

Coronavirus update: Disinfection tunnels



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As the coronavirus outbreak expands globally, reports of widespread use of disinfectant tunnels and disinfectant spraying of the population to address the pandemic are raising concern. There is a lack of evidence demonstrating that these practices are safe and effective. Further, their use may create a false sense of security, and pose hazards for the community.

Health Care Without Harm recommends against the use of disinfection tunnels and disinfectant spraying of the general population.

Health Care Without Harm recommends against the use of disinfection tunnels and disinfectant spraying of the general population for the following reasons:

1) Disinfection tunnels are being built throughout the world, raising concerns about exposure to hazardous chemicals

For example, the tunnels are being used in India¹, Malaysia², Bosnia and Herzegovina³, Argentina⁴, Mexico⁵, China⁶, Pakistan⁷, Colombia⁸, and Albania⁹ and many other countries.

2) The goals of widespread disinfection of the population have not been articulated

If the goal is to reduce the spread of the virus by decontaminating the exterior clothing, shoes, and skin of the general public, there is no evidence that clothes are an important vector for transmission. If the goal is to attack the virus in the airways, what is the evidence that a 20-30 second external application is efficacious and safe? The World Health Organization¹⁰ recommends more direct and effective ways to address hand hygiene, with interventions known to be effective.

3) The efficacy of the practice has not been demonstrated

We do not find evidence of efficacy. Efficacy will depend on many things including the goal of the intervention, the chosen disinfectant, residence time, and target surface, among other considerations. A variety of disinfectants appear to be in use. Typically disinfectants will require a period of residence time. For example, when using hydrogen peroxide vapor to disinfect N95 respirators¹¹, a cycle of over 2 hours is needed. Cleaning textiles¹² requires a hot-water wash cycle (90°C) with regular laundry detergent, or the addition of bleach to the wash cycle, or placing the textile in a disinfectant solution. There is a lack of evidence that a 20-30 second misting in a tunnel will disinfect the target surface.

4) Use in health care settings

In the health care setting, the effectiveness of fogging health care patient rooms with disinfectants has not been demonstrated. The U.S. Centers for Disease Control and Prevention (CDC) reports evaluations of effectiveness based on other viruses in 2003, 2008 and 2011. These technologies were considered for empty hospital rooms, not occupied rooms. These studies have been revisited in the wake of the coronavirus outbreak. Based on those reports, the CDC still concludes¹³:

- 2003: "Do not perform disinfectant fogging for routine purposes in patient-care areas. Category IB"
- 2008: "Do not perform disinfectant fogging in patient-care areas. Category II"

Newer technologies involving fogging for room decontamination (e.g., ozone mists, vaporized hydrogen peroxide) that have become available since 2003 and 2008 were assessed by the CDC and the Healthcare

Infection Control Practices Advisory Committee (HICPAC) in the 2011 Guideline for the Prevention and Control of Norovirus Gastroenteritis Outbreaks in Healthcare Settings, which states:

- *“More research is required to clarify the effectiveness and reliability of fogging, UV irradiation, and ozone mists to reduce norovirus environmental contamination. (No recommendation/unresolved issue)”*

5) The safety of this practice has not been demonstrated

The hazards associated with the practice will vary depending on the virucidal agent, the concentration of the disinfectant, the time of exposure, and the vulnerability of the person entering the tunnel, including age, pre-existing conditions, pregnancy status, etc. There is a possibility of respiratory irritation, depending on these factors. That is a concern because the virus takes advantage of weakened lungs.

In addition, it would be difficult to precisely control the levels of exposure to disinfectants for users, raising additional concerns. The implications of repeated exposures, or exposures to those who staff the tunnels could be significant.

For example, the tunnel to be installed in front of the Parliament building in Sarajevo will use hydrogen peroxide and silver in undisclosed levels. Hydrogen peroxide can be toxic if ingested, inhaled, or by contact with the skin or eyes. According to the U.S. Agency for Toxic Substances and Disease Registry (ATSDR)¹⁴, inhalation of household strength hydrogen peroxide (3%) can cause respiratory irritation and mild ocular irritation. Inhalation of vapors from concentrated (higher than 10%) solutions may result in severe pulmonary irritation.

According to the EU hazard classification and labeling¹⁵, this substance causes severe skin burns and eye damage, is harmful if swallowed or inhaled. Regarding the use of silver, scientists in the U.S. have concluded¹⁶ that the use of silver nanoparticles in spray products may result in inhalation and deposition of silver in the respiratory tract. In the European Union, biocidal products based on silver are not yet authorized (currently under review). Scientific data¹⁷ show cytotoxic and genotoxic properties of silver ions, and inhalation of aerosolized silver can cause lung inflammation in animals. There does not seem to be mandatory eye

protection or lung protection for those entering the tunnels. Lung protection might need to include air supplied respirators depending on the nature of the mist.

