

Geodynamics Seminar
Carriage House, Quissett Campus
Thursday, February 20, 2013
1:30 p.m.

Assessing the Criticality of Metals

Thomas E. Graedel
Center for Industrial Ecology
Yale University

Abstract

Potential resource scarcity is increasingly in the news – lithium, indium, lanthanum, and so forth. The stories typically involve prospects for a rapid increase in a resource-dependent product such as solar cells or electric vehicles and the suggestion of geological, political, or environmental supply limitations. More generally, some observers question whether the extensive palette of natural resources now available to scientists and product developers can be preserved. To explore these issues from the perspective of rigor and breadth, a “criticality methodology” has been developed and then applied to 62 elements of the periodic table. This presentation will present some preliminary results of this work, discussing what factors seem well known, what can be estimated, and what needs to be explored in order to provide a better informed and more comprehensive picture of resource availability over the long term.

Brief Bio

Thomas Graedel is Clifton R. Musser Professor of Industrial Ecology in the School of Forestry and Environmental Studies, Yale University. His research is centered on developing and enhancing industrial ecology, the organizing framework for the study of the interactions of the modern technological society with the environment. His textbook, *Industrial Ecology and Sustainable Engineering*, coauthored with B. R. Allenby, was the first book in the field and is now in its third edition. His current interests include studies of the flows of materials within the industrial ecosystem, and of evaluating the criticality of metals. He was elected to the U.S. National Academy of Engineering in 2002 for “outstanding contributions to the theory and practice of industrial ecology”, and recently chaired the National Research Council committee on Linkages of Sustainability in the Federal Government.