

PROFESSIONAL DEVELOPMENT

BIOHAZARDS: UNDERSTANDING HEALTH RISKS AND CONTROLS

COVID-19 provides an essential insight into how the safety community responds to and handles biohazard risks in the workplace, as well as further efforts to be made, writes **Glyn Jones**



THE safety community is generally well versed in talking about the six categories of workplace hazards and how to build a control strategy. Safety, chemical, physical, ergonomic, psycho-social and biological hazards all require recognition and control. Hazard assessment and control following the hierarchy is foundational safety thinking. Of these six hazard types, the one we are typically least familiar with is biological hazards. The recent pandemic of coronavirus (COVID-19) has brought to light the fact that we need to learn a little more and be better prepared to manage biohazards. The COVID-19 pandemic is a case study allowing us to review the health risks, the mechanisms of exposure and transmission and strategies for control of biohazards.

COVID-19 is the new name of the 2019 edition of the coronavirus. It is actually a family of viruses. The word corona means crown or wreath in Latin. It is called the coronavirus because each virus particle, or virion, has a series of towers coming out of the capsid and the top of each looks like a crown. COVID-19 is transmitted person to person by contact with contaminated mucous from an infected person.



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The first person likely became infected from an infected animal in a live food market in Wuhan, China. The virus causes infections of the nose, throat and lungs. A cough or a sneeze aerosolizes the biohazardous or contaminated mucous, making transmission more likely. Contaminated mucous may deposit on surfaces and, if touched, will transfer the bioagent to a person's hand and, if this then contacts their eyes, nose or mouth, transfer of the virus may be completed.

In the world of health and safety, we often think about exposure limits or TLVs in parts per million or milligrams per cubic metre for toxic substances. With respect to biohazardous agents such as COVID-19, theoretically, there is no threshold limit and exposure to a single virion could result in disease propagation. The hierarchy of controls suggests we eliminate exposure to the hazard, use administrative or procedural controls and, finally, use personal protective equipment in conjunction with other controls.

With respect to COVID-19, the World Health Organization (WHO) acknowledges that education is likely the best control strategy of all. In support of this, it has created an online five-minute free training course. In addition, it

has developed a two-hour online course so one can learn even more.

Beyond education, the WHO suggests the following strategy for avoiding infection:

Elimination as a control

- Stay away from areas with high levels of reported cases;
- Stay out of public places with large gatherings of people; and
- Stay out of areas where others may be infected (hospitals etc.).

Administrative controls

- Regularly wash your hands with soap and water for at least 20 seconds;
- Wash easily contaminated surfaces (doorknobs, escalator handrails, etc.) often to reduce risk of virus transfer;
- Do not touch eyes, nose or mouth with unwashed hands; and
- Cough or sneeze into your sleeve and not your hands.

The WHO does not make any recommendations with respect to personal protective equipment because of the impracticality of equipping billions of people worldwide who are at risk of exposure to the virus. However, PPE is an effective control to prevent exposure to biohazardous agents. There are a lot of media reports of people wearing paper dust masks or surgical masks as protection against exposure. Wearing a paper mask provides almost no protection and only helps people who are infected reduce the likelihood of aerosolizing their own contaminated mucous. To be properly protected against exposure to biohazardous agents, a person would need to wear a full-face respirator and gloves or a half-mask respirator, goggles and a face shield. Depending on the nature of the work they are doing, wearing a disposable suit may also be appropriate to reduce the burden of having to figure out decontamination.

This pandemic will be followed by another, so, to prepare, the advice of the WHO should be followed and it would be most prudent to avoid exposure to the risk. If this can't be assured, then universal precautions should be maintained. [EHS](#)

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