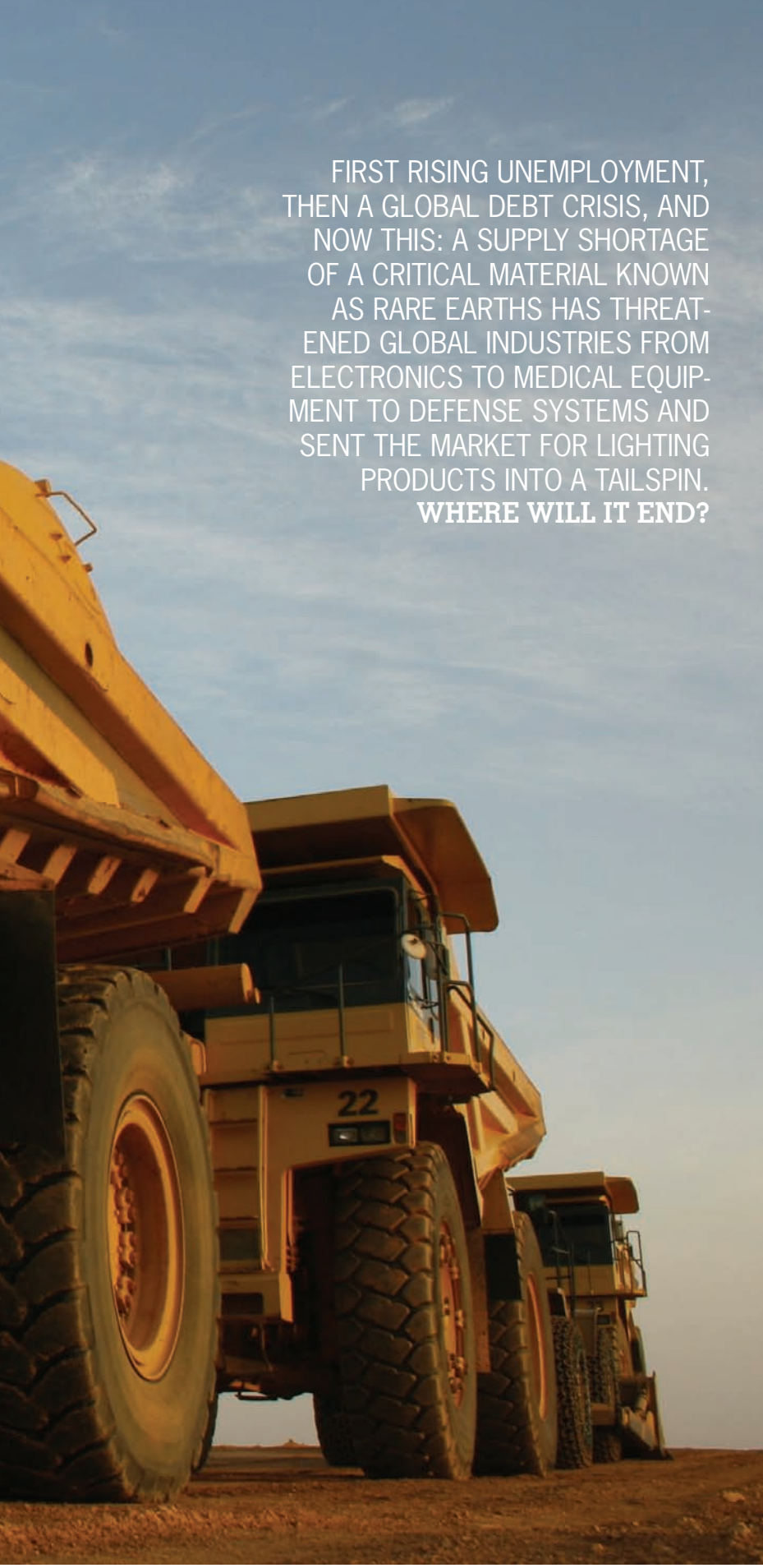


WILL
RARE
EARTHS
BECOME
RARER
STILL?



