Bioaerosol Boss: Desquamative and Other Bioaerosols Deactivation Ultra-Violet C Light Irradiation Prototype

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Operating rooms flooded with UVC light during surgery in clinical studies conclude UVC light reduces surgical infection rates. Instead of flooding an entire operating room with UVC light—creating a cumbersome working environment—the Bioaerosol Boss prototype offers a unique simpler approach by providing a small perimeter beam of intense Ultra-Violet C light at 254 nanometers that deactivates bioaerosol microorganism DNA, wafting in the air, in order to protect the surrounded site from in-room bioaerosol contaminants. The prototype's effectiveness and concept of a perimeter light beam being as effective at protecting a site as whole-room UVC exposure was tested six times, using a total of eighteen new agar plates. Three plates were used in each test set. The first was exposed for one minute to the bioaerosol exhaust (skin cells and pseudomonas aeruginosa) from my bedroom humidifier to serve as the control. The second and third plates were placed in the prototype and collected bioaerosols floating through the air from the humidifier source for one minute each. The only difference was the UVC lights were turned on for the third plate, protecting the simulated incision site. No agar plates were directly exposed to UVC light. Plates were incubated for two days at 37 degrees Celsius to determine growth or no growth. In all tests, the plates protected with the UVC light did not show growth, while the other plates showed growth, concluding the UVC prototype efficiently and effectively deactivates desquamative and other bioaerosols and proves the concept for further development.