14841 Dallas Parkway
Suite 500, The Aberdeen Bldg.
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Summary Report

Ozone and Organic Oxidization By-products

Ozone and organic oxidation by-products are sometimes formed as a result of the irradiation of ambient moisture and oxygen in the air by UVC radiation with wavelengths in the range of 100~285nm. The Aerus Medical Guardian, model F170A was tested for the purpose of determining if any organic oxidation by-products are created by the device as it operates.

The device was evaluated in a 3,000 cubic foot non-ventilated, environmentally controlled test area. Temperature was 73°F with a humidity level of 87%. The humidity level was increase beyond what would be normally found in a professional healthcare environment to ensure the ambient air was sufficiently saturated to promote oxidation by-products. Air samples were collected hourly over an 8-hour period, then 1 air sample was collected at 24 hours and another sample at 48 hours to determine if by-products were created and if so, at what level. The device was operated on the lowest fan speed.

To summarize, the organic oxidation data indicated that;

- No carbon monoxide was detected above baseline levels
- Formaldehyde, acetaldehyde, benzaldehyde, Toluene remained at or below baseline levels
- No significant levels of other volatile organic compounds (TVOC) were measured

Organic oxidation data is documented in section 19, pages 19.85 through 19.86.

Ozone measurements were collected operating a single and multiple devices in a 3,000 cubic foot ventilated area with 4~6 air exchanges per hour representative of what is found in professional medical locations. Measurements were also conducted in a 3,000 cubic foot non-ventilated area. Temperature was 73~74°F, 60~64% RH and the device operated on the lowest fan speed. Testing was performed over 48 hours with measurements collected hourly.

To summarize, the ozone measurement data;

1 device, non-ventilated area

Baseline measurement 0.006ppm
Peak measurement during test 0.0054ppm
48-hour average 0.002ppm

2 devices, non-ventilated area

Baseline measurement 0.0059ppm
Peak measurement during test 0.0052ppm
48-hour average 0.0025ppm

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1 device, ventilated area

Baseline measurement 0.019ppm
Peak measurement during test 0.0048ppm
48-hour average 0.0023ppm

2 devices, ventilated area

Baseline measurement 0.0024ppm
Peak measurement during test 0.0071ppm
48-hour average 0.0052ppm

Single or multiple devices operating, ozone remained below baseline levels in all tests and well below 0.05ppm which is generally accepted as a maximum exposure level.

Using measurement data collected in each test, a 180-day ozone level was projected, which could represent the first interaction (filter change) with the device.

To summarize the projected ozone levels after 180-day;

1 device, non-ventilated area <0.0001ppm
2 devices, non-ventilated area 0.0025ppm
1 device, ventilated area 0.0012ppm
2 devices, ventilated area 0.0025ppm

Full report is in section 19, pages 19.87 through 19.96.