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**The Effect of Limonene on the Biodegradation of Phenanthrene and Polystyrene by *Pseudomonas putida* and *aeruginosa***

Phenanthrene and other polycyclic aromatic hydrocarbons (PAH) are naturally occurring, but increasing in environmental concentration, primarily due to the incomplete combustion of fossil fuels. These compounds consist of two or more fused benzene rings and are very stable, persisting for long periods of time in sediments. PAH cause carcinogenic and mutagenic effects in humans and the EPA has listed 16 PAHs as primary pollutants that need immediate remediation (Perelo, 2010). Polystyrene is an aromatic polymer and one of the most widely used plastics with several billion kilograms produced annually. Foamed polystyrene, known by the trade name “Styrofoam” is notable among plastic polymers for its resistance to biological and environmental degradation. Discarded consumer plastics will likely persist in natural systems for many thousands of years, unless gathered and treated with various degradation processes. This study examined the biodegradation of phenanthrene and biodegradation of polystyrene foam by *Pseudomonas putida* and *aeruginosa* in aqueous-limonene solvent system. Limonene is an organic terpene and the primary component of essential citrus oils. Cell growth was measured using optical density spectrophotometry. Biotransformation of phenanthrene was determined by Fourier transform infrared spectroscopy (FTIR) and UV spectroscopy.

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