6) Occupational health concerns for workers managing these sites

Please see above the hazards of at least two chemicals used for disinfection. U.S. NIOSH recommends¹⁸ personal protective equipment if exposures are above certain levels.

7) The community implications of the widespread use and dispersal of disinfectants are unknown

Particularly as tunnels are operated over time, the hazards of draining a significant amount of disinfectants into sewage systems or waterways have not been evaluated. There is the possibility of contributing to the emergence of disinfectant-resistant organisms as a result of the practice.

8) Disinfection tunnels may give people a false sense of security and discourage proven effective actions to decrease transmission

Proven effective actions to decrease transmission include social distancing and hand washing¹⁰. The WHO's lists of myths¹⁹ suggests various myths are circulating which can undermine proven effective actions.

There is no evidence that disinfection tunnels will address the source of the virus. Once a person goes through the tunnel, the viral load that a person is carrying in their mouth, nose, and respiratory tract - the major sources of exposure to others – still has not been addressed. Exhaled aerosolized virus (very small particles in gaseous phase or tiny droplets) can persist in the air longer than previously realized. Infected people will still be carrying the virus indoors after going through the tunnel.

9) Government agencies recommending against the practice

The Ministry of Health in Mexico²⁰ does not recommend the use of sanitation tunnels and arches.

“There is no evidence on the efficacy of these systems to effectively disinfect the SARS-CoV-2 virus that causes COVID-19”

In India, the Directorate General of Health Services²¹ in the Ministry of Health & Family Welfare issued an advisory against the use of disinfection tunnels. The advisory states:

- Even if a person is potentially exposed to the COVID-19 virus, spraying the external part of the body does not kill the virus that has entered your body. Also, there is no scientific evidence to suggest that they are effective even in disinfecting the outer clothing/body effectively.
- Spraying of chlorine on individuals can lead to irritation of eyes and skin and potentially gastrointestinal effects such as nausea and vomiting. Inhalation of sodium hypochlorite can lead to irritation of mucous membranes to the nose, throat, respiratory tract and may also cause bronchospasm.
- Additionally, use of such measures may in fact lead to a false sense of disinfection & safety and actually hamper public observance to hand washing and social distancing measures.

“Spraying of individuals or groups is NOT recommended under any circumstances. Spraying an individual or group with chemical disinfectants is physically and psychologically harmful.”

The Philippine Department of Health (DOH)²² recommended against the practice, based on a lack of evidence of efficacy, whether done indoors or outdoors. They noted it can also cause pathogens to be dispersed during spraying and result in skin irritation and inhalation of chemicals. The DOH added that it could also cause environmental pollution.

“Everyone should not spray or mist disinfectants at this time. Soak objects completely or disinfect surfaces directly to kill the virus,” it said in an advisory.

In Malaysia, the Director-General, Ministry of Health said it would not recommend the use of the disinfection box, chamber or tunnel saying there is no proof that these equipment are effective in curbing the spread of COVID-19. “The process will not kill the virus in one’s body. The chemicals used can be harmful to one’s eyes and mouth”, he said in a press conference on April 15.

References

- ¹Financial Express | [Disinfectant tunnels: India’s emerging strategies to combat deadly coronavirus](#)
- ²FMT News | [No proof sanitising tunnels, disinfection boxes work, says health DG](#)
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- ⁵Mexico News Daily | [Some states say no to disinfection tunnels, others say yes](#)
- ⁶South China Morning Post | [Disinfection tunnels built to clean people within 20 seconds amid coronavirus outbreak \(video\)](#)
- ⁷CGTN | [Walk-through disinfectant tunnel installed in Pakistan \(video\)](#)
- ⁸W Radio | [Instalan cabinas de desinfección en hospitales de Tunja y Sogamoso](#)
- ⁹XinhuaNet | [Disinfection tunnels installed in Albanian capital markets to prevent coronavirus spread](#)
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- ¹¹U.S. CDC | [Decontamination and Reuse of Filtering Facepiece Respirators](#)
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- ¹⁷Nanomaterials | [Silver Nanoparticles in the Lung: Toxic Effects and Focal Accumulation of Silver in Remote Organs](#)
- ¹⁸U.S.CDC | [The National Institute for Occupational Safety and Health \(NIOSH\): Hydrogen peroxide](#)
- ¹⁹WHO | [Coronavirus disease \(COVID-19\) advice for the public: Myth busters](#)
- ²⁰Gobierno de México | [La Secretaría de Salud no recomienda uso de túneles y arcos sanitizantes](#)
- ²¹India Ministry of Health & Family Welfare | [Advisory against spraying of disinfectant on people for COVID-19 management](#)
- ²²Inquirer | [DOH: Spraying, misting vs COVID-19 not recommended; may even cause harm](#)