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Explanation of Coronavirus and Application of Bi-Polar Ionization to Disinfect Air and Surfaces

Coronaviruses were first identified in the 1960s. Coronaviruses are enveloped RNA viral particles. The symptoms of most ordinary coronaviruses are similar to any other upper-respiratory infection, including runny nose, coughing, sore throat, and varying fever. In most cases you won't know whether you have a coronavirus, or a different cold-causing virus such as a rhinovirus. These ordinary strains are easily treated by over-the-counter medication.

In some of the more serious strains, the coronavirus causes an infection that can spread to the lower respiratory tract and cause pneumonia, especially in older people, people with heart disease, or people with weakened immune systems. Sometimes, but not often, animal coronavirus can jump species & infect humans. Such is the case with the novel coronavirus COVID-19, originally isolated from patients from Wuhan, China and currently causing a global Pandemic. According to the World Health Organization, it likely originated from an animal and passed to humans by contact at a live animal market in Wuhan. There is clearly person-to-person transmission as well as airborne spread (the virus has been reported in the air up to 3 hours). It has also been shown to contaminate hard non-porous surfaces like stainless steel and plastics for up to 3 days. COVID-19 virus infections will likely increase with time. This strain can cause severe respiratory disease, pneumonia, and death in some people especially the elderly and the immunosuppressed.

Keep in mind that COVID-19 virus is among several other serious disease-causing strains of the virus. For example, more than 475 people have died from the MERS coronavirus (Middle East Respiratory Syndrome). The MERS strain originated in Jordan and then Saudi Arabia in 2012 before spreading to other countries in Middle East, Africa, Asia, and Europe. In May of 2015 there was an outbreak of MERS in Korea, the largest outbreak recorded. In 2003, another severe respiratory Coronavirus killed many people and caused several cases of the acute respiratory disease known as SARS (severe acute respiratory syndrome). COVID-19 virus has thus far has caused over 350,000 infections and over 15,000 deaths globally.

In general, most coronaviruses spread in the same manner as other cold-causing viruses: via **aerosols directly** (infected people coughing, sneezing or touching an infected person's hands or face) or i**ndirect contact** (touching fomites like doorknobs, elevator buttons, elevator buttons, etc. then touching your nose, eyes, or mouth, the conduits of entry into the body). Since the virus is spread via direct and indirect contact, the **continuous application** of Bi-Polar Ions emitted to ambient air by the AtmosAir System continuously disinfect both the breathing space and surfaces. It is the most effective system for continuously cleaning and decontaminating indoor air.

As mentioned above, the possibility of aerosolized spread of COVID-19 and the ability of particles to hang in the air for extended periods of time, would make the consideration of an active air cleaning strategy even more prudent.

Also, because Coronaviruses are enveloped viruses, they are easier to kill compared to naked viruses like Noroviruses. AtmosAir has shown significant reduction of bacteria and viruses in both laboratory and in situ testing. Spaces like airport terminals where travelers from affected regions may carry and spread this virus could implement the AtmosAir bi-polar ionization air cleaning system as a step to combat the spread of illness.

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