Air Quality and Cleaning

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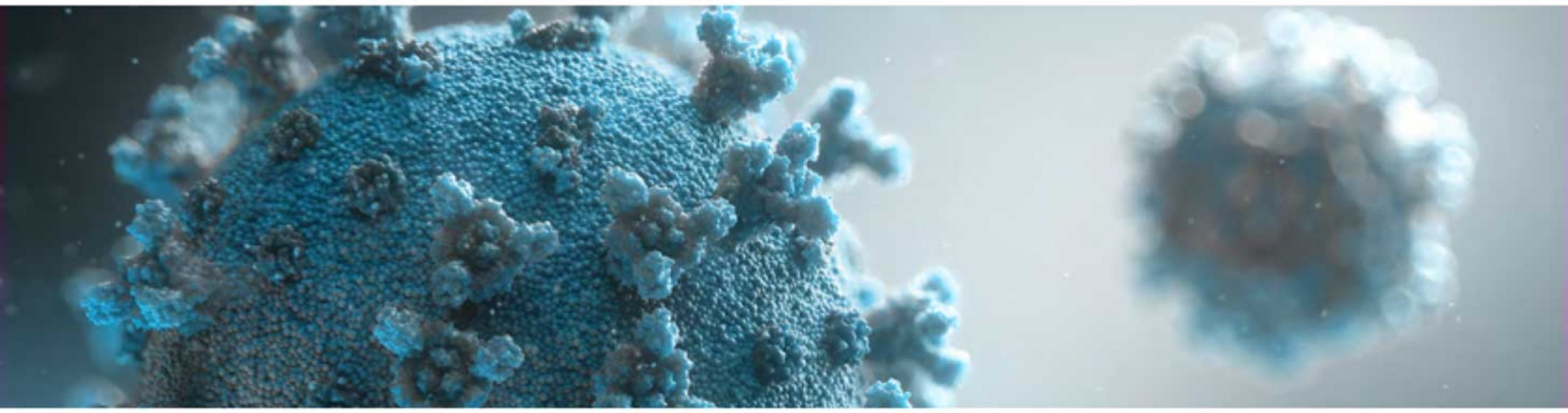
In recent years, air quality has been a trending issue in many parts of the world. From cities introducing clean air zones to governments imposing sanctions on companies not meeting emissions targets, it is clear that taking care of the air that we breathe is an issue rising in importance globally. Described by both the UN and the UK government as one of the most urgent environmental health crises in the world, it is still a problem that many people still do not know a great deal about, and may not understand just how much they are being affected by it in their daily lives.

Most people will have some awareness of the impact and risks of air pollution outdoors, both in terms of negative effects on the environment and human health. In some cases, this air pollution may be visible – present as smog in busy city areas, dust or other particulates settled onto surfaces or unpleasant odours – but in many instances people inhaling polluted air may have no idea, until they start to feel the effects. Indeed, as a result, reports of increased instances of respiratory problems and other serious health conditions have been on the rise for several years across the world, particularly in urban areas.

Indoor air quality may be a less familiar concept, but it is one that rose substantially in the public consciousness as a result of the coronavirus pandemic. It became a known fact, recognised by governments and healthcare institutions alike, that it was easier to catch the virus indoors than outside, due to the reduced air flow and ventilation in these enclosed spaces keeping the COVID-19 pathogens in the surrounding air, where it could be easily breathed in by anyone nearby. This is just one example of contaminants that can build up indoors for the same reason, and a good illustration of the dangers of poor indoor air quality.



> CAUSES AND EFFECTS OF INDOOR AIR POLLUTION

According to the World Health Organisation, air pollution can be defined as the “contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere”. As can be understood by this definition, pollution, both inside and out, can be composed of a number of different contaminants, caused by a wide range of factors. Typically, the two main categories of pollutant are particulate matter, tiny solid particles like dust, dirt and soot, and noxious gases, including nitrogen oxide, sulphur dioxide, carbon monoxide and other emissions. Both of these substances have the potential to cause injury to human health, irritating the respiratory system when inhaled and worsening the symptoms of existing respiratory and cardiovascular conditions.

