

Review of Research on the Processes Controlling the Dissolution of Dense Non-Aqueous Phase Liquids in Fractured Porous Media

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Abstract. This presentation presents a review of the processes that control the dissolution of Dense Non-Aqueous Phase Liquid (DNAPL) in fractured porous media. The behavior of this type of contaminant in fractured systems is poorly understood, yet it is very important for understanding contaminant transport processes and for design of *in situ* remedial systems. Dissolution occurs as contaminants are transformed from the DNAPL phase to the aqueous phase within the fracture system. Dissolution is controlled by many chemical and physical properties of the system in question. The purpose of this analysis is to summarize peer-reviewed research that has been completed to investigate the dissolution behavior of DNAPL in fractured systems, during both natural groundwater flow and active remediation. Research conducted on fracture dissolution was performed in various artificial fractured media, including: a beaded glass matrix, parallel glass plates, etched glass plates, a Plexiglas block matrix, and a limestone brick matrix. The ideas, data, and results compiled in this literature review will be used to discuss the current state of the art of DNAPL dissolution in fractured rock and to identify future research needs.