



MHRP

The Manganese Health Research Program



The Manganese Health Research Program

OVERVIEW

- A team comprised of government, academia, world-renowned scientists and researchers and international industry spearhead the program.
- Collaborative effort which seeks to clarify the level at which exposure to manganese may play a role in adverse health effects.
- Continued objective is to protect the health of those exposed to manganese through their work or in the environment by developing an improved understanding of the relationship between exposure and health effects.



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US Department of Defense:

Manganese Interests

- Several primary industrial activities of the DoD involve exposure to manganese, including welding, steel fabrication, the use of batteries, and the use of manganese-based fuel additives.
- All branches of the service are heavily involved in the fabrication of steel and extensive welding operations.
- Military services have over 6,000 welders and metal workers.



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HISTORY

- Washington, DC based firm, Kinghorn Hilbert & Associates lead efforts to obtain funding through Congressional adds to the Department of Defense (DoD) budget.
- MHRP now in fourth year of operation under the direction of the United States Army, through the *Medical Research and Materiel Command (USAMRMC)*

Total funding to date: \$5.05 million

\$1.4 million -- FY 2006

\$2.25 million -- FY 2005

\$1.4 million -- FY 2004



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Congressional Advocacy

- Kinghorn Hilbert & Associates organize annual lobbying efforts including industry visits to key Members of Congress.
- Mn users/producers request funding and bring awareness to the program.
- Funding is requested in the Defense Appropriations Bill – Research Development Testing & Evaluation titles (RDT&E)



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Congressional Advocacy

- **Key Congressional Supporters:**
 - *Rep. Gene Green (D-TX)*
 - *Senator Kit Bond (R-MO)*
 - *Senator Patrick Leahy (D-VT)*
 - *Rep. Tanner (D-TN)*
 - *former Rep. Ted Strickland (D-OH)*



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Program Focus

- At the onset of the program in FY04, the MHRP Steering Committee devised a strategy to focus the proposal on a number of core projects.
- In December 2004, the MHRP Steering Committee sent a Request for Proposals (RFP) to a wide distribution list.
- 28 proposals were received totaling nearly \$10 million in project costs.



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Request for Proposals

- Funding was awarded to proposals focused towards the advancement of novel scientific knowledge that will characterize airborne and dietary manganese exposures, its deposition and fate, and its impact on central nervous system function.
- The following are updates from the 15 projects selected as the most merit worthy and applicable to the MHRP research core.



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Project Updates

RESEARCH CORE 1

- **Researcher:** Robert Aitken
- **Location:** Institute of Occupational Medicine, Research Park North, Edinburgh United Kingdom
- **Focus:** Development of Guidance and Tools to Facilitate the Use of Routine Exposure Data in Future Epidemiology Studies of Manganese Exposed Workers
- **Started** in 2004 **Awarded** \$230,140 **Duration:** 1 year
- **Status:** Requires data from other studies to proceed. As such, most of the work that will take place in this project will be conducted in the last year. Data will be released from the human studies sometime between summer of 2007 to summer of 2009.



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Project Updates

- **Researcher:** Wei Zheng
- **Location:** Purdue University, West Lafayette, Indiana
- **Project Focus:** Biomarkers of Early Onset of Manganese Neurotoxicities Among Occupationally Exposed Chinese Workers
- **Started:** 2004
- **Awarded:** \$521,865
- **Duration:** 3 years
- **Status:** Collected almost half of the samples and they've done measurements on Mn exposure in three groups. Earlier indications show that saliva may be a reliable biomarker of manganese exposure. Timeline – predicted February 2009.



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Project Updates

- **Researcher:** Craig Jackson
- **Location:** Institute of Occupational Health, Birmingham, United Kingdom
- **Focus:** Exposure to Welding Fume and Parkinson's Disease: Proposal for a Feasibility Study
- **Started:** 2004
- **Awarded:** \$69,858
- **Duration:** 1 year
- **Status:** ongoing



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Project Updates

- **Researcher:** David Dorman
- **Location:** CIIT Centers for Health Research, Research Triangle Park, North Carolina
- **Focus:** Cellular Mechanisms Involved in the Uptake and Delivery of Inhaled Manganese Via the Olfactory Nerve
- **Started:** 2004
- **Awarded:** \$150,028
- **Duration:** 1 year
- **Status:** The methodology has been developed. The final data has not been obtained and final results are expected in the next six to eight months.



