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Received 14 July 1997.

Available online 9 April 2002.

**Abstract**

Many studies have demonstrated mercury contamination in the Amazonian ecosystem, particularly in fish, a dietary mainstay of populations in this region. The present study focused on potential health effects of this low-level methylmercury exposure. The study was carried out in a village on the Tapajós River, a tributary of the Amazon, on 91 adults inhabitants (15–81 years), whose hair mercury levels were inferior to 50 μ/g. Performance on a neurofunctional test battery and clinical manifestations of nervous system dysfunction were examined in relation to hair mercury concentrations. Near visual contrast sensitivity and manual dexterity, adjusted for age, decreased significantly with hair mercury levels (*P*<0.05), while there was a tendency for muscular fatigue to increase and muscular strength to decrease in women. For the most part, clinical examinations were normal, however, hair mercury levels were signficantly higher (*P*<0.05) for persons who presented disorganized movements on an alternating movement task and for persons with restricted visual fields. These results suggest dose-dependent nervous system alterations at hair mercury levels below 50 μg/g, previously considered a threshold for clinical effects. The profile of dysfunction in this adult population is consistent with the current knowledge on methylmercury poisoning. The long-term implications of these findings are unknown and need to be addressed.

**Author Keywords:** methylmercury; low levels; human; hair; neurotoxicity.

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