Research has discovered, air pollution levels are usually far higher inside than outside, averaging 2 to 5 times more pollutants densely packed in a smaller area, and in the most extreme cases being more than 100 times worse. This, combined with the fact that the average person spends 90% of their time indoors, has caused great concern over the widespread negative effects that poor indoor air quality may be having on human health. Science is only just beginning to touch on how indoor air pollution may be impacting wellbeing, but it is already clear that poor air can cause a range of issues, both in the short and long term. It can be hard to certify exactly how many deaths each year can be attributed to air pollution, as in most cases mortalities are caused by pollutants worsening existing conditions and hastening decline in health, but globally anywhere from 4 to 9 million deaths annually can associated with poor air quality.

High air pollution levels have been found to cause respiratory problems in many people, resulting in symptoms like coughs and shortness of breath, with prolonged exposure potentially causing serious long-term health conditions. In the UK, it is estimated that air pollution contributes to up to 36000 early deaths every year, usually affecting those suffering from pre-existing heart or lung illnesses. There is also evidence to suggest that children growing up exposed to air pollution are more likely to develop problems with their lungs, often suffering from conditions like asthma.

Often linked with poor indoor air quality specifically is a phenomenon, recognised by the NHS, known as ‘sick building syndrome’, in which people experience symptoms only whilst inside a particular building, their condition worsening the longer they are inside and improving once they leave. Those suffering from this may report issues like headaches, tiredness and difficulty concentrating, which can severely impact productivity and deter people from wanting to visit the affected business’ premises, possibly resulting in loss of income and damaged brand reputation.

> ROLE OF CLEANING

Air pollution can be caused by a variety of factors, most notoriously from the burning of fossil fuels, but there are many factors that can contribute to this issue. All manner of practices and processes release gases and particles into the air, some which occur naturally like pollen and mould spores, and others that are manmade in origin, such as car exhaust fumes and emissions from factories.

Unfortunately, even as it is done with the intent of removing contaminants and improving conditions, cleaning can actually be a major contributor to poor indoor air quality. One of the most notorious categories of pollutants indoors, and one that carries with it the potential to seriously harm health, are volatile organic compounds (VOCs). Defined as types of gases given off by chemicals, these substances can be found in a range of household products, including paint, varnishes, building materials, perfumes and air fresheners. Unlike most other types of air pollutants, VOCs are nearly always found in higher concentrations inside than outside, making them a unique hazard.

Cleaning products have been highlighted as a primary source of VOCs indoors.

A wide variety of different cleaning products, including disinfectants, oven cleaners, toilet cleaners and even sanitising wipes, contain chemical compounds as their primary ingredients that are among the most harmful VOCs.

Examinations of indoor air quality have found that almost 700 milligrams of VOCs are estimated to be in the air of an average room at any given time, but that with every use of common chemical products like air freshener sprays, the equivalent amount is released, doubling the amount of contaminants present in the air.

Considering this, it is easy to understand how cleaning products can contribute to poor indoor air quality, and how easy it is to be exposed to these potentially dangerous substances.

Anyone can be affected by poor indoor air quality if they are present within the polluted space, but due their constant close contact with cleaning products that often contain harsh chemicals, cleaning operatives themselves are at most risk of a reaction. Numerous studies and surveys over the years have recorded cleaning operatives in a range of industries experiencing ailments such as coughing, wheezing and chest tightness at a greater frequency than those working in other fields. In many cases, the operatives themselves have identified their tasks involving the use of cleaning chemicals as causing many of their symptoms.

In the long term, there is evidence to suggest that people who are excessively exposed to chemicals in close quarters have an increased risk of developing potentially serious respiratory problems. It has been discovered that those who use chemical cleaning agents regularly (at least once a week) are at a 25-38% increased risk of contracting COPD (chronic obstructive pulmonary disease – an umbrella term for of long-term, progressive lung disorders, including asthma and chronic bronchitis). Considering the fact that, research has shown, cleaning staff such as housekeepers in hospitals have been observed to not only use chemical cleaners like disinfectants daily, but spend more than 150 minutes per average shift doing so, it is easy to understand why cleaning operatives are often a highly at-risk group.

REGULAR CLEANING CHEMICAL USE CAN LEAD TO

25% -38%

INCREASED RISK OF COPD

(CHRONIC OBSTRUCTIVE PULMONARY DISEASE)

In addition to being a cause of chronic respiratory illnesses, exposure to cleaning products and the VOCs within have been found to worsen the condition of those already suffering from such problems.

10% of asthma attacks occurring in the workplace, not just limited to cleaning staff but across the wider working population, have been attributed to cleaning chemical dispersed into the air.

