

27 March 2020

## COMMUNICATION No. 4

### Ozone decontamination as a method to counteract SARS-CoV-2

- 1) Until now, there have been no reports that would ultimately resolve the issue whether ozone decontamination of indoor air or surfaces from SARS-CoV2 is effective.
- 2) However, it has been scientifically proven that, at high concentrations, ozone can effectively help eliminate bacteria, fungi and viruses such as Polio, Norwalk, parvoviruses or HAV and HBV from the environment. Ozone has also been shown to destroy the SARS-CoV virus discovered in 2003. This information is all the more important as the genome of the SARS-CoV-2 virus of 2019 is remarkably similar (about 85%) to that of 2003. It is, therefore, very likely that ozone will be able to destroy the lipid sheath of the new virus, thereby helping to inactivate it. To fully confirm this thesis, reliable studies on SARS-CoV-2 exposure to ozone must be conducted.
- 3) Ozone decontamination may be recommended as one of the methods of disinfecting rooms subject to the provisions set out in point 2.
- 4) As regards the procedure for the ozone decontamination of rooms for disinfection purposes, the optimum intervals at which it should be carried out have not yet been determined. Certainly the duration of the whole process, which may vary from 3 to 5 hours, should be taken into account. In addition, before starting the ozone decontamination, it is essential to prepare the room properly, which may take as long as the ozone disinfection itself. Furthermore, it is important to know what type of work is carried out in the workplace, i.e. whether harmful biological agents are released there. Assuming as well that other protective measures (e.g. disinfectants, gloves, masks) are also used in the workplaces and that no people infected with SARS-CoV-2 work there, ozone decontamination can be carried out every three or four weeks.

- 5) The ozone generator should be operated by a person who is trained to operate it and prevention measures must be taken during the ozone decontamination process, including the provision of a full face mask with carbon absorber B2 for the operator. It is, therefore, recommended that the ozone decontamination is carried out by specialised companies that are able to guarantee that the room is properly prepared for the treatment, can monitor the entire process, including measuring the ozone concentration (for disinfection, the recommended ozone concentration is 2-5 ppm) and checking the airtightness of the room. According to the procedure, it is also required to ventilate the room after the generators have stopped working and wait for the moment when the ozone concentration reaches a safe level of below 0.1 ppm.

Ozone is classified as a substance hazardous to human health. It is an oxidising gas, irritating to the eyes (cat. 2), with acute toxic properties (cat. 1). Symptoms of acute poisoning: at concentrations of about 2 mg/m<sup>3</sup> (1 ppm), headache, eye pain and epiphora, coughing, sneezing, feeling of dryness in the nasopharynx may occur. Once the exposure ceases, these symptoms disappear without any health effects. In higher concentrations, dyspnea, severe epiphora, visual disturbances, headache and dizziness, disorientation, changes in respiratory rate, decrease in blood pressure, slowing of heart rate develop. Bronchospasm, pulmonary edema and even death may occur immediately after exposure or within a few hours after the exposure has subsided. Poisoning may result in toxic pneumonitis. Symptoms of chronic poisoning: reduced exercise capacity, frequent respiratory inflammation.

The maximum permissible concentration in the air in the workplace is - 0.15 mg/m<sup>3</sup>, i.e. 0.075 ppm (Regulation of the Minister of Family, Labour and Social Policy of 12 June 2018 on the maximum permissible concentration and intensity of agents harmful to health in the working environment (Journal of Laws 2018, item 1286, as amended Journal of Laws 2020, item 61).