



SCIENCE AND RESEARCH WORKING GROUP

Progress Report of the Science & Research Working Group

Presentation

WP/NFMSD/Nov2001/SRWG2

Porto, 12 – 13 November 2001





Non-Ferrous Metals Consultative Forum on Sustainable Development

Progress Report
of the Science & Research Working Group

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WP/NFMSD/Nov2001/SRWG/2



NON-FERROUS METALS AND THEIR CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

A Report to the Forum on the Science Group's Work Program

David Chambers, CSPP
Science Group Co-chair



The Science Group's Program

- A stock-take of metals science SD initiatives;
- Principles of risk assessment for non-ferrous metals;
- Principles for life cycle assessment of non-ferrous metals;
- Launching metals science network.



The Stock-take Initiative

- Identifies existing science-related activities underway in;
 - intergovernmental organisations
 - national research institutes
 - academia
- Provides an idea of common themes of research.



Principles for Risk Assessment

- Looks at the specificity of metals in risk assessments;
- Considers risk assessment processes currently underway (with case studies);
- Highlights the need for objective approaches to risk assessment of metals based on sound science.



Principles for Life Cycle Analysis

- Considers how to enhance the development of trustworthy life cycle studies for metals;
- Outlines the difficulties that metal LCAs face;
- Identifies a number of key issues that must be addressed for the process to move forward.



The Science Web Network



• Recognises the need for industry and government to understand each others research priorities and areas of concern;

• Gives researchers' contact details, area of specialisation and directions to recently published work.



The Science Group on the NFMSD Site



For more information, refer to **Science Working Group page** on the Web site at:

www.nfmisd.org



NON-FERROUS METALS AND THEIR CONTRIBUTION TO SUSTAINABLE DEVELOPMENT



A Stock-take of Metals-Science SD related activities

Ian Burrell
International Lead & Zinc Study Group




The Stock-take's Target



• Discover the extent of existing work underway on the science applied to the sustainable development of non ferrous metals;

• Consider private and public sectors;

• Identify synergies.




Sectors Covered



• Intergovernmental bodies including
– the UN system
– OECD
– EU

• Academic research institutes;

• Industry funded research institutes.



Main Areas of Research Underway



• Metallic raw materials flows;

• Ecological risk assessment;

• Principles of toxicology and risk assessment;

• Bio-availability of essential metals;

• Resource management;

• Cleaner production technology.



An Example of Output



Research Institutes	Research Topic	Web Site	Email Contact
CANMET Mining and Minerals Sciences Laboratories	Expertise includes advanced mining systems; mine-related health and safety; emissions and effluent management, including mine closure; and metals in the environment.	www.nrcan.gc.ca/mms/canmet/ mtb@mmsl.htm	liaftech@nrcan.gc.ca

Where Next?



- Determine how best this resource can be used;
- Make user-friendly and allow for growth
- Integrate further into appropriate existing databases
 - The UN System
 - Databases set up by individual sectors



NFMSD Science Group



A Report to the Forum on the Science Sub-Group's Work on Metals in Life Cycle Studies

Christian Bauer
Porto Nov. 2001



Starting Point



- life cycle studies are important tools to detect challenges for sustainable development;
- life cycle assessment (LCA) in general is sufficiently treated in current ISO standards;

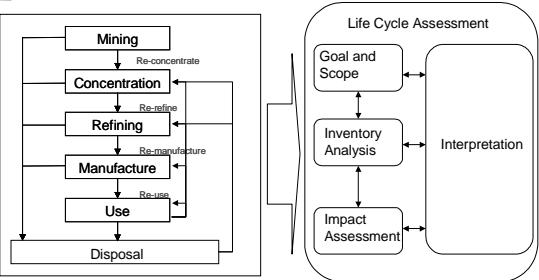
but:

- metals are still treated differently in current LCAs;
- confusion exists about "cradle to gate", "cradle to grave" and "cradle to cradle" approaches;
- each metal has unique properties complicating comparability;

therefore:

- harmonisation in carrying out LCAs and interpreting the results is desirable.

Metals & Life Cycle Assessment

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graph TD
    Mining --> Concentration
    Concentration --> Refining
    Refining --> Manufacture
    Manufacture --> Use
    Use --> Disposal
    Re-concentrate[Re-concentrate] --> Concentration
    Re-refine[Re-refine] --> Refining
    Re-manufacture[Re-manufacture] --> Manufacture
    Re-use[Re-use] --> Use
  
```

Life Cycle Assessment

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graph TD
    GoalScope[Goal and Scope] <--> InventoryAnalysis[Inventory Analysis]
    InventoryAnalysis <--> ImpactAssessment[Impact Assessment]
    ImpactAssessment <--> Interpretation[Interpretation]
  
```

Metals & Life Cycle Assessment II



Goal & Scope Definition:

- system boundaries ?
- upstream conditions ?
- downstream conditions ?

Inventory Analysis:

- recycling ?
- allocation of co- and by-products ?
- metal specific issues: large volume wastes, reclamation, infrastructure... ?



 **Metals & Life Cycle Assessment III**

Impact Assessment:

- resource depletion / land use ?
- exploration - reclamation ?
- acid mine drainage ?
- eco and human toxicity ?

Other Contentious Issues:

- north-south relevance ?
- garimpeiros ?
- abandoned sites ?
- legal frameworks ?



 **Metals & Life Cycle Assessment IV**

Credibility of Outcomes:

- data quality ?
- review panel ?

Stakeholders:

- role and importance ?
- participation ?



 **Conclusions**

- Harmonisation of LCAs across metals means tackling numerous issues;
- Harmonisation can only be reached on a mutual basis of policy and industry;
- Harmonisation must not restrain the flexibility of the current LCA-framework;
- Harmonisation should exclude premature decisions or conclusions;



 **Recommendations**

- compile "lessons learned" from previous and ongoing initiatives (MMSD; CSIRO; BGR ...);
- derive "do's and don'ts" by the evaluation of current "best practice" documents (SETAC; CML ...);
- participate in ongoing initiatives (UNEP-SETAC; workshops....);
- identify linkages to supplementary tools towards SD (RA, EIA,)



 **Science Group Report**

Risk Assessment

Porto, November 12-13, 2001

 **Risk Assessment Sub-Group**

Report

- Starting points
- Goals
- Key issues
- Importance of bioavailability
- Summary of Guiding Principles
- Recommendations

