



Shali Habibulla

M.Tech(Mechanical),M.I.S.T.E.,

Project Manager

ALMUFTAH TRADING&CONTRACTING W.L.L

P.O.BOX:875, DOHA-QATAR

habibmep@gmail.com

Mob:+974-66588211

IMPORTANCE OF CLEAN AIR IN HVAC SYSTEMS

Air is a necessary resource for every human being and clean air is a great way to keep our body healthy and happy.

Air is the natural mixture of gases that surround the earth. It is made of 79% Nitrogen,20% Oxygen and 1% a bunch of other gases(Ar,Co₂,Ne,He,So₂ etc.,) that nobody really cares about.

Of all the chemical elements, oxygen is the most vital to the human body. We would survive for only minutes without oxygen. Oxygen is the life-giving, life-sustaining element.Energy is the daily man's common commodity. Approximately 90% of the body's energy is created by oxygen. Nearly all of the body's activities, from brain function to elimination, are regulated by oxygen.

The ability to think, feel and act is derived from the energy supplied by oxygen. The way to optimize health is to ensure complete cellular oxygenation. Each of the body's trillions of cells demands oxygen for proper function.

Clean air is rather difficult to come by these days, and this has detrimental effects on the health of all of us. We breathe about 20,000 times each day. Each person inhales over 3,500 gallons of air each day. Children inhale more particles for their size than adults.

Each time, our body has to utilize the oxygen in each of those breaths and filter out the "leftovers". These could be extra gases, like carbon monoxide and carbon dioxide, lead or hydrocarbons, among many others. This puts an extra strain on our bodies already taxed detoxification systems.

Polluted air causes 94% of all respiratory problems. The products that leaves a person's lungs during exhalation are carbon dioxide and water (exhaled air has a relative humidity of 100%), which are eliminated by the human body through the lungs. Atmospheres with oxygen concentrations below 19.5% can have adverse physiological effects, and atmospheres with less than 16 % oxygen can become life threatening.

In the human body, the oxygen is absorbed by the blood stream in the lungs, being then transported to the cells where an elaborated change process takes place. oxygen plays a vital role in the breathing processes and in the metabolism of the living organisms.

The living cell is the site of tremendous biochemical activity called metabolism. This is the process of chemical and physical change which goes on continually in the human body: build of new tissue, replacement of old tissue, conversion of food to energy, disposal of waste materials, reproduction- all the activities that we characterize as "LIFE".

Research shows that cells have only a "limited number" of cell divisions possible in a human life time. Studies shows that cells have only a "limited number" of cell divisions possible in a human lifetime. Studies show that by the time you're 20 most of the cells that make up your body have used up half of the divisions available in their cell lifespan. By the time you're 40, there are may be only 30% of your possible cell divisions left. When the cells use up their natural allotted cell division, the end is death!

Improving Air Quality and Safety:

How "Fresh" is Air Freshener?

Air Fresheners do not "purify" the surrounding air, nor do they add natural fragrances. Air fresheners are not a solution for poor air quality and cannot substitute for good ventilation.

A study release by the National Institute of Environmental Health Science and Natural Resources Defense Council (NRDC) evaluated and found that 12 contained variable amounts of substances called phthalates (pronounced THAL-ates), a group of chemicals that are used to dissolve and carry fragrances, soften plastics and also as sealants and adhesives. Phthalates are commonly found in a variety of products including cosmetics, paints, nail polish, and children's toys, tobacco smoking etc.,

Studies suggested that high exposures to certain kinds of phthalates can cause cancer, developmental and sex-hormone abnormalities (including decreased testosterone and sperm levels) in infants, and can affect fertility. This could be serious for those with asthma or other lung problems. Reduced lung function is also a risk factor for heart disease, stroke, and lung cancer.

What can we do now?

As we know that – “Prevention is better than cure “.

Dust allergy is a major issue which people face mostly in Gulf Region. To solve this problem and get prevention, proper Air Filtration methods to be adopted in HVAC Systems.

Air Filtration:

Filtration of the air is an often overlooked part of total conditioning of the space/room environment. Since the air supplied from the system mixes outdoor air with return air from the conditioned space, it must be filtered properly to a level that ensures product quality. Most systems will have commercial grade 30% filters as the first level of filtration in the process. These filters are 30% efficient on a 1 micron particle, and are designed to be changed monthly.

The second level of filtration in the system is matched to the specific process with the product in the room. Uncooked or raw product requires a level of filtration that is 95% (**ASHRAE**) efficient on a 1 micron particle, removing virtually all of the airborne yeast, bacteria and mold particles. HEPA(High Efficiency Particle Arrestor) filters are rated 99.97% efficient on a 0.3 micron particle, and each filter is factory tested for efficiency.

How often should you change disposable HVAC Return Air Filters?

Under normal circumstances, changing disposable filters every 30-60 days is fine. If you just moved in to a home, it is recommended that you change them every 30 days for the first month or two, to get an idea of how dirty they are getting in the environment.

- If you live in a dusty area or notice dust around your home/office, every 30 days.
- If you have pets, every 30 days
- If you have a smoker in the home, every 30 days.
- Basically, any situation where you have higher than normal airborne particles in your home, you should change your filters every 30 days at minimum.
- If you buy the 60-90 days filters that are becoming common in the market, you may still need to change them more often in a dusty environment.
- When we have a dust/sand storm, you should change them every 15 days for the next few months, as more of the fine particles of dust are going to have made their way in to the envelope of your home and end up in your air conditioning system.

Conclusion:

Proper sizing, features and construction are all important considerations in the selection of the environmental control systems.

Although the outdoor air is also polluted, it is less than what is usually in our homes/offices. If your house/office is Air Conditioned, you should regularly clean/change air filters and if your house is non-a/c, you should always keep your house well aired-out by opening your doors and windows.

The only true purifier is nature, and air round areas with a lot of fresh plants and trees is much more pure. If you live a distance away from these areas, plan to get out in these nature spots as often as possible and especially try to exercise outdoors.