

Diesel in Antarctica and a bibliometric study on its indigenous microorganisms as remediation agent

ABSTRACT

Diesel acts as a main energy source to complement human activities in Antarctica. However, the increased expedition in Antarctica has threatened the environment as well as its living organisms. While more efforts on the use of renewable energy are being done, most activities in Antarctica still depend heavily on the use of diesel. Diesel contaminants in their natural state are known to be persistent, complex and toxic. The low temperature in Antarctica worsens these issues, making pollutants more significantly toxic to their environment and indigenous organisms. A bibliometric analysis had demonstrated a gradual increase in the number of studies on the microbial hydrocarbon remediation in Antarctica over the year. It was also found that these studies were dominated by those that used bacteria as remediating agents, whereas very little focus was given on fungi and microalgae. This review presents a summary of the collective and past understanding to the current findings of Antarctic microbial enzymatic degradation of hydrocarbons as well as its genotypic adaptation to the extreme low temperature.

Keyword: Antarctica; Diesel; Bioremediation; Microbial degradation; Psychrophiles