IMA Working Group on Environmental Mineralogy and Geochemistry - report of activities (July 2006 -August 2010)

Officers:
Chairman: David J. Vaughan
Vice- Chairman: Tom Sato
Secretary: John Jambor (until 2008)
Anne J. B. Thompson

History:

The Working Group was first proposed by Ian Parsons and the IMA Council in 2004. Activies of the embryonic Group included organising a session on "Mineralogy and Geochemistry of Acid Mine Drainage and Metalliferous Minewastes" at Goldschmidt 2005 (Idaho); publication of a collection of papers as a special part- issue of *Applied Geochemistry* (Vol 21, pp1249-1334, 2006), and organisation of the session on "Environmental and medical Mineralogy" at IMA2006 (Kobe).

Mission:

The scope, definition and remit of WGEMG was discussed at Kobe and subsequently, after further discussions, the following was adopted:

Environmental mineralogy and geochemistry is an interdisciplinary field dealing with systems at, or near, the surface of the Earth where the geosphere comes into contact with the hydrosphere, atmosphere and biosphere. This is the 'environment' on which plants and animals (including humans) depend for survival and which can be disrupted by human activity, particularly that associated with exploitation and utilization of Earth's resources. It deals with those systems containing minerals that constitute key environments (modern sediments, soils, atmospheric aerosols, parts of certain micro and macro organisms including the human body). Both pure systems and those contaminated through human activities are considered, and with emphasis on a fundamental (predictive) understanding of such systems at scales which can range from molecular to global. The full armory of modern analytical, imaging, diffraction, spectroscopic and computer modeling techniques are employed. Examples of specific topics within the remit of environmental mineralogy and geochemistry include: release, transport and dispersal of toxic wastes from mining and industry (including the nuclear industry) and the safe containment of such wastes; mineral based atmospheric aerosols; minerals in the human body; geochemistry and human health; preservation of minerals and rocks in culturally important buildings and artefacts.

This mission statement was published in the magazine "Elements" (vol. 3, p145) along with the following statement:

The recently established *IMA Working Group on Environmental Mineralogy and Geochemistry* (WGEMG) is seeking to promote this new field through organization of relevant sessions at international conferences, short courses, specialist publications, networking and an internet

presence. The officers of the WGEMG and other scientists involved believe that mineralogy and geochemistry have a central role to play in the larger field of environmental science, and in tackling the many environmental problems faced by humanity in the 21st century.

And with contact addresses and numbers and information on the IMA website where further details of WGEMG are published.

Conferences and Meetings:

Conference Sessions organized or contributed to –

Goldschmidt 2008 (Vancouver) 2 day session on
"Geochemistry and Mineralogy of Metalliferous Minewastes"
(organized in honour of John Jambor)

Also presence at Goldschmidt 2007 Koln, "Frontiers in Mineral Sciences", Cambridge 2007 ("Minerals in Contaminated Environments"session)
IGC 2008, Oslo (invited lectures from WGEMG Chairman and others)

Sessions organized for IMA2010 –
EM60G: Environmental mineralogy and geochemistry, biomineralogy, health (general)
EM61: Mineralogy of minewastes and contaminated soil
EM62: Contaminated land and sustainable remediation
EM63: Mineralogy and geochemistry of the nuclear fuel cycle

Publications:

162 page special issue of *Applied Geochemistry* (Vol. 24, p2211-2373)
"Geochemistry and Mineralogy of Metalliferous Minewastes: an issue in honour of John Jambor" A. Thompson and D. J. Vaughan (Guest Editors)

Also promoters of 'Elements' magazine issues on 'Toxic Metals in the Environment: the Role of Surfaces" and on "Atmospheric Particles" and future issue on "Minewastes"

Future Activities:

A wide range of future activities are under discussion and these include:
* a greater internet presence including internet exchanges to link the potential WGEMG community more effectively
* developing a 'list' of classic books and reference articles ('primers') for this new area
* publications including short articles (for 'Elements' and other such outlets as well as more conventional conference proceedings
*Sessions at planned conferences (Goldschmidt; national meetings etc); possible short courses