Activated Carbon: Houseplant System as a Low Cost Method of Air Purification for Improving Indoor Air Quality in Urban and Sub Urban Areas in Kenya

Pindoria, Priyen

Patel, Zeel

This project explores the air purification properties of various indoor landscaping plants (Sansevieria trifasciata, Spathiphyllum wallisii and Epipremnum aureum), to remove pollutants such as trichloroethylene, benzene and formaldehyde from indoor environments. The design of the air purification system combines the plants and an activated carbon filter. This design is based on propelling air upwards through the soil, roots and activated carbon bed to enable suspended particles (ash, dust and particulate matter) to be trapped and the pollutants to be absorbed by the plant leaves. Tests were conducted on the plants to determine their efficiency, reliability and effects of variables on absorption rates. Firstly, tests were conducted to determine whether the plants actually did remove the pollutants from the air. Secondly, experiments were conducted to determine the clogging point of the plant due to recent absorption of pollutants. Further experiments were carried out to determine the effect of various variables on the plant's efficiency of removing these pollutants. The setup was also tested in a paint factory in Nairobi, to prove its efficiency. From our experiments, we concluded that the activated-carbon houseplant air purification system is a suitable method of purifying air, hence reducing eco-system and health problems related to indoor air pollution.

Awards Won:

Fourth Award of $500