The next step after traditional filtration techniques: Bioremediation of our indoor air quality

The importance of our Indoor Air Quality (IAQ) will be a trending topic for the years to come. Recent crisis showed us how vulnerable we are inside our offices and buildings. TAL welcomes the broader discussion where we distance ourselves from conventional and traditional thinking and look for ambitious solutions today.

When policymakers, companies or governments talk about physically combatting Sars-Cov2 the focal point commits towards traditional technologies such as ionization, HEPA filters and UV light solutions. The third route of infection for all pathogens is indeed the air we breathe, but it is also the most difficult to manage. As this discussion has a strong core of relevance, we emphasize that a broader discussion could benefit the issue of what healthy IAQ is. Cleaning, disinfecting or sterilizing are considered today as the only logical action to make. It is the opinion of TAL that this is only the first. As with the treatment of soil and water removing impurities and pollutants, a sterile condition is nor possible or favourable. Many of the traditional technologies today promise just that. By trying to create what is a theoretical approach of a sterile environment, we give room to dominant pathogens to grow and become the dominant species (competitive exclusion). As traditional filtration systems have their downsides and sometimes even adverse health effects, a mitigating action is essential in creating a balanced indoor air environment, where healthy bacteria and archaea thrive. Bioremediation of the IAQ poses as the logical addition to an already effective ventilation system. To make the general public aware of clean and bio-remediated air, we bring back the trust to go back inside and live, work and breath in healthy habitat optimized for human consumption.

Healthy air, free from pollution is essential and considered a human right by international institutions as the UNEP, OHCR and UNECE, this discussion has never been more relevant, and the time is now in working towards ambitious solutions and policies. As virus inhibitors of all kind will flood the markets and will not disappear soon, some will have proven scientific claims while others highly disputable. First, an updated assessment and universal testing method of these products under EU rule could promise a rise in efficiency. As cheaper and less engineered applications could have serious adverse health effects when not produced, installed, or used correctly. Secondly, the notion that one system or technology is sufficient in creating suitable air quality for human consumption is long outdated. Addressing the challenges, specifics and function of the building requires an optimized and performance driven solution. Updated standards or certificates need to the show the quality and performance of the systems in place and generate public trust in safely coming back inside. Third, creating a level playing field should give oxygen to a whole community of people, NGO's and companies in translating the needs for a healthier and sustainable habitat for human consumption.

As we go into a prolonged global health crisis, it is more than clear that our living and working spaces are too vulnerable for pollutants and contaminants. As short-term decisions have an astronomical impact on the economy, society and social wellbeing of people, we lack a fundamental long-term vision. As eventually, we will need to bring people back inside. The mission of air-cleaning effectiveness today, is to filter and kill everything. This hell of a task can only find itself more problematic from newer or older systems with limited scientific evidence or poor engineering. Resulting in adverse health effects, the opposite of what we are aiming to do. But it fits into conventional ways of thinking. Kil, disinfect and purify everything.

Deliberately eliminating every single bacteria creates the perfect condition for indoor generated pathogens to grow and become the dominant culture. As an indoor environment just like nature can only benefit from a balanced microbiome, favourable bacteria and archaea can physically occupy a certain area and suppress the growth of harmful and undesired microorganisms.As air cleaning devices have the potential to reduce the bioburden in the air and hence the exposure to the infectious virus, these devices however do not lead to sterile or balanced environments. The simple fact that when we breathe, speak, cough or sneeze we spread potential airborne pathogens shows us that this strategy of disinfecting and cleansing doesn't provide a structured solution. If our indoor air is not rebalanced after a single pass effectiveness filter in a system (which boasts itself in stopping 95.9% of incoming particles), we constantly deprive our working and living habitat of the beneficial properties that healthy bacteria and archaea provide. When we secure good ventilation practices with proven filtration methods and enhanced the room with a healthy and balanced condition, We will have reached our goal of an Indoor Air Quality with the lowest possible risk and the highest outcome for a healthy human habitat.

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