FIRST RISING UNEMPLOYMENT,
THEN A GLOBAL DEBT CRISIS, AND
NOW THIS: A SUPPLY SHORTAGE
OF A CRITICAL MATERIAL KNOWN
AS RARE EARTHS HAS THREAT-
ENED GLOBAL INDUSTRIES FROM
ELECTRONICS TO MEDICAL EQUIP-
MENT TO DEFENSE SYSTEMS AND
SENT THE MARKET FOR LIGHTING
PRODUCTS INTO A TAILSPIN.
WHERE WILL IT END?

By Susan Bloom

Rare earths refer to a group of 17 natural elements that include lanthanum, neodymium, gadolinium, cerium, yttrium, samarium, and erbium. These elements are used in everything from smartphones, MP3 players, military defense items such as night vision goggles, medical imaging equipment, car parts and batteries, tools, televisions, wind turbines, and fluorescent lamps.

Contrary to their name, rare earths are actually metals and are not, in fact, rare, as they're found scattered in the earth and in mines around the world in such spots as the United States, Russia, Canada, and Australia. Rare earth oxides, the form of these elements that is used to make phosphors, however, are complicated and costly to extract and reprocess. While at one point the United States was the leader in the production of rare earths, China has been the world's low-cost provider since the 1980s and currently controls more than 95% of the earth's supply of these critical elements.

The problem? Since late 2010 and throughout 2011, China has been restricting exports of rare earths to world markets and is expected to continue to do so over the next decade in order to protect its own growing industrial needs. China's exports will likely amount to less than half of the 55,000 to 60,000 tons demanded by world markets in 2011, and with world demand forecast to more than triple to 185,000 tons by 2015, the reality of this severe supply/demand mismatch has sent shock waves throughout the many industries reliant on these materials. The resultant product prices are soaring—according to an analysis by NEMA, prices of rare earth oxides increased from an average of \$14,400 per ton in July 2010 to \$109,000 per ton in February 2011 and tripled between January and June.

Based on their unique properties, rare earth materials are critical to a

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broad range of clean technology products, among them fluorescent and compact fluorescent lamps. When struck by UV rays, the presence of rare earth phosphors enables fluorescence, and their use (as opposed to less costly but less efficient and lower-quality halophosphors) increases lamp efficacy while dramatically improving color quality and lumen maintenance, according to the DOE's Division of Efficiency and Renewable Energy.

As a result, "China's export restrictions have affected pricing on the market's most popular fluorescent lamps today because demand for rare earths continues to grow in line with the growth in green technologies," said Rebecca Bompiedi, Lighting Transformation & Strategic Programs Leader for GE Lighting (gelighting.com).

"The lamps that require the largest quantities of rare earth phosphors tend to be among the highest-performing, highest-efficiency fluorescent models in the industry," concurred Paula Ziegenbein, strategic marketing manager for OSRAM Sylvania (sylvania.com). "Unfortunately, these are the lamps that will experience the most price impact and fluctuation."

According to Bompiedi, this price fluctuation will occur to the tune of increases ranging from 500% to more than 2,000% for some types of rare earth materials in less than 12 months.

"In a nutshell, the rapidly changing prices on rare earth materials will have a continued effect on the cost of fluorescent lighting, which represents approximately 40% to 50% of the installed lighting in the United States," explained Eric Marsh, senior marketing manager at Philips Lighting (lighting.philips.com). "These market fluctuations will require both distributors and contractors to pass these price increases on to the end-user."

AN INDUSTRY RESPONDS

All of the major lamp manufacturers informed distributors of the supply shortages in June and announced initial rounds of price increases that took effect in August or September, trying to give

as much advance notice as possible.

"However, some of the smaller lighting vendors announced price increases effective the next day because they couldn't absorb the initial losses like the larger players," said Stephen Shepps, construction solutions manager for Harrisburg, Pennsylvania-based distributor Schaedler Yesco Distribution.

