

Phosphonates and Their Degradation by Microorganisms

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Abstract—Phosphonates are a class of organophosphorus compounds characterized by a chemically stable carbon-to-phosphorus (C–P) bond. Wide occurrence of phosphonates among xenobiotics polluting the environment has aroused interest in pathways and mechanisms of their biodegradation. Only procaryotic microorganisms and the lower eucaryotes are capable of phosphonate biodegradation via several pathways. Destruction of the non-activated C–P bond by the C–P lyase pathway is of fundamental importance, and understanding of the process is a basic problem of biochemistry and physiology of microorganisms. This review offers analysis of available data on phosphonate-degrading microorganisms, degradation pathways, and genetic and physiological regulation of this process.