Sri SAI RAM INSTITUTE OF TECHNOLOGY

An ISO 9001 : 2008 Certified Institution

Sai Leo Nagar, West Tambaram, Chennai - 600 044

INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTRE (IEDC)

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DEVELOPMENT OF PAH PURIFIER

PAH PURIFIER

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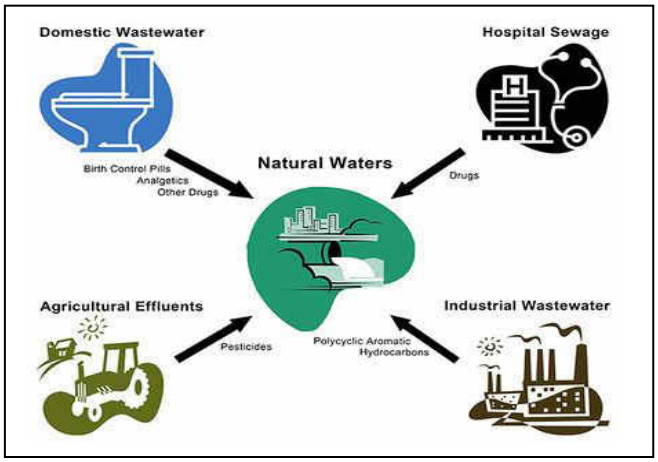
DEPARTMENT OF SCIENCE AND TECHNOLOGY

INTRODUCTION:

Polyaromatic hydrocarbons (PAHs) are a group of organic compounds consisting of two or more fused aromatic rings. PAH is a carcinogen which causes cancer. Polyaromatic hydrocarbons are ubiquitous pollutants formed from the combustion of fossil fuels and are always found as a mixture of individual Compounds. Their presence in surface water or ground water is an indication of source of pollution. Some PAHs are known as carcinogens among the 16 PAHs.Benzo[a]pyrene is the most extensively studied carcinogen and chlorinated PAHs which are formed due to the presence of residual chlorine.

SOURCES OF PAH:

1. Domestic
2. Agricultural
3. Industrial
4. Hospital sewage



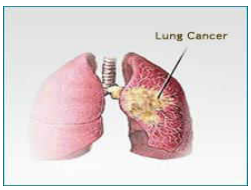
EFFECTS OF PAHs:

1. **Short term health effects**

   Eye irritation, nausea, vomiting, diarrhea and confusion.

