Manganese Health Research Program: Recent published literature

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Introduction

This report presents bibliographic details of recent literature addressing a number of research areas that are considered of direct relevance to the health effects of Manganese (Mn), and include:

**Section 1 - EXPOSURE MEASUREMENT AND MODELLING:** Papers relating to the measurements or modelling of environmental and occupational Mn exposure, the development of biomarkers of exposure or effect.

**Section 2 - HEALTH EFFECTS:** Papers on the influence of Mn on health, disease and dysfunction.

**Section 3 - MECHANISM:** Papers on the physiological, biochemical and cellular mechanisms underlying the toxic effects of Mn.

**Section 4 - HUMAN SUSCEPTIBILITY:** Papers relating to assessment of the influence of genetic and epigenetic factors on human susceptibility to the effects of Mn.

**Section 5 - TREATMENT AND IMAGING:** Papers on the development and implementation of new medical approaches to the treatment of excessive Mn exposure.

**Section 6 - MISCELLANEOUS:** Other papers considered of interest or potential relevance to the study of the health effects of Mn.

The papers presented herein were identified using a series of structured searches of the following on-line databases: Medline, Toxline, Biological Sciences and Proquest Health. The paper abstracts were reviewed and categorised by an experience Scientist to confirm their relevance before inclusion in this report.

The papers presented were identified as being first published between January 2002 and May 2006. Future reports will present the literature published during subsequent 3-monthly (quarterly) intervals.
1. EXPOSURE MEASUREMENT AND MODELLING


Institute of Environment and Health Report to MHRP, June 2006


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Merkur’eva, L.I. & Riabova, O.I. (2003) [Diagnostic and prognostic value of serum manganese levels for chronic manganese intoxication in electric welders]. *Meditina Truda i Promyshleneaia Ekologiiia, (8), 41-43*


Shamberger, R.J. (2002) Validity of hair mineral testing. Biological Trace Element Research, 87(1-3), 1-28

Shamberger, R.J. (2003) Calcium, magnesium, and other elements in the red blood cells and hair of normals and patients with premenstrual syndrome. Biological Trace Element Research, 94(2), 123-129


Vigeh, M., Yokoyama, K. & Ramezanzadeh, F., et al. (2006) Lead and other trace metals in preeclampsia: a case-control study in Tehran, Iran. Environmental Research, 100(2), 268-75


2. HEALTH EFFECTS


Klos, K.J., Ahlskog, J.E., Josephs, K.A., Fealey, R.D., Cowl, C.T. & Kumar, N. (2005) Neurologic spectrum of chronic liver failure and basal ganglia T1 hyperintensity on magnetic resonance imaging: probable manganese neurotoxicity. *Archives of Neurology*, 62(9), 1385-1390


Vigeh, M., Yokoyama, K. & Ramezanzadeh, F., et al. (2006) Lead and other trace metals in preeclampsia: a case-control study in Tehran, Iran. Environmental Research, 100(2), 268-75


3. MECHANISM


Lu, W., Roos, P.H. & Mersch-Sundermann, V. (2005) Vinclozolin, a widely used fungizide, enhanced BaP-induced micronucleus formation in human derived hepatoma cells by increasing CYP1A1 expression. *Toxicology Letters*, 159(1), 83-88


neuroblastoma cells expressing the human dopamine transporter. *Neuroscience Letters*, 354(1), 34-37


Takeda, A. (2004) [Function and toxicity of trace metals in the central nervous system]. *Clinical Calcium*, 14(8), 45-49


4. HUMAN SUSCEPTIBILITY


5. TREATMENT AND IMAGING


Kim, Y. (2004) High signal intensities on T1-weighted MRI as a biomarker of exposure to manganese. Industrial Health, 42(2), 111-115

Klos, K.J., Ahlskog, J.E., Josephs, K.A., Fealey, R.D., Cowl, C.T. & Kumar, N. (2005) Neurologic spectrum of chronic liver failure and basal ganglia T1 hyperintensity on magnetic resonance imaging: probable manganese neurotoxicity. Archives of Neurology, 62(9), 1385-1390


Merkur'eva, L.I. & Riabova, O.I. (2003) [Diagnostic and prognostic value of serum manganese levels for chronic manganese intoxication in electric welders]. Meditsina Truda i Promyshlennaia Ekologiya, (8), 41-43


Institute of Environment and Health Report to MHRP, June 2006
6. MISCELLANEOUS


