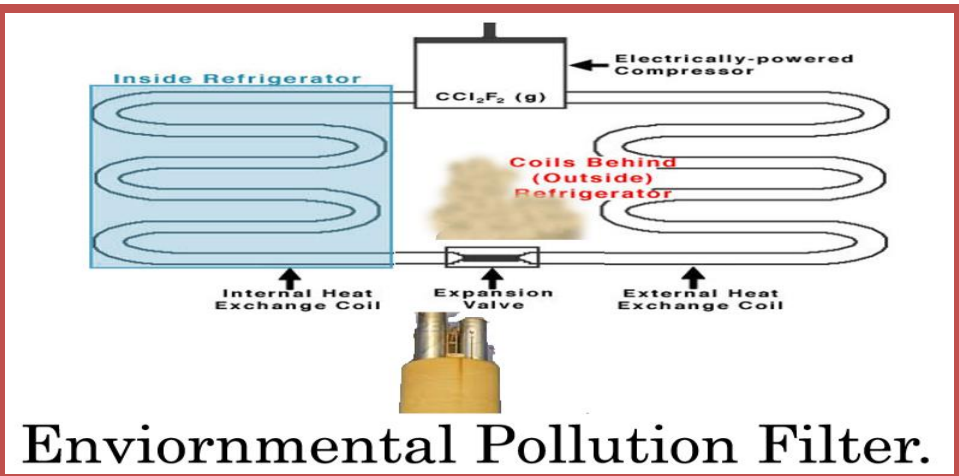
International Journal of Scientific & Engineering Research Volume 10, Issue 10, October-2019
ISSN 2229-5518

RESEARCH PAPER

Prevention of O-Zone(O_3) by Environmental Pollution Filter (EPF)

Prof. Sohail Ibrahim



Prevention of O-Zone by Environmental Pollution Filter (EPF)

Index

Subject Category: Physics

ABSTRACT

Prevention of O-Zone(O_3)by Environmental Pollution Filter (EPF)

This research project aimed to prevent O-Zone Layer through at low cost, most efficient and easy to assemble Environmental pollution Filter. Environmental pollution is the biggest menace to the human race on this planet today. It means adding impurity to environment. The environment consists of earth, water, air, plants and animals. If we pollute them, then the existence of man and nature will be hampered. One of the biggest sources of this Pollution is generation of CFCs in Industries which spread out in the form of gasses in the environment.

Pure air is always needed for inhaling. If we take pure air, our health improves. On the other hand impure air causes diseases and impairs our health and causes our death. Smoke pollutes the air. It is the root of air pollution. The smoke which is discharged from industries, automobiles and kitchens is the mixture of carbon monoxide, carbon dioxide, methane etc.

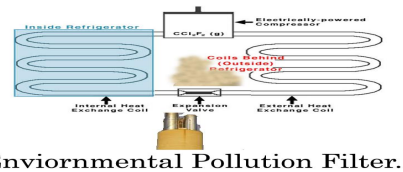
That's why I have decided to work on a Filter which absorb and control the main cause CFCs and other causing substances which are damaging and harmful for O-Zone and also before it mix up in air and Polluted air it control at its source of generation.

My New filter is based on cooling process and attached with the top of Chimneys of the Industries. Before the polluted gasses enter in the atmosphere my filter cool it at low temperature provided by system attached or heat pump. As the temperature becomes down gasses liquefy and store in the chamber name is collecting chamber. The waste material can be recycled and utilized for other purposes as per needed.

E% = Absorption power of smoke x 100
Total power of smoke

Pressure = Force / Area Or
Pressure = rho x h x g (Density x height x acceleration due to gravity)
Area = $2\pi r^2 + 2\pi r h$

It is very necessary for us to save our Planets with Pollution and prevent O-Zone layer before it damages. My Designed Filter is low cost, easy to assemble and most efficient.



Enviornmental Pollution Filter.

