Rare Earth Elements Resources and their Utility in Electronic Industry

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"Picture the Periodic Table as a city. You've got your flashy downtown: gold, silver and the like. You've got your industrial sector: iron and nickel. There are parks: carbon, oxygen and nitrogen. And of course the "troubled" section: radionuclides. Then there are the forgotten, distant exurbs: the rare earth elements (REEs), lanthanum (element 57) through lutetium (element 71) along with scandium and yttrium. Sleepy no more, the exurbs have turned very desirable. In recent decades, REEs have become vital to a host of novel electronics and green-energy technologies. The trouble is that, while researchers are steadily inventing new applications for rare earths, the supply isn't keeping up – and users of REEs are feeling the pinch.

Today, China supplies more than 97% of all REEs, and increasingly the products from which they are made. Those products span a wide swath, ranging from phosphors in electronic displays, to magnets in disk drives, cell phones, and MRI machines, and motors in missile guidance systems. In 2000, about 60,000 metric tons of rare earth oxide ores were mined worldwide. By 2014, that number is expected to grown to 200,000 metric tons.

China's production of REEs has been growing steadily over the past decade. But because its domestic demand for the elements has been growing even faster, the country's REE exports have dropped from 75% of the total produced to 25%. For a handful of elements–neodymium, dysprosium, terbium, and yttrium–China is expected to use all it can produce sometime between 2012 and 2014, leaving the rest of the world out in the cold (*Science*, 11 Sept. 2009, p.1336)"

India is also rich in resources of rare earths especially along west coast. Scientists in the Atomic Energy Department should concentrate on study of REE, especially their utility in making products which are vital in electronic industry.