A simple solution to fogging inside goggles used as a part of personal protective equipment

Dear Editor,

Goggles are recommended for protection of eyes from the SARS-CoV-2 virus both by the Center of Disease Prevention and Control and World Health Organization[1,2] but fogging inside the goggles is common.[2] Fogging inside goggles decreases quality of vision and performance ability of the healthcare worker potentially compromising quality of clinical care. The exact cause of fogging is not known. The leaking of expired air into the goggles may be the culprit. However, fogging happens frequently even after using N95 facemask with proper fitting. The temperature difference between the outer and inner surface of the goggles is responsible for the condensation of water and, hence fogging. Warm expired air causes condensation of water droplets to accumulate in the relatively cooler surface of goggles. We are hereby reporting a simple and effective solution for fogging in this scenario.

We are using a commercially available polypropylene-based anti-fogging solution [Nabaiji Swimming Goggles Anti-Fog Marker, imported by Decathlon Sports India Private Limited, Bangalore] for reducing fogging inside the goggles used as a part of personal protective equipments (PPE). The package insert of the antifogging marker suggests that it’s applied on the inner surface of the goggles and to be dried for 1 minute. We paint the entire inner surface of the goggles with the antifogging marker and after drying, wear it in the usual fashion [Figure 1]. The goggles should be immersed in the water before wearing so that the anti-fogging marker is evenly applied. However, we are using it without immersing the goggles into water and in our experience, fogging is minimal up to >4h of use at least.

The anti-fogging marker contains propylene glycol butyl ether, 2-(2-butoxyethoxy) ethanol, fluorocaliphatic oxyethylene, potassium hydroxide, and magnesium lauryl sulfate.[3] It is postulated that antifogging chemicals decreases surface tension between two liquids and a liquid and solid, thereby reducing the condensation of water droplets.

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Conflicts of interest
There are no conflicts of interest.

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2. Using Personal Protective Equipment (PPE). Center of Disease Prevention and Control. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/using-ppe.html. [Last accessed on 2020 Jul 15].

3. Nabaiji Antifog marker. Available from: https://www.nabaiji.fr/reactivateur-anti-buee-lunettes-de-natation-id_8400299. [Last accessed on 2020 Jul 15].