Prof. Sohail Ibrahim

International Journal of Scientific & Engineering Research Volume 10, Issue 10, October-2019
ISSN 2229-5518

Introduction

AIMS AND OBJECTIVES

1 **To control the pollution produces by the CFCs in air.**

2 **To prevent the O-Zone layer by CFCs.**

3 **Use of Environmental Pollution Filter overcomes the problems of Air pollution produces in air.**

4 **Use of EPF the smoke produces by chimneys of industries convert into liquid and collect in the chamber & recycle for utilization of another purpose.**

5 **Efficiency of the Filter can be calculated by the formula:**

$$E\% = \frac{\text{Absorption power of smoke}}{\text{Total power of smoke}} \times 100$$

Power = Force / Area
Force = rho x h x g (Density x height x acceleration due to gravity)
Area = πr^2

Introduction to Concepts

Pollution

Pollution is the introduction of contaminants into the natural environment that causes adverse change. Pollution can take the form of chemical substances or energy, such as noise, heat or light. Pollutants, the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Pollution is often classed as point source or nonpoint source pollution.

Types Of pollution

There are 6 (six) types of pollution that are, namely air, water, noise, land, radioactive, and thermal.

- **Air Pollution**
- **Water Pollution**
- **Land Pollution**
- **Noise Pollution**
- **Radioactive Pollution**
- **Thermal Pollution** **etc.**

Air Pollution

The major forms of pollution are listed below along with the particular contaminant relevant to each of them:

Air pollution:- the release of chemicals and particulates into the atmosphere. Common gaseous pollutants include carbon monoxide, sulfur dioxide, chlorofluorocarbons (CFCs) and nitrogen oxides produced by industry and motor vehicles. Photochemical ozone and smog are created as nitrogen oxides and hydrocarbons react to sunlight. Matter , or fine dust is characterized by their micrometer size PM_{10} to $PM_{2.5}$.

Light Pollution: - Includes light trespass over illumination and astronomical interference.

Littering: - the criminal throwing of inappropriate man-made objects, un removed, onto public and private properties.

Noise pollution: - which encompasses roadway noise, aircraft noise, industrial noise as well as high-intensity sonar.

Soil contamination occurs when chemicals are released by spill or underground leakage. Among the most significant soil contaminants are hydrocarbons, heavy metals, MTBE, herbicides, pesticides and chlorinated hydrocarbons.

Radioactive contamination, resulting from 20th century activities in atomic physics, such as nuclear power generation and nuclear weapons research, manufacture and deployment. (See alpha emitters and actinides in the environment.)

Thermal pollution, is a temperature change in natural water bodies caused by human influence, such as use of water as coolant in a power plant.

Visual pollution, which can refer to the presence of overhead power lines, motorway billboards, scarred landforms (as from strip mining), open storage of trash, municipal solid waste or space debris.

