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Ozone Air Purifier is Boon or Bane

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Abstract: - The purpose of this paper is to provide the real information about the use of air purifiers in homes. Its types, operating methods, harmful impacts and proper usage techniques are discussed one by one, with special focus on ozone type.

I. INTRODUCTION

Now days, Pollution has been increasing day by day. Revolution in industrial sector such as construction activities, Production activities and use of fossil fuels not only disturb ecological balance but also contaminate air, water and soil and Wastes after industrial activities is a major factor of pollution. As we all know majority of diseases are caused by bacteria and viruses. To be healthy in this polluted environment, we need some device which reduces concentration of harmful gases and should be able to kill viruses and bacteria. It can be done with the help of ozone disinfection treatment or by the use of "Air Purifiers". The Air Purifier can be of three types:-

A. Ozone Generators
B. Ionizers
C. UV Light Purifier
D. Hepa Filter

II. OZONE

Ozone is a gas that is having three oxygen atoms denoted by O3 which is represented in fig:-1 .It is pale blue gas with distinctly odour. It occurs naturally in atmosphere and lies in upper layer of troposphere between 10 to 50 km above earth at stratosphere. It prevents us from harmful ultraviolet radiations. Naturally ozone is formed by chemical reactions between sunlight and oxygen molecules, It breaks apart one oxygen molecules to produce two oxygen atoms, Then highly reactive oxygen atoms combine with single oxygen molecule to produce ozone. In this way ozone is produced in the atmosphere.

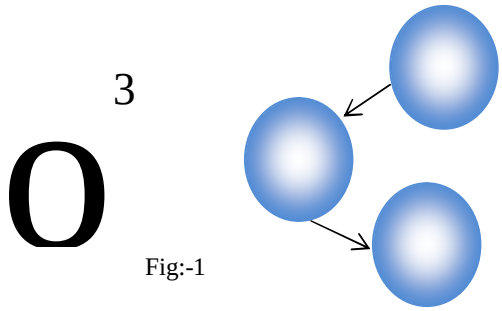

Fig:-1

III. OZONE GENERATOR

Ozone generators are available in market as an air cleaner which is artificial ozone gas producer. The ozone produced, can also reacts with the organic materials of body from which our body is made up of and then caused several health related problems. A typical diagram of ozone generator is shown in figure below.

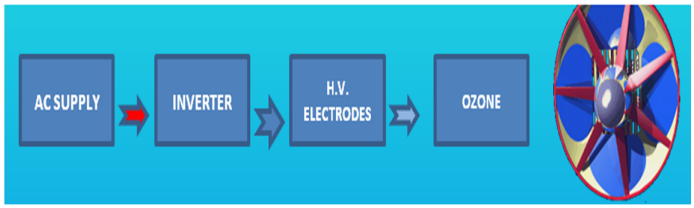

Fig.:-2

The health problems due to ozone are represented below:-

A. Coughing
B. Irritation in throat
C. Risk of asthma
D. Breathing Discomfort
E. It reduces proper function of lungs.
F. Over exposure of ozone may lead to lung cancer.
G. It also reduces bronchial airways.

NOTE:-Children are more prone to the risk of being affected by ozone as compared to the grown up people.

IV. IONIZER

The air cleaning capacity can be increased with the help of using an ionizer. Here, the electromagnetic charges are utilized to add or remove electrons from oxygen atoms, which makes these either positively or negatively charged as they left the ionizer. After oxygen is passed through air filter, the other particles gets detached and in search for new particles for bonding. As the outgoing oxygen is electromagnetically charged. It can damage human lungs. The best way to use Ionizer is with timer, So that its effect on lungs can be minimized.

V. U.V. AIR PURIFIER

When the UV technology is used for killing airborne bacteria and viruses, It only kills viruses as bacteria as same as your Television. So, it cannot be a proper substitute for the proper air purifier. Since mostly air purifier working UV principle cannot generate ozone, so it does not affect our lungs.

VI. HEPA FILTERS AS AIR PURIFIER

Finally, In HEPA i.e."HIGH EFFICIENCY PARTICULATE ARRESTENCE" must meet the standard of efficiency decided by USDEO.As per this from the 99.97% of particles of size 0.3µm in air that passes through HEPA. These filers are made up of fibers and it acts like a sieve for bacteria and are specially designed to remove much smaller size of particulate matter and pathogens causing pollutions and health related problems.

