

Copyright © 1986 Published by Elsevier Ltd.

◆ [Permissions & Reprints](#)

Microbial transformations of arsenic in lake ohakuri, New Zealand

**Michael C. Freeman<sup>1,\*</sup>, John Aggett<sup>2</sup> and Glennys O'Brien<sup>2</sup>**

<sup>1</sup>Biological Sciences Department, University of Waikato, Private Bag, Hamilton New Zealand

<sup>2</sup>Department of Chemistry, University of Auckland, Private Bag, Auckland, New Zealand

Available online 15 April 2003.

### **Abstract**

The concentration and chemical speciation of arsenic in the waters and sediments of Lake Ohakuri, New Zealand were examined. Mixed microbial populations from the sediments were tested *in vitro* for their ability to mediate redox transformations of inorganic arsenic.

Under aerobic conditions the mixed microbial cultures were found to be able to reduce arsenic(V) to arsenic(III) and also to oxidize arsenic(III) to arsenic(V). Under anaerobic conditions only reduction of arsenic(V) to arsenic(III) was observed. Four species of sediment fungi were isolated, grown aerobically and all were found capable of reducing arsenic(V) to arsenic(III).

The role of microbial heterotrophs in determining the observed mobility and speciation of arsenic in Lake Ohakuri is discussed.

**Keywords:** arsenic; arsenic(III); arsenic(V); sediments; bacteria; fungi; biogeochemistry; Lake Ohakuri; Waikato River

\* Present address: North Canterbury Catchment Board and Regional Water Board, P.O. Box 788, Christchurch, New Zealand.

---