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MICROBIAL DEHALOGENATION AND OXIDATION OF HALOGENATED N-ALKANES

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Microbial degradation of 40 halogenated n-alkanes was carried out using 5 different species of known hydrocarbon utilizing bacteria (*Pseudomonas aeruginosa, Pseudomonas mendocina, Bacillus subtilis, Bacillus circulans, Aeromonas* sp.). This study was aimed at obtaining information on the effects of halide group, chain length, and number of substitution, on the degradation of hydrocarbon. The selected hydrocarbon compounds had 3 - 18 carbon atoms in their chain and consisted of mono or disubstituted compounds with Br^-, Cl^- and I^- groups. Microbial degradation was assessed using the following criteria : (a) Growth tests; (b) Halide release; (c) Oxidation tests.

The comparative studies carried out using short chain and long chain hydrocarbons showed that the selected bacterial species could readily utilize long chain hydrocarbons than short chain ones. Monosubstituted compounds were utilized easily by the selected bacteria, than disubstituted compounds. As revealed by values of halide release and oxygen uptake, there was no effect of the nature of halide group on degradation.

Resting cell suspensions of the selected bacteria incubated with the halogenated compounds (which did not serve as growth substrates) showed an appreciable oxygen uptake indicating that co-metabolic degradation processes may occur when halogenated hydrocarbons are present in the natural soil.