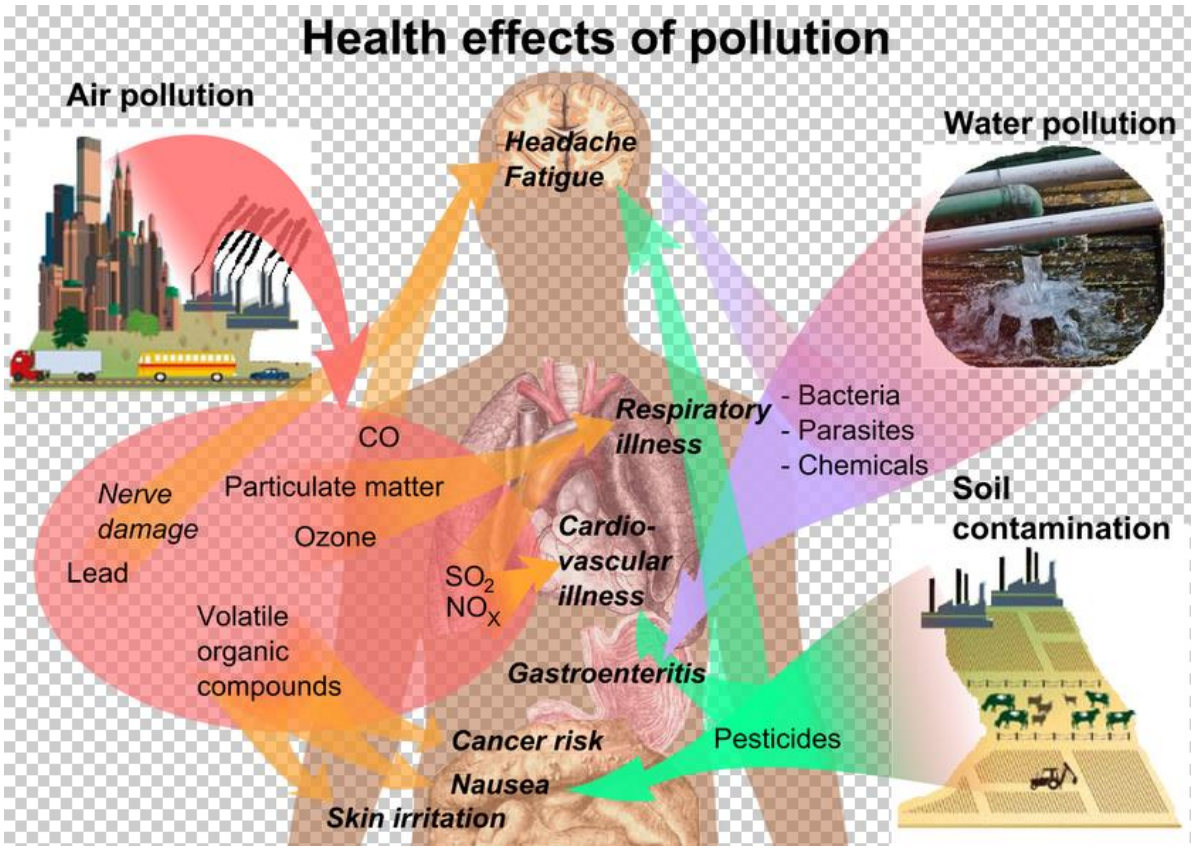
Water pollution, by the discharge of wastewater from commercial and industrial waste (intentionally or through spills) into surface waters; discharges of untreated domestic sewage, and chemical contaminants, such as chlorine, from treated sewage; release of waste and contaminants into surface runoff flowing to surface waters (including urban runoff and agricultural runoff, which may contain chemical fertilizers and pesticides); waste disposal and leaching into groundwater; eutrophication and littering.

Effect on Health

Overview of main health effects on humans from some common types of pollution.

Adverse air quality can kill many organisms including humans. Ozone pollution can cause respiratory disease, cardiovascular disease, throat inflammation, chest pain, and congestion. Water pollution causes approximately 14,000 deaths per day, mostly due to contamination of drinking water by untreated sewage in developing countries. An estimated 500 million Indians have no access to a proper toilet and 580 Indians die of water-related pollution every day. Nearly 500 million Chinese lack access to safe drinking water. A 2010 analysis estimated that 1.2 million people died prematurely in a year in China because of air pollution. In 2007 it was estimated that in India, air pollution is believed to cause 527,700 fatalities. Studies have estimated that the number of people killed annually in the US could be over 50,000.

Oil spills can cause skin irritations and rashes. Noise pollution induces hearing loss, high blood pressure, stress, and sleep disturbance. Mercury has been linked to developmental deficits in children and neurologic symptoms. Older people are majorly exposed to diseases induced by air pollution. Those with heart or lung disorders are at additional risk. Children and infants are also at serious risk. Lead and other heavy metals have been shown to cause neurological problems. Chemical and radioactive substances can cause cancer and as well as birth defects.



