboratory setting, exposed MRSA and C.diff spores on steel disk carriers to UV-C for varying fluence exposures ranging from 10,000 to 100,000 µJ/cm².
- The UV-C indicators were placed adjacent to the carriers.
- Change in color of the indicators was correlated with dose, by radiometer reading, and log10CFU reductions.

Results & Conclusion:
- UV doses required for a 3 log reduction of MRSA and C.diff were 10 000 and 46 000 µJ/cm², respectively.
- The dosimeters tested showed a visible colour change at 10 000 µJ/cm² and a final colour change at 46 000 µJ/cm².
- Indicators were easy to use and took only seconds to place and easy to make the readout
- Additional studies are needed to evaluate the functionality in patient rooms and shadowed areas

Fig 1: Shows the colour change of the dosimeter, unexposed (yellow), 10mJ/cm² (3 log reduction of MRSA) 46 mJ/cm² and (3 log reduction of C.diff). UVC energy levels is stated on top of each dosimeter.
References:
[2] John M. Boyce, MD;1,2 Patricia A. Farrel, MT et.al, “Impact of Room Location on UV-C Irradiance and UV-C Dosage and Antimicrobial Effect Delivered by a Mobile UV-C Light Device”, infection control & hospital epidemiology june 2016, vol. 37, no. 6