

# Anemoiator

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**Abstract:** Pollution is the introduction of contaminants into the natural environment that cause adverse change. Pollution can take the form of chemical substances or energy, such as noise, heat or light. We have generally divided pollution into five domains: Air, Water, Soil, Light and Noise. Air pollution is measured by AQI (Air Quality Index). AQI tells us how clean or polluted the air is. Dust, smoke, emissions from vehicles and chimneys of industries contribute heavily for air pollution which are all human activities. Water pollution is measured in terms of BOD (Biochemical Oxygen demand). Industrial wastes go directly into the rivers, humans also throw their garbage recklessly into water bodies, thereby creating more pollutants for water bodies. Soil pollution is mainly caused by the chemicals used for agricultural activities and is also accompanied by the industries which help in toxication of the soil. Light pollution is caused by unnecessary use of artificial light. Noise pollution or sound pollution is mainly caused by machines and transport. Out of all these 5 pollution the one which affects us the most is air pollution. Air pollution can have short term as well as long term effects. Short term effects include pneumonia or bronchitis, irritation to nose, throat, eyes or skin. Long term effects include heart disease, lung cancer, damage to kidneys and livers and some other organs. Air pollution often appears as cloud making the air murky. It is called smog. Smog is often categorized as being either summer smog or winter smog. Summer smog is primarily associated with the photochemical formation of ozone. During the summer season, photochemical smog is the dominant type of smog formation. During the winter months when the temperatures are colder, and atmospheric inversions are common, there is an increase in coal and other fossil fuel usage to heat homes and buildings. This is where Anemoiator comes into play, which will help in removing Smog. Anemoiator will emit UV-rays of certain frequencies which will remove smog by destroying ground level smog and thereby helping us for a better and a cleaner environment. In this way we will try to remove the disturbances affecting our ecological cycle.

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## 1. Theory and Calculation

Smog (in summer) is primarily associated with the photochemical formation of ozone. Photochemical reactions here are those chemical reactions which happen in presence of sunlight.

Nitrogen oxides produced in the car engine are introduced into the atmosphere, which may combine with water to form nitric acid or react with sunlight to produce singular oxygen atoms, which then combine with molecular oxygen to produce ozone. Now this ground level ozone is a colourless and highly irritating gas. We will be using UV-Rays of certain frequencies which will help in breaking the ozone bond and hence destroying the ground level ozone. These UV-rays are emitted by Anemoiator and they will help in reducing ground level ozone.

UV-rays emitted have energy which can be calculated using Planck-Einstein Equation. Planck-Einstein Equation is

$$E = h \nu \quad (1)$$

where  $h$  is planck's constant and  $\nu$  is frequency.

These UV-rays will have enough energy to break the bond between Ozone. UV-rays having wavelengths ( $\lambda$ ) between 240nm(nanometre) to 315 nm can help in destroying ozone. Dividing speed of light( $c$ ) by wavelength( $\lambda$ ), gives us frequency( $\nu$ ).

$$\begin{aligned} c &= \lambda \nu \\ \nu &= c / \lambda \end{aligned} \quad (2)$$

We will get frequency using the equation (2). So the frequencies corresponding to 240 nm and 315 nm are  $1.249 \times 10^{15}$  Hz and  $9.517 \times 10^{14}$  Hz respectively.

## 2. Conclusion

Anemoiator is an effort in reversing the aberration humans have created. It is an effort for making a better and a sustainable tomorrow.

Anemoiator will not only correct the disturbance affecting the ecological cycle but will also help to regain the original ecological cycle.

Anemoiator will help in making a less polluted environment. As smog is reduced, visibility will be increased. As visibility is increased there will be less chances for accidents. With less chances of accidents we are making roads safer for children and old age people.

Many other problems like irritation while breathing, irritation to nose and skin will be reduced. Problems faced by people like Asthma will be reduced. There will be a significant drop in the patients suffering from pneumonia and bronchitis.

People who have weaker immune, tend to be more sensitive towards air pollution. Air pollution is a big threat to their life as there are more chances that they might get affected by air pollution and hence their life expectancy will be reduced.

Some scientists even say that air pollution causes birth defects. Nearly 2.5 million people die worldwide each year from the effects of air pollution. There will be a significant drop in these figures with the help of Anemoiator.

Anemoiator will not only help humans, but will also help animals and trees. Smog hinders the shapes and colours and can even alter sound. It can even kill crops or reduce their yield. It can even damage soil, thereby decreasing fertility

and output is hindered. Like humans, animals too suffer from air pollution and whole food chain is disturbed, but Anemoiator will help tackle this problem.

Today we are facing air pollution as one of the greatest threat. Not only humans but animals also suffer due to air pollution, which is why this is our responsibility. Anemoiator is not only solving problems for humans but it is helping animals also, thereby creating back the balance.

### 3. Implementation

In places where we have smog, we can use it in car, bikes and trucks, we can also make street lights using Anemoiator. Regions with high altitude can be used for projection. We can stick it by the end of road for clear vision. It can be used by pedestrians also.

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