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Project Updates

- **Researcher:** Michael Aschner
- **Location:** Vanderbilt University Medical Center, Nashville, Tennessee
- **Focus:** Magnetic Resonance Imaging (MRI) of Manganese Accumulation in the Rat Brain Associated with Iron-Deficiency and Supplementation
- **Started:** 2004
- **Awarded:** \$434,248
- **Duration:** 3 years
- **Status:** Work is nearly complete. All items included in statement of work have been completed. One methods paper has been written and submitted for publication. Statistics have been completed and two more studies will be completed this summer. By February of 2009, all funds will be utilized.



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Project Updates

- **Researcher:** Len Levy
- **Location:** MRC Institute for Environmental and Health, University of Leicester, Leicester United Kingdom
- **Focus:** Provision of Research Activity Awareness Services
- **Started:** 2004
- **Awarded:** \$186,822
- **Project Duration:** 3 years
- **Status:** Ongoing



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Project Updates

- **Researcher:** Anne Tremblay
- **Location:** International Manganese Institute, Paris France
- **Focus:** Coordinator of the Mn Health Research Program Steering Committee and Administrator of the Research Activity Awareness Services
- **Started:** 2004
- **Awarded:** \$252,108
- **Duration:** 3 years
- **Status:** Ongoing



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Project Updates

- **Researcher:** David Dorman
- **Location:** CIIT Centers for Health Research, Research Triangle Park, North Carolina
- **Focus:** Identification of Novel Biomarkers of Exposure
- **Started:** 2005
- **Awarded:** \$82,924
- **Duration:** 1 year
- **Status:** Ongoing



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Project Updates

- **Researcher:** Dag Ellingsen
- **Location:** National Institute for Occupational Health, Norway
- **Focus:** A Study of the Nervous System in Welders
- **Started:** 2006
- **Awarded:** \$187,978
- **Duration:** 4 years
- **Status:** Recently started. Received approval from Russian government and DoD IRB in January 2007 and money received. Data collection will begin in April.



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Project Updates

- **Researcher:** Thomas Gunter
- **Location:** University of Rochester, Rochester, New York
- **Focus:** Mechanisms of Manganese-Induced Damage at the Cell and Mitochondrial Level
- **Started:** 2005
- **Awarded:** \$343,713
- **Duration:** 3 years
- **Status:** Ongoing



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Project Updates

- **Researcher:** Len Levy
- **Location:** Cranfield University, United Kingdom
- **Focus:** Assessment of Genotoxicity and Carcinogenicity of Inorganic forms of Manganese
- **Started:** 2005
- **Awarded:** \$35,560
- **Duration:** 4 months
- **Status:** Ongoing



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Project Updates

- **Researcher:** Richard Nass
- **Location:** Vanderbilt University Medical Center, Nashville, Tennessee
- **Focus:** Role of Toxins and Genetics in Manganese-Induced DA Degeneration
- **Started:** 2005
- **Awarded:** \$293,896
- **Duration:** 2 years
- **Status:** Ongoing



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Project Updates

- **Researcher:** Jane Wu
- **Location:** Vanderbilt University Medical Center, Nashville, Tennessee
- **Focus:** Molecular Mechanisms Underlying Manganese Neurotoxicity
- **Started:** 2005
- **Awarded:** \$183,000
- **Duration:** 2 years
- **Status:** One manuscript has been published. The study addresses the in vitro effects of Mn on various neuronal proteins. A paper will be submitted for publication this summer.



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Congressional Update

- Kinghorn Hilbert & Associates are providing pro-bono lobbying efforts on behalf of IMnI and Vanderbilt University.
- Approached Congressman Gene Green (D-TX) to work to fund MHRP in FY08.
- Congressman Green has been supportive in the past and his position in the majority may provide a needed boost for FY08 funding. This is a program with a justifiable history.



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Outlook

Distribution of RFPs

- The MHRP Steering Committee expects to send RFPs by June 15, marked due by Sept. 1.