Environment

Pollution has been found to be present widely in the environment. There are a number of effects of this:

Biomagnifications describes situations where toxins (such as heavy metals) may pass through tropic levels, becoming exponentially more concentrated in the process.

Carbon dioxide emissions cause ocean acidification, the ongoing decrease in the pH of the Earth's oceans as CO_2 becomes dissolved.

The emission of greenhouse gases leads to global warming which affects ecosystems in many ways.

Invasive species can out compete native species and reduce biodiversity. Invasive plants can contribute debris and bimolecular that can alter soil and chemical compositions of an environment, often reducing native species competitiveness.

Nitrogen oxides are removed from the air by rain and fertilizer land which can change the species composition of ecosystems.

Smog and haze can reduce the amount of sunlight received by plants to carry out photosynthesis and leads to the production of troposphere ozone which damages plants.

Soil can become infertile and unsuitable for plants. This will affect other organisms in the food web.

Sulfur dioxide and nitrogen oxides can cause acid rain which lowers the pH value of soil.

Pollution control

Pollution control is a term used in environmental management. It means the control of emissions and effluents into air, water or soil. Without pollution control, the waste products from consumption, heating, agriculture, mining, manufacturing, transportation and other human activities, whether they accumulate or disperse, will degrade the environment. In the hierarchy of controls, pollution prevention and waste minimization are more desirable than pollution control. In the field of land development, low impact development is a similar technique for the prevention of urban runoff.

Practices

- recycling
- reusing
- Waste minimization
- mitigating
- preventing
- compost

Air Pollution

Air pollution is indication of disturbances to the composition of compounds in the atmosphere, as it may be summarized as shown:

- excess emission of gases/vapors into atmosphere
- saturation of chemical compounds/particulates
- rate of dissipation < (smaller than) rate of absorption through various cycles (i.e. carbon and nitrogen cycle)
- Emergence of new chemical reactions of reactive and non-biodegradable compounds.
- Global warming, acid rain, smog, ozone depletion are some effects of air pollution. In relation to this, we may observe the cycle which involves in our daily lives: carbon and nitrogen cycle. These 2 cycles are the most important of all, regulating the composition of carbon and nitrogen of Earth.

EXPLANATION

As we know that air, water and sunlight are the great natural resources of energy as blessing of my Lord (Allah Subhan-o-Tala). This research project aimed to prevent O-Zone Layer through at low cost, most efficient and easy to assemble Environmental pollution Filter.

Environmental pollution is the biggest menace to the human race on this planet today. It means adding impurity to environment. The environment consists of earth, water, air, plants and animals. If we pollute them, then the existence of man and nature will be hampered. One of the biggest sources of this Pollution is generation of CFCs in Industries which spread out in the form of gasses in the environment.

Pure air is always needed for inhaling. If we take pure air, our health improves. On the other hand impure air causes diseases and impairs our health and causes our death. Smoke pollutes the air. It is the root of air pollution. The smoke which is discharged from industries, automobiles and kitchens is the mixture of carbon monoxide, carbon dioxide, methane etc.

That's why I have decided to work on a Filter which absorb and control the main cause CFCs and other causing substances which are damaging and harmful for O-

Zone and also before it mix up in air and Polluted air it control at its source of generation.

My New filter is based on cooling process and attached with the top of Chimneys of the Industries. Before the polluted gasses enter in the atmosphere my filter cool it at low temperature provided by system attached or heat pump. As the temperature becomes down gasses liquefy and store in the chamber name is collecting chamber. The waste material can be recycled and utilized for other purposes as per needed.

