

During this stressful time of enduring the COVID-19 pandemic and the associated altered daily behaviors we must implement, such as “social distancing”; I feel it would be beneficial to educate the population on a few basic principles of health and safety. The following is a brief summary of the differences between a surgical mask and a respirator in the realm of respiratory protection.

On a daily basis, we hear the federal and state of NJ updates regarding the enormous need for personal protective equipment (PPE) for the heroic health care professionals of “masks and respirators.” As a regular guy before this crisis really hit the NY/NJ/PA area, I listened to the “Preston & Steve” radio broadcast and they would also discuss this “mask/respirator” topic and stated “masks only work if you’re sick.” This doesn’t quite clarify the situation. So, as an industrial hygienist I would like to offer some basic knowledge to allow understanding these objects and their intended use and limitations.

First order of business, may I define the *purpose* of each of these terms:

- **Surgical Mask**- this is designed to protect the *patient* from bioaerosols generated from the wearer. [Showing my age, for those people that watched “MASH”, the doctors at the 4077th mobile army surgical hospital wore surgical masks to protect their patient, NOT to protect themselves.] Think about it, if you had any type of surgical incision, do you want your doctor or her assisting team members cough or sneeze into your open body cavity? So, for the general population, think that when you wear a surgical mask, this is not designed to protect you from other people, it is to protect other people from you.
- **Respirator**- this is designed to protect the *wearer* from contaminants in their work environment. Respirators are not designed to protect other persons in their vicinity as many respirators have an exhalation valve that expels air without filtration. So, when you think about respirators, think about construction workers preventing their exposure to silica, asbestos, organic vapors, etc. Below: N95 respirators with and without exhalation valve.



- What is the difference? The fundamental difference is a respirator, in this basic explanation, has a *tight-fitting* seal around the user's face. ALL of the air that the user inhales passes through the filter providing "purified air."
A surgical mask does not protect the user from airborne contaminants in the efficiency of a respirator because it does NOT provide a tight fitting seal to the user's face. A certain amount of inhaled air will not be filtered because the mask is not 100% tight fitted (*and* it has not been tested for filtration efficiency as a respirator. This is because it was not designed to protect the user.)



N95 respirator- provides air tight seal.

Surgical Mask- air can bypass the mask and be inhaled

What has changed? Prior to this pandemic, under normal circumstances, the doctors and nurses wore surgical masks to prevent the patient from infection. Of course, there were events concerning blood borne pathogens or victims contaminated with hazardous materials which required the doctors and nurses to have PPE but that was not the majority of the time. Now, every patient visiting a health care facility must be assumed to be carrying this very contagious virus and surgical masks be given to the patient to decrease the spread of the virus to other patients and the staff. The health care professionals need gloves and gowns to prevent contact transfer of the virus and they need respirators to prevent the inhalation of virus containing aerosols as they are caring for dozens or hundreds of sick persons under respiratory distress. These N95 respirators were designed for single use and therefore the need is enormous.

So is there any harm for a healthy person to wear a surgical mask while getting groceries? The answer is no, there is not any problem with it as long as the person understands it provides very limited protection from inhaling droplets which may carry the COVID-19 virus. The one possible benefit of wearing the mask is the user maybe less likely to touch their face decreasing the chance of contact transfer.