The Application of Mycoremediation Upon Cigarette Filter Waste

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Cigarettes are the most prominent form of plastic litter with 5.4 trillion discarded annually. Traditional disposal practices are unable to prevent leaching of harmful chemicals found in these plastics. Many scientists are investigating sustainable techniques to degrade plastics. A potential solution is mycoremediation, a bioremediation process in which fungi are utilized to remove toxic compounds. In this experiment, the Application of Mycoremediation Upon Cigarette Filter Waste, the researcher wanted to evaluate oyster mushroom's efficiency with treating cigarette waste pollution and leaching. She hypothesized that if cigarette filters were introduced to mycoremediation, then they would exhibit degradation and significantly decreased leaching. The purpose was to find an alternative for traditional plastic disposal. The controls were the cigarette filter samples prior to treatment. The independent variables were cigarette filters, spring water, and mushroom grow material. The dependent variables were the water quality and degradation of each filter. She soaked three filters per two concentrations of cigarette leachates for a month. Each were tested using a Total Dissolved Solids meter and water quality test strip. She covered the filters in mushroom grow material and formed them into balls using plastic wrap. Each sample was tested after a day. After 2 weeks, the water quality from the extracted filters and their degradation was examined. After 3 trials, the results showed that mycoremediation completely diminished leaching after 24 hours, increased water quality by 24hours, and began degradation within 2 weeks. She accepted her hypothesis. Overall, the process of mycoremediation had proven to be an effective method plastic waste disposal.

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NC State College of Engineering: Award to attend NC State Engineering Summer Camp