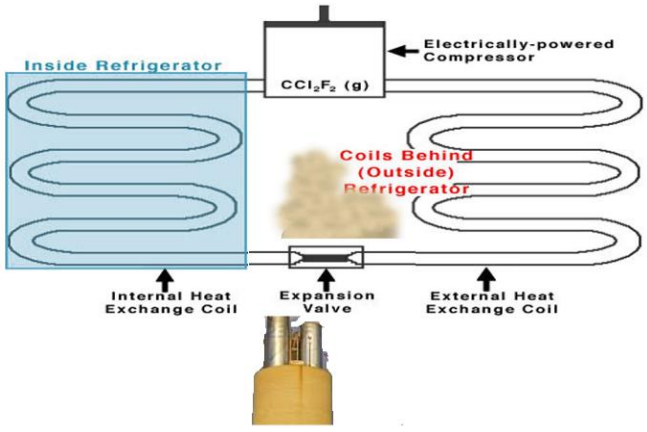
$$E\% = \frac{\text{Absorption power of smoke}}{\text{Total power of smoke}} \times 100$$

Pressure = Force / Area
Pressure = rho x h x g (Density x height x acceleration due to gravity)
Area $= 2\pi r^2 + 2\pi r^2 h$

It is very necessary for us to save our Planets with Pollution and prevent O-Zone layer before it damages. My Designed Filter is low cost, easy to assemble and most efficient.

Materials required

- **Long Vessels like Pipes** **Compressor**
- **Condenser** **Welding Equipment**
- **Socket Set** **Screwdrivers etc**
- **Collecting chamber**



Enviornmental Pollution Filter.

PROCESS

This research project aimed to prevent O-Zone Layer through at low cost, most efficient and easy to assemble Environmental pollution Filter. Environmental pollution is the biggest menace to the human race on this planet today. It means adding impurity to environment. The environment consists of earth, water, air, plants and animals. If we pollute them, then the existence of man and nature will be hampered. One of the biggest sources of this Pollution is generation of CFCs in Industries which spread out in the form of gasses in the environment.

My New filter is based on cooling process and attached with the top of Chimneys of the Industries. Before the polluted gasses enter in the atmosphere my filter cool it at low temperature provided by system attached or heat pump. As the temperature becomes down gasses liquefy and store in the chamber name is collecting chamber. The waste material can be recycled and utilized for other purposes as per needed.

Conclusion

We have observed that it is more economical and more efficient because there is no setback in this project. We have tested its working capacity and efficiency which proved to be successful. After practical observation it proved that it is more efficient and reliable than other system. This is a Filter that is preventing our environment from polluted air or smoke come out chimneys of the industries. Such project can be installed at top of the chimneys of the industries which will work more efficiently by the absorbing of carbon and cooling process to convert smoke into liquid. As the power of polluted gasses increases the process installed in filter also increase and simultaneously the

cooling process and absorption of carbon motion also increase which work more efficiently. The residue of the polluted gasses can be recycled and utilized for various purposes as per required.

In Pakistan we have a lot of industries especially a large area of Karachi, Lahore and other big cities. There this project works more successfully. Thus, we can prevent our environment specially O-Zone (O_3) by using the Environmental Pollution Filter (EPF). It is new idea and very economical and can be made in different shapes as per needed.

On the base of the practical observation it is concluded that we can overcome the problem of Polluted Gasses by using this technique too.

Thanking You.

Prof. Sohail Ibrahim

REFERENCES

Books:

1-Physics Text Book (Board of secondary & intermediate education Karachi)

2- Physics for "O" level students

3-Physics Encyclopedia on energy by Time Life Series

4-Mathematics for Class V1-V111 by Sindh Text Book Board

5- Schaum's outline of theory and problems of beginning physics II

By Alvin M. Halpern,

6- Schaum's Outline of Mathematics for Physics Students

By Robert V. Steiner, Philip A. Schmidt

Websites:

1- www.google.com
2- www.Knowledge.Allianz.com
3- www.Siemens.com/Pakistan
4- www.solarnavigator.net/windmill_hill_sussex.htm
5- www.wikipedia.org
6- www.lmnoeng.com/cylconesphere.htm
7- http://en.wikipedia.org/wiki/Flue-gas_stack
8- http://gizmodo.com/o-zone-dragostea-din-tei-1441837930