

The Cycles and Sustainability of Metals

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Should we worry about the sustainability of supplies of non-renewable resources? To study this question, flows of metals into and from human use (the anthropogenic metal cycles) have been quantified for a number of the common engineering metals. Results for metals singly and grouped into “metal spectra” demonstrate aspects of extraction, manufacturing, trade, use, recycling, and loss. More recently, a methodology for assessing the “criticality” of both the common and uncommon metals has been developed, involving their supply risk, the susceptibility of corporations, countries, and the planet to supply disruption, and environmental implications. Preliminary criticality results will be presented and discussed.