

## **A simple review on potential prevention of landfill infiltration using nanofiber as protective barrier**

### **ABSTRACT**

Sustainable waste management and disposal is a global challenge. Over 90% of all municipal solid waste (MSW) disposal is done using landfills. The landfill generates leachate, which pollutes the surrounding water environment. Water contaminated by landfill leachate has been identified all over the world. Compacted clay, alone or in combination with artificial materials, serves as a barrier to precipitation from entering the landfill and eventually groundwater. Compacted clay liners may fail to work because of cracking, especially during seasonal changes and differences in temperature. Geomembrane degradation is inevitable. Improper installation, chemical attack, and age are the primary threats to geomembranes. Similar issues may be encountered with geosynthetics, especially when exposed to the atmosphere. Recent new studies showed that fiber mix increases the functionality of clay liners, reducing the likelihood of cracks. In this review paper, practice and issues associated with the current landfill liner will be reviewed. Also, the potential solution will be proposed using nanofiber as a protective layer barrier added to the current landfill design. Nanofibers like polypropylene nanofiber (PP) is a potential protective liner due to their hydrophobic nature and chemically inert material, which does not absorb or react with the soil moisture or leachate.