

The National Institute for Occupational Safety and Health (NIOSH) Hierarchy of Controls

Overview

Controlling exposures to occupational hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective control solutions. One representation of this hierarchy is as follows:



The idea behind this hierarchy is the control methods at the top of graphic are potentially more effective and protective than those at the bottom. Following this hierarchy normally leads to the implementation of inherently safer systems, where the risk of illness or injury has been substantially reduced. NIOSH leads a national initiative called Prevention through Design (PtD) to prevent or reduce occupational injuries, illnesses, and fatalities through the inclusion of prevention considerations in all designs that impact workers. Hierarchy of controls is a PtD strategy.

Elimination and Substitution

Elimination and substitution, while most effective at reducing hazards, also tend to be the most difficult to implement in an existing process. If the process is still at the design or development stage, elimination and substitution of hazards may be inexpensive and simple to implement. For an existing process, major changes in equipment and procedures may be required to eliminate or substitute for a hazard.

Engineering Controls

Engineering controls are favored over administrative and personal protective equipment (PPE) for controlling existing worker exposures in the workplace because they are designed to remove the hazard at the source before it comes in contact with the worker. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The initial cost of engineering controls can be higher than the cost of administrative controls or PPE, but over the longer term, operating costs are frequently lower, and in some instances, can provide a cost savings in other areas of the process.

Lessons Learned

As we study the Coronavirus pandemic, we now recognize, like the Influenza viruses or other common respiratory pathogens, the disease is spread predominantly from person-to-person in our communities through “shared air.” This viral transmission occurs either through respiratory droplet nuclei (larger particles which tend to fall out of the air within 6 feet of dissemination) or aerosolized particles which may be more insidious, persist longer, and travel further from a point source of infection.

By installing CIMR® systems to protect this “shared air” we can significantly decrease the risk of transmission, stop the virus, and greatly reduce the threat from future threats.

The threat of infectious shared air has always had a negative impact on the nation’s health and safety, as well as productivity when considering the annual burden of lost work-days to influenza and other more common respiratory illnesses. Unlike vaccine and treatment strategies, clean air technology such as CIMR® has the potential to mitigate this risk and impact the current crisis as well as serve as a known line of defense for future airborne threats. CIMR® ductwork systems are engineered to seamlessly integrate into existing HVAC systems and use existing ductwork to sanitize and protect shared air throughout the building. Portable CIMR® units are designed to safely and continuously sanitize and protect occupied spaces and incorporate multiple technologies such as HEPA filtration, Activated Carbon filtration, RF Ionization, UV, and CIMR’s patented H₂O₂ cells. Both systems have been rigorously tested and proven effective against many airborne and surface threats.