



# IMnI Lobbying Initiative in the US

Results

&

**Manganese Health Research Program**



# MHRP History

- **Manganese Health Research Program (MHRP)**
  - Pro-active decision of IMnI Board in June 2001
  - Need for research on effects of manganese on human health
  - Cost beyond IMnI's current financial possibilities
  - Opportunity to subsidize research : US Congress lobbying by a Washington-based firm
  - Aim : \$ 6 million program over three years
- **October 2003 : Congress voted \$ 1.4 million for the MHRP in 2004 Federal Budget**



# MHRP Organization

- MHRP Steering Committee
  - Chaired by IMnI Secretary General Anne Tremblay
  - Composed of Industry Representatives and of Scientists
  - Wrote the call for studies
  - Drew up a pre-program from a dozen of proposals
  - Presented it in Dec. 2003 to DOD representative (Lt-Colonel Brian Luckey)



# IMnI's Involvement

- MHRP Steering Committee
  - Chair IMnI
  - Members: Eramet, BHP Billiton, Ethyl Corp.
- IMnI OHES Committee
  - Follows MHRP
- IMnI Board
  - Chair of Steering Committee reports to IMnI Board



# MHRP Program

- Comply with industry and army objectives
- First phase : four-pronged research program
  - Manganese exposure and human health
  - Basic research to understand fundamental issues
  - Creation of a research activity information service
  - OECD tests : mutagenicity assessment
- Second phase : continuation of lobbying effort
  - Paid on a voluntary basis by IMnI members
  - Objective : \$ 4.2 million funding



# Research : Mn exposure (1)

- Development of Guidance and Tools to Facilitate the Use of Routine Exposure Data in Future Epidemiology Studies of Exposed Workers  
Robert Aitken, IOM, Edinburgh, Scotland
  - Quality exposure assessment data : key requirement for epidemiological studies
  - Development of a set of methods, guidelines and tools to collect valid manganese exposure information
  - Will provide a secure base for future multi-center epidemiological studies of Mn exposed workers



## Research : Mn exposure (2)

- Biomarkers of Early Onset of Manganese Neurotoxicities among Occupationally Exposed Chinese Workers  
Wei Zheng, School of Health Sciences, Purdue University, West Lafayette, IN
  - No available biomarker for early diagnosis of manganese excessive exposure and impossible precise human health risk assessment
  - Study of relation between manganese exposure and concentrations in biological matrices including high manganese exposed workers
  - Dose-response relationship establishment for NOAEL (No Observed Adverse Effect Level) determination



# Basic Research (1)

- Exposure to Welding Fume and Parkinson's Disease:  
Proposal for a Feasibility Study  
Anne Spurgeon, Institute of Occupational Health,  
University of Birmingham
  - Steel welders constitute an occupational group exposed to manganese
  - Some scientists claim that exposure to Mn fumes might enhance susceptibility to Parkinson's Disease in welders
  - Precise investigations require the resolution of numerous methodological questions
  - This study will develop the design for the realization of a practical and scientifically defensible epidemiological study



## Basic Research (2)

- Cellular Mechanisms Involved in the Uptake and Delivery of Inhaled Manganese Via the Olfactory Nerve  
David Dorman, CIIT, Research Triangle Park, NC
  - Olfactory delivery of manganese into the brain was observed in animal species but no data on absorption mechanism
  - Study of the delivery using a molecular biology approach on the role of the Divalent Metal Transporter (DMT-1) on rats



# Basic Research (3)

- Magnetic Resonance Imaging of Manganese Accumulation in the Rat Brain Associated with Iron-Deficiency and Supplementation  
Michael Aschner, Vanderbilt University Medical Center, Tn.
  - The competition between iron and manganese is known and has implications for manganese exposed iron-deficient population
  - Studies objective is to establish iron supplementation as a treatment for workers exposed to manganese



# Basic Research (4)

- Genetic Profile Effect on Mn Neurotoxicity

Dr Dada, Metalloys, South Africa

- Neurotoxicity of manganese presents variations that might be related to genetic pre-disposition
- Identify genetic profile of highly sensitive people
- Develop
  - tests to determine genetic abnormality or pre-disposition
  - psychometric tests to determine changes in brain function before the onset of clinical signs and symptoms



# Information Service

- Provision of Research Activity Awareness Services  
Leonard Levy, Institute for Environment and Health,  
University of Leicester, England
  - Establish a database of research projects linked with exposure to inorganic manganese and human health
  - Provide, on a quaterly basis, an awareness service identifying key scientific papers published
  - Provide short overview reports at yearly intervals



# Mutagenicity OECD Tests

- Mutagenicity OECD Tests on Manganese Metal, Manganese Monoxide and Manganese Sulphate  
M. Kirsch-Volders, ULB, Belgium & Covance Laboratories
  - Partial and contradictory results from existing studies
  - Need of reliable data
  - Internationally (US and Europe) recommended battery of tests (OECD)



# Calendar & Way Forward 2005 - 2007

- All studies will produce tangible results by the end of Year 1 (mid 2005).
- Those studies programmed over 3 years will be completed subject to 2<sup>nd</sup> phase funding.
- MHRP will not assume fiscal responsibility for over-extended budgets
- Studies to abide by Animal Care and Use Protocols