

20 May 2015, 2pm (Ingram
Lecture Theatre)

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Mine Wastes: Metals,
Mineralogy, Management

Wastes produced from the mining and extraction of metal, industrial mineral and energy resources constitute one of the largest waste streams on Earth. The volumes of these 'mine wastes' are predicted to increase at least two-fold over the next 100 years due to increasing demands for minerals and energy, and lower ore grades. Mine wastes can be gases, fluids (e.g. acid, circumneutral or basic mine drainage) and solids (flue ashes and dusts, slags, tailings, sludges and waste rock). Solid mine wastes can contain high concentrations of potentially toxic metallic and metalloid elements, and the weathering and dispersion of these wastes can release these elements to waters, soils and the atmosphere. This talk describes results from a range of field and laboratory studies to illustrate the processes and impacts of mine waste on the environment, and to show how an understanding of mine waste mineralogy can help with the development of remediation and management schemes.