



## NASOFILTERS, FEEL THE FRESH BREATHE: A REVIEW

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### Abstract

Innovations are vast and intellectual. One such vast thing has been converted into a small invention known as Nasofilters. Nasofilters are the small mask like thing which is been worn on nasal orifice to eradicate the small air pollutants and bacteria to pass through our lungs. This idea was raised in a brilliant mind of one of IIT students, Prateek Sharma's mind due to the condition of his mother who was an asthma patient. He always wanted to something for his mother's health because of which the idea known as Nanoclean Global Private Limited was born. This company was started by IIT, Delhi graduates with the help of their faculty members. Getting an idea is a great imagination but implementing it makes you creative. The main aim of this invention is to abolish the respiratory diseases in future and to give the fresh breathe to the poor even since the cost of this mask is very much affordable.

(<https://www.nasofilters.com/anti-air-pollution-masks-india>).

**Key Words:** Nasofilters, Air pollution, Nasal Orifice, 2.5 pm particles, Bio-degradable product, Air filtration

### Introduction:

#### AIR POLLUTION:

Air pollution refers to the release of pollutants into the air that are detrimental to human health and the planet as a whole. **Air pollution** can be defined as the presence of toxic chemicals or compounds (including those of biological origin) in the air, at levels that pose a health risk. In an even broader sense, air pollution means the presence of chemicals or compounds in the air which are usually not present and which lower the quality of the air or cause detrimental changes to the quality of life (such as the damaging of the ozone layer or causing global warming). (environmentalpollutioncenters.org).

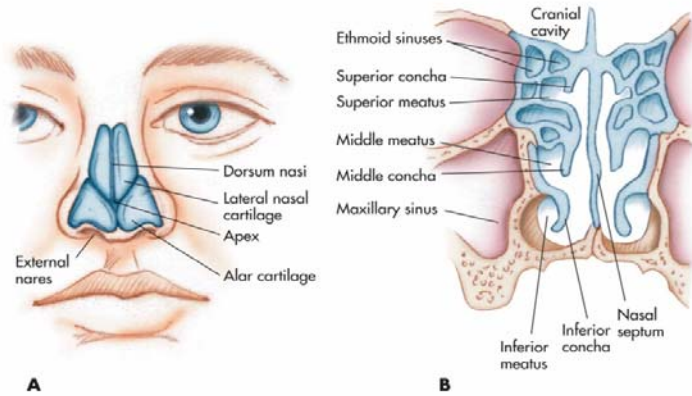


### NASAL ORTIFICE:

An orifice is an opening or a hole, most often in the body, such as your mouth or your nostril. We

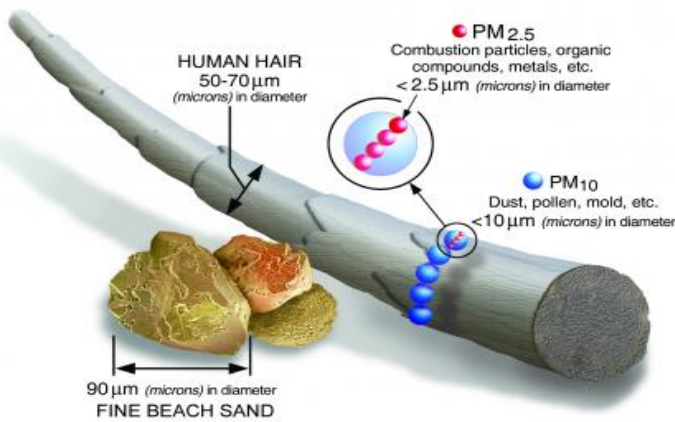
most often use *orifice* to describe a natural opening in our bodies, but it can an opening into any cavity, such as a hollowed out tree trunk, or

the vent of a heating system. Other definitions of *orifice* include a type of nozzle used in plumbing applications and a plate used to measure the flow of liquid.



**PM<sub>2.5</sub>** : fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller. How small is 2.5 micrometers? Think about a single

hair from your head. The average human hair is about 70 micrometers in diameter – making it 30 times larger than the largest fine particle. (airnow.gov).



**BIO-DEGRADABLE PRODUCT:**

Capable of being broken down (decomposed) rapidly by the action of microorganisms. Biodegradable substances include food scraps,

cotton, wool, wood, human and animal waste, manufactured products based on natural materials (such as paper, and vegetable-oil based soaps). See also degradable and photodegradable



**AIR-FILTRATION:**

Air purifiers are becoming increasingly common in India due to the rising levels of air pollution in major cities. Also, people have become more aware of the health issues caused by indoor and outdoor pollution, and are opting for home air filtration products. If you are also looking for an indoor air filtration system, there are a few basic things you must know about these products. Here is our guide for buying an indoor air filter and purifier for your home or office. There are two types of air purifiers, Active and Passive. Active air purifiers use ionisation for cleaning the air.

