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Metals Trivia:

- Look at the periodic table of the elements and you will see that metals comprise about 2/3 of the known elements.
- The AC/DC album Back in Black is by far the best selling Heavy Metal album of all time, having sold more than 42 million copies worldwide.
- In Ancient Egyptians used Galena, the ore containing lead, as decorative eye paint.

Have a Metals problem?
Call Us 1-262-650-7171
www.MetalTek.com

RARE EARTH METALS

Rare earth elements (or “rare earth metals”, since they are all metals) are not really all that rare. Relative to gold, maybe, but some of the rare earth elements are as abundant in the earth’s crust as copper or nickel. The difference is that concentrations are dispersed in a way that it is not commercially practical to recover much of it. There are only a few places on earth where mining of these elements is economically feasible. Greater than 95% of the world’s production of about 130,000 metric tons of these rare earth materials now comes from China.

With glamorous names like Yttrium, Promethium, and Gadolinium, the rare earth metals are highly prized in industry because of the unique qualities that they bring to products that use them. Almost 1/3 of the rare earth metals are used as alloying agents by companies like MetalTek to deliver elevated properties in specialty alloys. Significant amounts are used in electronics because they can be excellent insulators and help in current management. They are an important component of catalysts used in



Fluid Catalytic Cracking (another important market for us).

Rechargeable batteries for electric cars use rare earth elements. Automotive catalytic converters, optics and glass manufacturing consume substantial quantities. The most notable driver impacting the market and market pricing for rare earth elements has been their use in use in electronics, including televisions, computers and cell phones.

There are now almost as many cell phones on earth as people. Much of the production of small electronics takes place in China which, coincidentally, is the same place as most of the current rare earth metal production. China announced in 2010 that they would be restricting the export of rare earth metals to ensure that there would be sufficient local availability of these critical raw materials for ongoing production in its key

electronics markets. With the restricted supply, world prices soared. For example, dysprosium, employed in computer storage devices and very strong wind turbine generator magnets, saw prices rise from \$7/pound to \$130/pound in the last 10 years, with continued shortages forecast. Even if small quantities are used, a cost increase of that magnitude impacts total costs.

There can be significant environmental considerations surrounding the mining and extraction of rare earth metals. Ores that may contain a variety of rare earth elements may be mildly toxic or radioactive and must be contained to avoid environmental contamination. Many products that use the materials are short-lived “throw-aways”, the environmental impact of which is not yet fully understood.

Rare earth metals are not as rare as you would think. And they are a remarkable, if often hidden, part of modern life.