

TerranearPMC Safety Share

Week of August 7, 2017 – Air Quality and Dust Masks

Something that we are seeing more and more these days are people walking on city streets, airports and shopping malls wearing dust masks. Occasionally we even see people walking briskly, jogging and even riding a bicycle while donning these articles of protection.

In large cities like Delhi and Beijing, it is part of the daily routine to check the city's air quality index, or AQI, before leaving the house. The AQI is a numerical value that associates the airborne particulate count with a color and an advisory warning. Once the level of pollutants reaches a critical concentration, it's no longer safe to breathe the outdoor air.

The AQI is a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 represents good air quality with little potential to affect public health. It has a colorimetric indicator of green. An AQI value over 300 represents hazardous air quality and is represented as maroon.

According to a recent (2014) Environmental Performance Index (EPI), one quarter of the world's population now breathes air that contains high levels of contaminants. Fine particulate matter, which comes from fuel combustion (such as from vehicle exhausts or coal-fired power plants), can permeate the alveolar barrier in our lungs and infect our bloodstream, contributing to cardiovascular and lung disease.

Because of the poor air quality in places like India and China, there has been a high demand for face masks as people look for ways to protect themselves from the smog. Demand is so high that, according to news reports, masks are now in short supply in China's capital. But do these masks really help? A closer look at the kinds of masks people get, the way they wear them and the hazards they're facing suggests that the masks are unlikely to help much.

And in the United States, we can see people wearing surgical masks - items that are designed to control germs in the droplets of mucus from the mouths of doctors when they cough and sneeze while tending to open wounds. These masks were never intended to protect the people wearing them, although research shows they may help slow the spread of illnesses, at least a little bit.

The fact is, surgical masks are the simplest types of face masks available over the counter. And wearing a surgical mask is not going to eliminate the risk of inhaling unwanted viruses and air pollutants. The fact is, surgical masks tend to be loose fitting, allowing contaminated air to flow around the sides and into a person's mouth/nose region.

In Beijing, where levels of pollution have spiked above 750 micrograms per cubic meter, wearing a mask that could possibly reduce the concentration of inhaled particles by half would still expose people to 10 times more than the exposure levels deemed safe by the U.S. Environmental Protection Agency.

For a step up in protection, consumers can buy a category of mask known technically as N95 respirators, which are generally available at hardware stores. These facemasks are often used in



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industrial workplace situations to protect against a variety of airborne contaminants and they are certified by the National Institute for Occupational Safety and Health (NIOSH) to filter out 95 percent of particles sent through them in testing situations. N99 and N100 masks are also available and have the ability to filter 99% and 99.97% (respectively) of airborne material.

However, in order to perform effectively, respirators need to be professionally fitted to each person's individual face to make sure there is a tight seal with no leaks. This means that men with beards, in all likelihood, would not be provided adequate protection. And if they truly fit right, they may be uncomfortable to wear. This means that just by buying a box of these things at the hardware store does not guarantee that they will protect you from airborne contaminants.

While N95 respirators may guard against small particles, they do not combat other forms of traffic-related pollution: gases like nitrogen oxides or volatile organic compounds. They are strictly to filter out particulates. In addition, wearing any type of respirator that is designed to filter air causes an increased resistance for breathing and therefore, people with lung disease or other respiratory ailments need to check with a doctor to ensure that wearing a respirator will not complicate or exacerbate their medical condition. So if these respirators increase the resistance for our breathing capability, how wise is it for persons to be wearing them while performing physical activities, such as jogging or riding a bicycle? It seems that while intentions may be good – that is, trying to maintain their health by protecting themselves from airborne pollutants - they actually may be causing harm. Or, if indeed, these masks are not properly fitted, or they are wearing surgical-type masks, they will not provide the protection that many people think that will.

Could it be that wearing these protective devices is merely a placebo and therefore, allow people who use such “protective” equipment to believe they are doing something good? So which is better: wearing a mask that offers no protection, thereby creating a false sense of protection or possibly compromising your health by placing a greater demand on your breathing? Yes, from an occupational point-of-view respirators are used in many industries, but under these circumstances, trained professionals, such as industrial hygienists, are providing the most appropriate equipment with a continued surveillance to verify persons are being protected. In addition, each person that is assigned to wear a respirator has an annual physical to ensure they are physically capable to wear these units and thus ensure they will not be placing an unmanageable burden on their respiratory system.

So what do we do when we are subject to poor air quality? Well first off, it seems that protecting our environment should be the primary concern. In the meantime, we should be aware of the air quality in our communities and to avoid taxing our bodies during episodes of hazardous air quality. That may mean to hit the running track early in the morning or later in the evening to avoid the most pollutant-heavy times of the day or going to an indoor gym where air quality can be controlled. Nevertheless, as all health professions will agree, personal protective equipment – such as respirators – should always be the last resort for protection.

Wherever the art of medicine is loved, there is also a love of humanity-

Hippocrates