2. **Long term health effects**

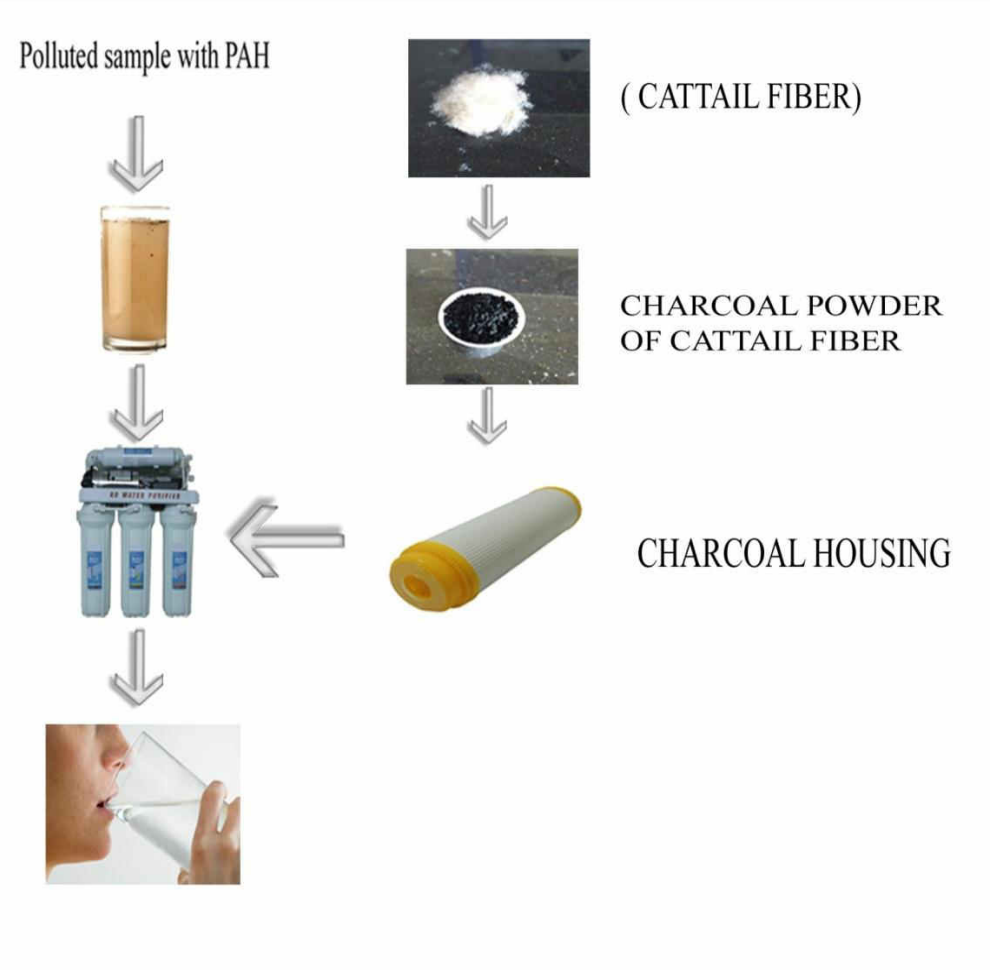
   Risk of skin, lung, bladder and gastro intestinal cancers.



INNOVATION:

The Pyrene present in the water can be removed either by natural manner or synthetic manner but the use of synthetic fiber causes **generating problems such as skin cancer and other types of cancer, chronic and severe respiratory infections as well as skin problems such as rashes, itching, redness and dermatitis** and more over the efficiency of removal of PAH is about 50-60% only. The use of natural fibers like cattail fibers can remove the poly cyclic aromatic hydrocarbons from water in more efficient manner of about 70-80% of removal.

METHODOLOGY FLOW CHART:

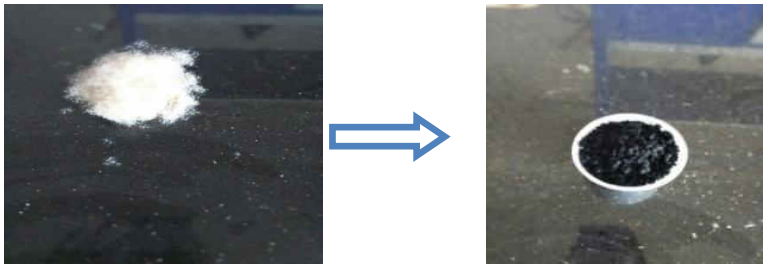


MARKET SURVEY:

The presence of PAH in drinking water in foreign countries particularly in gulf countries causes many of the short term and long term ill effects to human. As per present scenario, the traces of PAH are present in certain areas of Tamil Nadu, India particularly in some areas like Ambattur, Egmore, Saidapet, Kolathur. To overcome the situation of this effects this PAH are partially removed by synthetic manner. The use of natural fibers like cattail fibers can remove the poly cyclic aromatic hydrocarbons.

Product photographs:

Adsorbant from natural fiber



Packing of adsorbent in cartridge

CONCLUSION

Polyaromatic Hydrocarbons (PAH) which are harmful to the human life that are present in water can be removed effectively by passing the PAH contaminated water through activated carbon medium prepared from cattail fiber. In this study we taken the pyrene as the PAH and the removal of pyrene by the activated carbon medium was found to be about 70-80%. The removal efficiency was increased by varying the parameters like quantity of activated carbon to be placed and the time for which the water is in contact with the fiber. This study also gives the results that the cattail fiber based activated carbon has the ability to purify the water completely considering all the parameters up to an extent.