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# Biogeochemical transformation of arsenic in simulated wetland systems

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Wetlands are known to be susceptible to arsenic (As) contamination. Microorganisms can act as a key player in biogeochemical transformation of As such as oxidation, reduction, methylation, and demethylation. Here, we conducted microcosm experiments to observe the microbial mediated arsenic behavior in the simulated wetland systems contaminated with dimethylarsinic acid, DMAs(V), or arsenate, As(V) in both aerobic and anaerobic conditions. In DMAs(V)-contaminated systems, although the rate of demethylation varied, demethylation of DMAs(V) was observed in both aerobic and anaerobic condition. In aerobic condition, demethylation of DMAs(V) occurred in both with and without yeast extract and in anaerobic conditions demethylation of DMAs(V) was only observed in a non-substrate amended microcosm. On the other hand, in the As(V)-contaminated systems, reduction of As(V) to As(III) was observed in anaerobic conditions in case of substrate amended conditions. This implies that the presence of organic carbon in wetlands may play an important role in As(V) reduction. Moreover, both demethylation of DMAs(V) and reduction of As(V) were not observed in autoclaved microcosm systems, indicating that biogeochemical transformation of As was related to the activity of microorganisms.