Without a doubt, the fallout has created hardships for electrical distributors. "We've had several SPAs that had to be redone because the pricing was no

ones being hit the hardest with price increases. There's a price premium on them to begin with, and a price increase on top of that reduces the return on investment, increases the payback period, and makes an already-difficult sale that much harder in this economy," Saladucha said, noting that product shortages are an issue now too and manufacturers are working to avoid industry stockpiling. "The whole situation has resulted in a lot of extra effort, redundant communications, and renegotiation

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—REBECCA BOMPIEDI, GE Lighting



longer in effect," Shepps said. "While this has been slightly more manageable for us on MRO accounts like hospitals and commercial buildings that were under SPAs, some accounts have contracts that are much less flexible. For instance, we have one contract that specifically states that prices are firm for the first 12 months of the contract, so the manufacturer or the distributor has to hold to the prices and absorb the loss."

According to Mary Jo Saladucha, energy-efficiency sales manager at Teterboro, New Jersey-based Swift Electrical Supply, price increases and product shortages are presenting a double whammy of difficulty for her family-owned distributorship.

"Energy-saving, reduced-wattage linear fluorescent lamps such as the 32W, 28W, and 25W T8 models are key to us in this market, but they are the

of contracts, and it's not clear that any of these issues will resolve soon."

Shepp agreed. "Large construction jobs that extend over the next one to two years are in particular jeopardy because these projects are based on one-time bids involving previously negotiated SPAs and lamps that have already been purchased but not yet released for shipment at the previous price levels," he said. "It puts distributors in the position of having to warehouse the lamps at their own holding costs or absorb the loss from the price increase themselves."

For their part, lamp manufacturers have been doing their best to manage an untenable situation whose end date is currently uncertain. All of the major players have proactively reached out to their customers and the marketplace with informational web pages, webinars,

brochures, and videos and have worked collectively through NEMA to report the fallout that customers and the entire industry have experienced at the hand of Chinese policies. In fact, in July, based on a complaint filed by the United States, Europe, and Mexico, the World Trade Organization found that China had violated international trade law by artificially restricting its exports of nine raw materials, although it is believed that China is appealing this ruling.

In an attempt to promote consistency as long as possible and avoid enacting serial price increases, manufacturers have been proactively helping customers explore lamp alternatives that are less affected by price increases.

“Wherever possible, we’re certainly promoting different fluorescent lamps or alternative product technologies like LEDs to help address customer needs,” said Rob Mills, president of Baltimore-based C.N. Robinson Lighting Supply.

While the United States and other countries are currently racing to ramp up their mining and production of rare earths to alleviate their long-term dependence on Chinese supplies, insiders expect that these measures will likely have little bearing on the short-term issues at hand.