Indeed, spray or aerosol-activated cleaners have been highlighted as among the worst culprits, as they release higher concentrations of VOCs directly into the air, worsening air quality with every use. Thus, cleaning tasks that often require the use of such products, namely general surface cleaning and polishing tasks, can be regarded as higher risk tasks, despite the fact that they are performed daily.

> SOLUTIONS

Just as cleaning and cleaning products can not only worsen indoor air pollution but also be a major source of contaminants if the correct procedures are not followed, cleaning is also essential in preventing the build-up of pollutants inside buildings. Any oversights in cleaning routines can cause naturally occurring contaminants like dust, pollen, mould and mildew to build up, potentially causing allergens and contaminants that can seriously impact staff's ability to work.
However, as cleaning chemicals have been identified as significant hazards in regards to air quality due to the toxic gases they often produce, use of such cleaners should be limited as much as possible. While this is not always possible to do – for example, when disinfecting a contaminated surface, chemical products will still be necessary - there are measures that can be taken to reduce dependency on chemical cleaners, achieving an effective clean without using excessive amounts of these products.

Microfibre is a material that has grown in popularity in the industry in recent years. When used for cleaning purposes, typically as a mop, duster or cleaning cloth, the material is renowned for its ability to remove dirt, dust, grease and even bacteria with only the use of water. Where many traditional cleaning tools largely rely on chemicals to loosen debris so that they can be removed from the surface, the construction of microfibre, with its ultra-fine split fibres, makes it highly absorbent, capable of dislodging messes and trapping contaminants within the fabric without requiring any cleaning agent. In fact, under research conditions microfibre cleaning cloths have been found to remove around 70% more bacteria and viruses from contaminated surfaces than traditional cotton cloths using water alone.

As such, microfibre cleaning tools are products that can be used to significantly reduce the overall amount of cleaning chemical that is consumed for daily cleaning routines, which is highly beneficial to maintaining good indoor air quality.

That being said, there is also evidence to suggest that microfibre, if it is of a poor quality, can actually be a contributor to air pollution too, releasing tiny microplastics in use, irritating the lungs if inhaled in large amounts.
Hence, it is vital to choose only high quality microfibre, with a denser weave that will not shed these microscopic pollutants when used.
SYR's microfibre products, such as the Heavyweight Microfibre Cloth or the range of performance pads for the MST microfibre cleaning tool, are example of this; designed to be reusable and long-lasting, these products guarantee a durable yet sustainable construction even after repeated uses.

Many of the common cleaning tasks within an operative's itinerary, from mopping to cleaning windows, require the use of cleaning chemicals, such as detergents and disinfectants.
As essential as they can be in eliminating contaminants and inactivating bacteria from surfaces, in many instances chemical cleaners are overused.
Often occurring as a result of incorrect dosing or dilution, usually due to insufficient training or time constraints, even basic cleaning tasks can result in large amounts of chemical being consumed, releasing substances into the air indoor in doing so.
In addition to impairing indoor air quality, contact with chemicals can also result in a range of ill effects on the cleaning staff using them, from skin conditions to irritation of skin, eyes, nose or throat.

Thus, what with the fact that chemical cleaners have the potential to be both an occupational hazard for cleaning operatives and destructive to indoor air quality, it is clear that reducing the amount of chemicals that is used in daily routines will have a range of benefits for both human health and the environment. If cleaning chemicals cannot be eliminated totally from routines, the solution is then to ensure that all staff are trained on the safe use of chemical, making sure that they remain protected against potentially harmful exposure. Only using exactly as much chemical as needed can also result in other benefits for businesses, including cost savings and even improved quality and safety of floors and other surfaces, as excess chemical can cause surfaces to wear prematurely or leave a slippery residue that can cause accidents.

SYR manufactures a range of solutions created for both efficiency and sustainability, with many developments made specifically to reduce the amount of chemical wasted when in use. In addition to the chemical-minimising capabilities of microfibre, many SYR buckets and mopping combos have been designed to prevent chemical overdosing when in use. A very common practice in cleaning routines, overdosing can often expose staff to unnecessary amounts of chemical and release fumes into the air, substances which can cause long-term health problems if inhaled in large quantities. Many SYR buckets, such as the Lucy and Lucy-R Oval Buckets, contain features expressly designed to prevent this: the Lucy and Lucy-R Oval Buckets, extra tough compact mopping buckets, for instance feature integral portion pods within the bucket, allowing for easy chemical dosing, measuring exactly the amount of chemical needed for the volume of water in the bucket.

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