VII. SUMMARY

Air purifier is the best tool to remove mists, bacteria and viruses from indoor environment but one thing must be kept in mind. The lungs can never be compromised with pure air.

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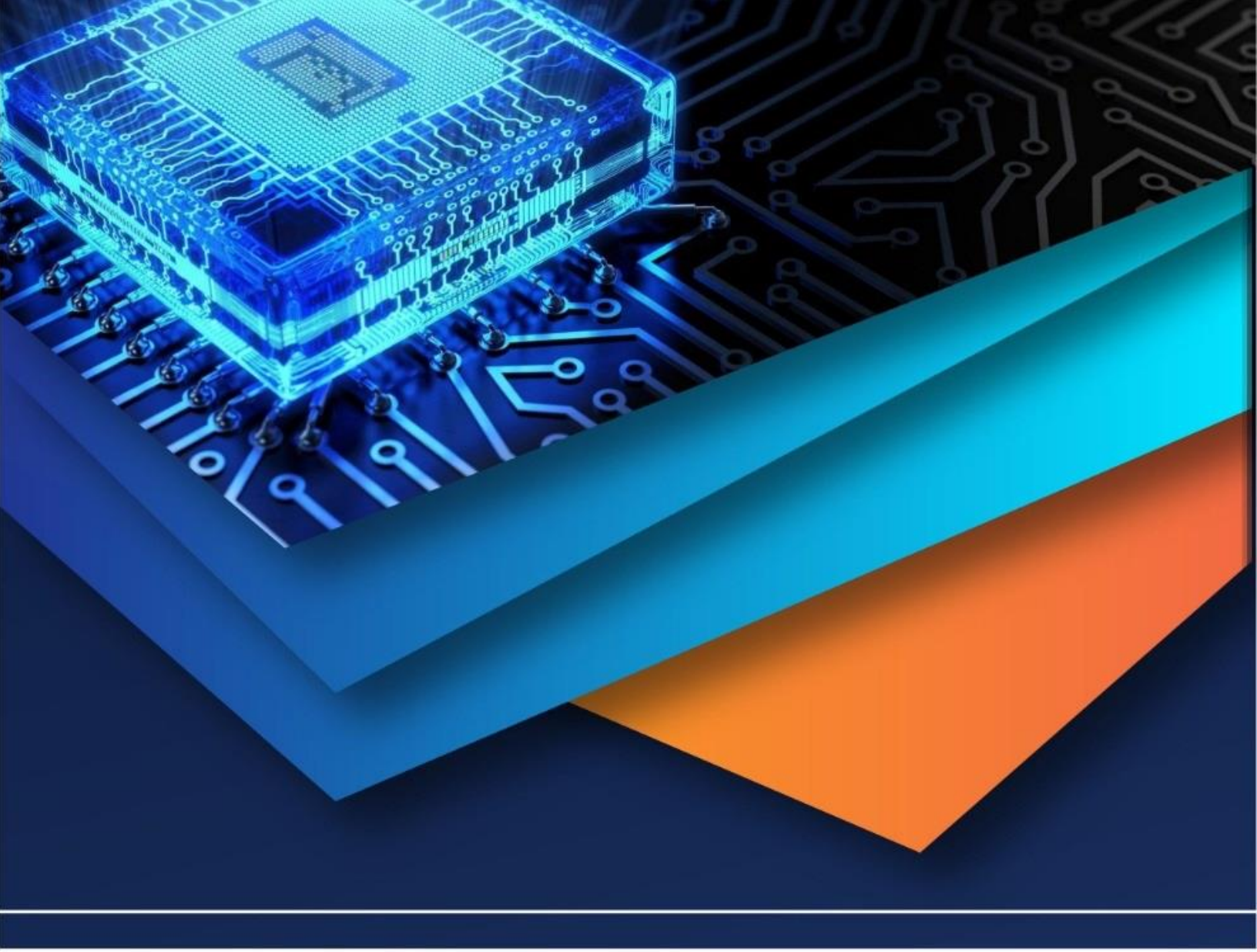

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