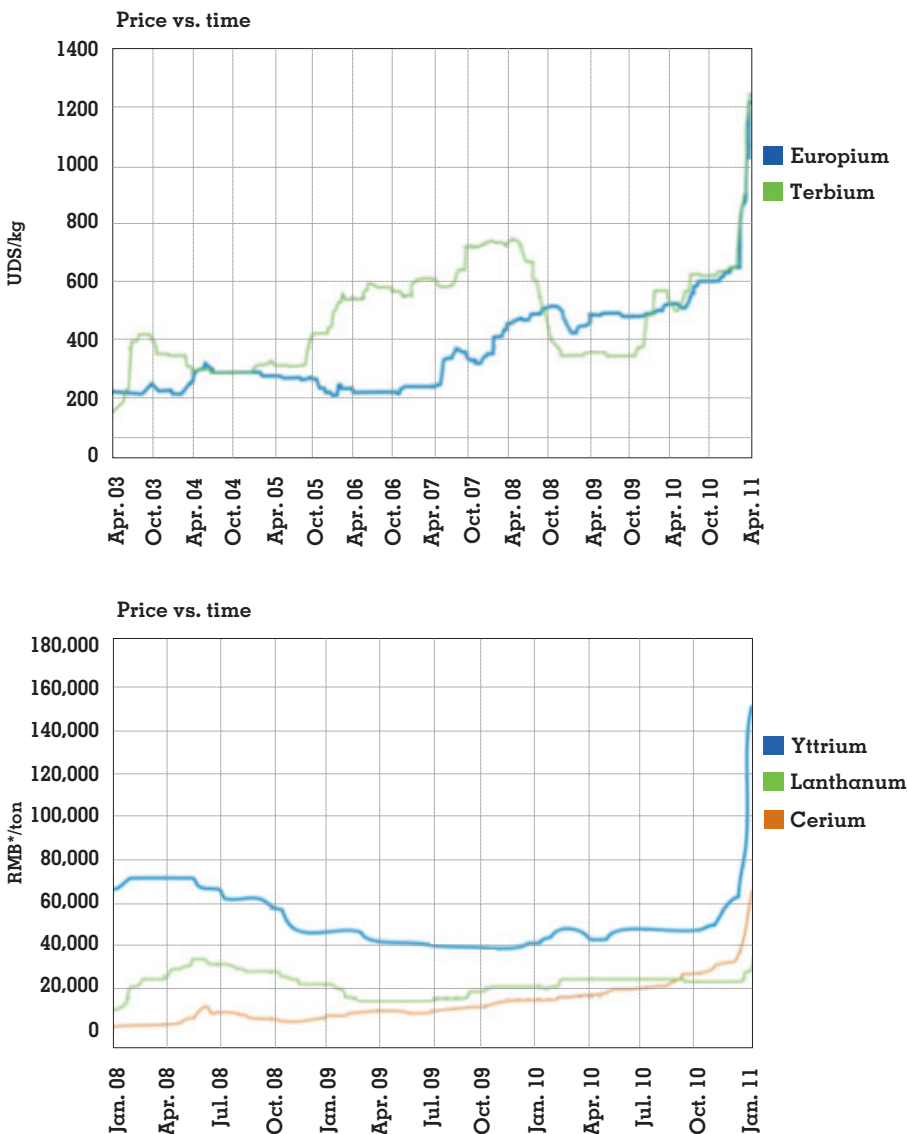
“Expert opinions vary, but this supply situation could remain for another three to five years,” said Marsh, referring to the time required for inactive mines to be brought online and the fact that, according to NEMA experts, these mines are not necessarily primed to produce the specific rare earths used in the manufacture of fluorescent lighting technology.

“In the end, increasing costs and sell prices impact whether energy-saving projects can be justified with payback times and ROIs that are acceptable to end-users,” agreed Ziegenbein. “With the uncertainty of rare earth material costs and anticipated continued cost inflation, firm pricing on future projects may not be possible.”

Though concerned about the immediate future of her lamp business, Saladucha is sympathetic too. “Because lamp manufacturers have worked hard to keep the marketplace informed and distributors have supported the effort by passing on the information and helping end-users to understand the situation, we’ve found that our customers understand and relate,” she conceded. “Still, we’d advise all distributors to account for price increases in their bids and to be organized and prepared so they don’t get caught in the middle.”

Overall, manufacturers report that nobody in the lighting industry has benefited from the rare earth crisis, as millions of dollars have been lost that will never be recouped. But all players are working diligently with customers and end-users throughout this situation to ensure timely and accurate communication regarding rare earth updates and issues. ■

PRICE TRENDS OF RARE EARTH MATERIALS USED IN FLUORESCENT LIGHTING: 2003 TO 2011



*The Renminbi (RMB) is the official currency of the People's Republic of China. Source: China Commodity Marketplace, Sealand Securities; charts courtesy of Philips Lighting

Bloom is a 20-year veteran of the lighting and electrical products industry. Reach her at susan.bloom.chester@gmail.com.