Which means they release negatively charged ions in the ambient air, causing pollutants to stick to surfaces. While they do get the job done, there is a downside to their functioning – they may release Ozone as a by-product. Passive air purification units on the other hand use air filters to remove pollutants. They are more efficient since all dust and particulate matter is permanently removed from the air and collected in the filters. (<https://www.honeywellsmarthomes.com>)

**What exactly Nasofilters are:**

As the world is travelling towards innovations, the travel towards health problems is also increasing and in the present scenario, air pollution is one of the such burning reason for health problems. To overcome this problem, IIT students from Delhi have created a sensation known as NASOFILTERS.

The main idea of nasofilters was brought by Mr. Prateek Sharma and the idea took birth due to his mother who was an asthma patient. She used to suffer a lot with respiration which disturbed Prateek a lot. He always aimed to do something for his mother and with the curiosity and intelligence, he brought a mask. That mask was a satisfactory factor for him but it created a bit disturbance for his mother since the frequent wear and remove process was not comfortable for the whole day. To overcome it, he with a couple of people named Tushar Vyas and Jatin Kewlani has invented this mask. They also made

it necessary that it should be affordable for everyone including the poor. So, they have decided to sell them at a cost of 10/-.(IITD.in).

The main target of this ground breaking filter is to eradicate the respiratory diseases from the world since it won't even allow the passage of particles of size 2.5pm i.e., the air pollutants, intoxicants and smallest of the bacteria. Not only that, it even cures certain physiological anomalies like sleep apnea, nausea, etc. The project is to develop the filter involved assembling millions of small sized pores to capture a thin flexible membrane. This membrane works with higher and faster efficiency.(business-standard.com)

The filter is a patch linked to nasal orifice which will not effect the breath and doesn't even go inside the nose.



**Working:**

This filter is made up of nanotechnology.

**What is nanotechnology, now?**

**FATHER OF NANOTECHNOLOGY:**

**Richard Feynman**

Nanotechnology is manipulation of matter on an atomic, molecular and supra-molecular scale. It is a science, engineering and technology conducted at the nanoscale, which is about 1 to 100 nanometers. Eg: A sheet of newspaper is about 100,000nanometer thick.

Nanoscience and the nanotechnology involve the ability to see and to control individual atoms and molecules. Everything on earth is made up of atoms-the food we eat,the clothes we wear ,the buildings and houses we live in, and our own bodies.

Today scientists and engineers are finding a wide variety of ways to deliberately make materials at the nanoscale to take advantage of their enhanced properties such as higher strength, lighter weight, increased control of light

spectrum, and greater chemical reactivity than their larger- scale counterparts.

**Implementation of nano-technology in nasofilters.**

As previously mentioned, these nasofilters are invented using nanotechnology. These nasofilters which are made up 100times smaller than a thread of normal fabric. Filter contains highly porous substrate that does surface filtration i.e., auto cleans itself as air is exhaled. This is technically very advanced. As previously mentioned, this nano fibre can filter aerosols up to PM2.5 in size and prevents them from entering your respiratory tract through the nose. PM2.5 is the size of the particulate matter capable of penetrating the farthest into the body. It enters the lungs and can go into the bloodstream. PM10 usually gets stuck in the nose hair. The nasofilter is capable of restricting the entry of both PM2.5 and PM10 to a large extent.(www.economicstimes.com).



**Awards and Recognition:**

The project went virally across the world. Nano clean has recognized among the top 50 tech startups around the world by South Korea from all over 118 countries and also selected among the top 100 startups in the world by Hong Kong- it is only Indian startup to achieve this feat. This

Nasofilters team also awarded the startup National award 2017 by former **President of India Shri Pranab Mukherjee**. It is one of the top 10 innovations of IIT Delhi and also received an award from minister of civil aviation of Delhi state.

**Conclusion:**

So, with the above details, we can say that this eye-breaking technology is very useful for the people from rich to poor since the cost of the product is very low. Even though this product has been brought out in the public, it's not readily available in the medical stores. It's only accessible through the online stores because of which many people don't know about this product. That's what the backdrop is.

An awareness program about this will not only improve the company standards but also the life of common people.

Since, it's a use and throw product of very cheap cost and efficient working, many countries are behind these people for the partnership. With this we can understand the importance of the product.

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