

Living with in-mask micro-climate



ABSTRACT

The in-mask micro-climate is heat and moisture buildup under facemasks but facemask doffing can immediately neutralize in-mask elevations in temperature and relative humidity. Therefore, home/workplace/facility living with in-mask micro-climate during COVID-19 pandemic warrants safe provisions for intermittent facemask “vacation”.

Correspondence

The in-mask micro-climate is heat and moisture buildup under facemasks as demonstrated with standard N95 respirator [1]. Analogously, Fig. 1 depicts my 25-hour-on-duty living with tight-fit ~N95 seven-layered covering (innermost three-layer cloth mask plus intermediate single-layer bandana plus outermost three-layer medical grade mask) as logged by continuous temperature/humidity logger, Hygchron iButton DS1923 (OnSolution Proprietary Limited, New South Wales, Australia). Areas under polynomial peaking curves of in-mask temperature (blue-colored) and in-mask relative humidity (brown-colored) can gauge the gravity of in-mask micro-climate as compared to breathing without facemasks at baseline room temperature and relative humidity. Per polynomial troughs (Fig. 1), facemask doffing can immediately neutralize elevations in temperature and relative humidity. Thus, intermittent facemask “vacation” may be warranted during

COVID-19 pandemic without losing facemasks’ potential preventative role and investigational “therapeutic” role [2–4]. However, clean-clear-silent (quiet) social-distancing zones will be required for safe facemask doffing considering that facemask “vacation” may not be ignored if following hypotheses are validated: (a) brain may not dissipate heat effectively in-mask [5]; (b) increased work of breathing in-mask may increase calorie needs to avoid catabolism [6]; (c) airways’ cells evolved to thrive under lower temperatures may grow erratically if chronically exposed to elevated in-mask temperature accentuated by elevated in-mask relative humidity [7,8]. Essentially, living with in-mask micro-climate warrants intermittent facemask “vacation” provisions.

Financial Interests

None.

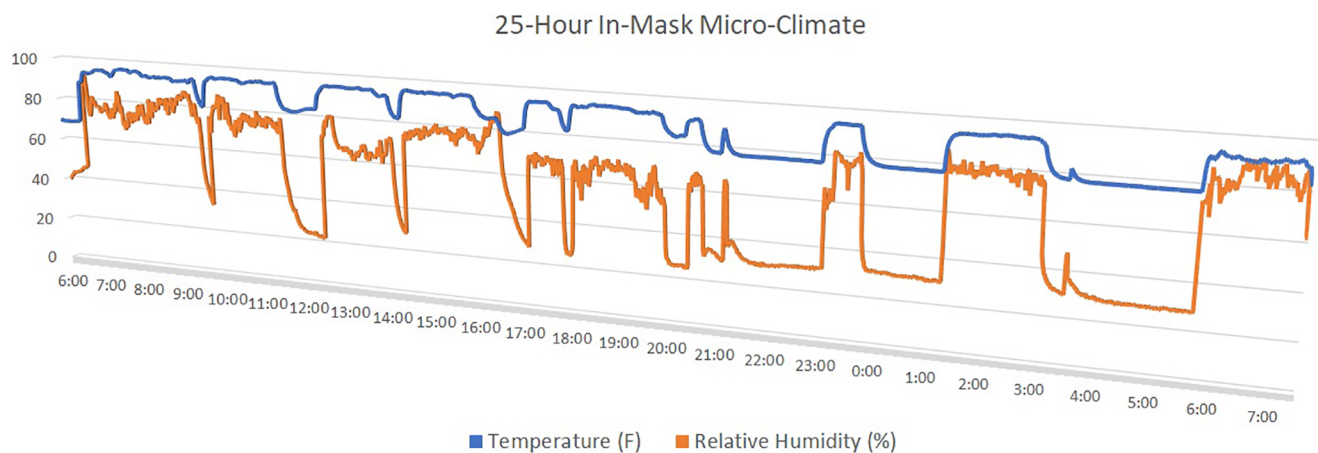


Fig. 1. My 25-hour in-mask micro-climate depicting my exposure to elevated temperature & relative-humidity.

Anti-Plagiarism Software

Not checked.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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