

# COVID-19

## THE USE OF TUNNELS AND OTHER TECHNOLOGIES FOR DISINFECTION OF HUMANS USING CHEMICAL ASPERSION OR UV-C LIGHT

The use of tunnels or other physical structures (booths, cabinets, gates) with disinfection aspersion, spray devices or UV-C radiation are not recommended for use on humans. This is based on the following observations:

- Products used in disinfection tunnels and similar devices pose harmful effects to human health
  - The chemicals used for aspersion (compounds of ammonium, chlorine, hydroxide peroxide, alcohols, glutaraldehyde) and others compounds like ozone, are known to cause harm in humans, such as irritation in the mucosa, skin, eyes and respiratory tract<sup>1</sup>. These chemicals are made for inanimate surfaces and water, and must not be used on the human body.
  - UV-C is not intended for direct human disinfection. Exposure to UV-C radiation can cause harmful health effects. These include skin and eye irritation, sunburn, eye injury, digestive tract irritation and cancer. Looking directly at irradiating UV-C light can cause cornea damage. UV-C radiation can generate ozone, a harmful air pollutant.
- Tunnels or other physical structures with disinfection aspersion, spray devices or UV radiation are not effective to inactivate viruses in or on humans.
  - Certain chemicals and UV-C radiation (200-280 nm) have proven to be effective as disinfecting agents for surfaces when used as a part of cleaning and disinfecting protocols and processes.
  - In order for the chemicals and UV-C light to work as effective disinfectants, the areas should be cleaned prior to application of an even layer of chemical solution. This is not feasible with humans.
  - The chemical aspersion will only cover exposed surfaces limiting its effectiveness.
  - UV-C disinfection will only act on the surface in direct line of sight. Shadowed areas or those covered by dust won't be disinfected.
  - Effective contact times and doses required for inactivating viruses cannot be met in tunnels or other physical structures with disinfection aspersion, spray devices or UV-C radiation without risking human health (i.e the effective contact time for soft porous surfaces, such as clothing textiles and shoes, of most chemical disinfectants is longer, more than 5 minutes, than the usage time of the tunnels).
  - The chemical spray will not inactivate the virus within the body, and therefore the duration of effectiveness for a disease carrier will be very short.
- The use of tunnels or other physical structures with disinfection aspersion, spray devices or UV-C radiation can lead to further unintended virus dispersion.

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<sup>1</sup> Human health effects are dependent on chemical type, concentration, duration of exposures, stage of life, and other factors.

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- The perception of disinfection could result in a false sense of safety and discourage actions with proven effectiveness, such as social distancing, hand washing, avoidance of touching the face and the use of masks.
- The aspersion action could aerosolize and therefore disperse the virus through droplets increasing transmission.
- Industrial and medical grade disinfecting devices require the use of protective gear and strict safety measures.
  - Industrial and medical grade disinfecting tunnels are part of a multi disinfecting approach including cleaning (usually with high pressure water and detergent), the use of a disinfecting product and a rinse and dry process.
  - Disinfecting tunnels and chambers used in industry requires the use of dedicated protective gear including but not limited to 1) hazmat suit/overall; 2) UV protective goggles; 3) gas protective mask.
  - Industrial and medical grade disinfecting tunnels are not designed for human disinfection.

Regular handwashing with soap and water, coughing into the elbow and sneezing into disposable tissues, social distancing and self-quarantine at the first sign of symptoms remain the recommended transmission barriers.

## HEALTH RISKS FROM DERMAL AND INHALATION EXPOSURE TO DISINFECTING AGENTS

Product	Cas	Presentation	INDICATION OF USE	HEALTH RISKS
Ozone	10028-15-6	Gas	Air and water disinfectant	Inhalation at low concentrations may increase risk to health, accelerate viral or bacterial infections of the respiratory tract or exacerbate pre-existing chronic lung lesions
Hydrogen peroxide	7722-84-1	Liquid	Disinfectant whitener	Eye, nasal, dermal, throat and respiratory irritation
Sodium hypochlorite	7681-52-9	Liquid Granulated	Disinfectant	Eye irritation and dermal contact irritation. Inflammation and erosion of mucous membranes if swallowed
Hypochlorous acid	7790-92-3	Liquid	Disinfectant	Potential dermal irritation from direct exposure. Potential respiratory tract irritation and pulmonary edema from vapour inhalation
Quaternary ammonium	Product mixes Varies by composition	Liquid	Surfactant disinfectant	Dermal irritation, shortness of breath, gastrointestinal injuries in case of ingestion
Isopropyl alcohol	67-63-0	Liquid	Disinfectant	Eye, nose and throat irritation, second to direct exposure or contact with vapours
Ultraviolet rays		Light	disinfection of drinking water, air, titanium implants	UV-induced skin erythema and keratoconjunctivitis

Source: Ozone: <https://kns.cdc.gov/niosh/topics/ozone/default.html> - <http://pubchem.ncbi.nlm.nih.gov/compound/24823#sourcer=HSD&Ssection=Human-Toxicity-Excerpts> Hydrogen Peroxide: <https://www.cdc.gov/niosh/topics/hydrogen-peroxide/default.html> - Hypochlorite - Hypochlorous Acid: <https://pubchem.ncbi.nlm.nih.gov/compound/23665760#sourcer=HSD> - <https://echa.europa.eu/documents/10162/330fee6d-3220-4db1-add3-3df9bbc2e5e5> Isopropyl Alcohol: <https://pubchem.ncbi.nlm.nih.gov/compound/3776#source=HSD>

Climate Change and Environmental Determinants of Health Unit  
Communicable Diseases and Environmental Determinants of Health Department

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