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RoHS is Coming

The metal finishing industry has been challenged in many ways during this past 10 years. Most of these new criteria revolve around subjects such as mandates, environmental issues, and process improvements. In most cases, change has been good, resulting in improvements to any of the aforementioned subjects. Now it is time to consider a new directive developed and in process by the European Union. It falls under the category of the restriction on hazardous substances, which is abbreviated RoHS. What is it? How does it affect platers and finishers? What are the critical points? What about timing, scheduling, and implementation? Let us review the latest concerning RoHS.

The European Union, based on committee meetings of the member nations, developed a critical environmental directive on January 27, 2003. It basically outlines the related issues concerning the sale of electrical and electronic products in the European Union. This directive is based on industry input and public debate. Of key importance is this statement from the RoHS directive: "from 1 July 2006, new electrical and electronic equipment put on the market (shall) not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE)." It breaks down affecting manufacturers, vendors, re-sellers, distributors, and recyclers. These industrial concerns and end-product users may not incorporate or use any of the above banned materials in electric and electronic equipment sold in and used in European Union countries. There will be exemptions, but only upon review of such individual cases every four years. Finished or assembled products that contain even trace amounts of the newly banned materials will be subject to a special tax. The funds of this tax would support the installa-

tion and maintenance of approved hazardous waste burial and storage sites. Great Britain has, per the targeted date of August 13, 2004, made this a law.

The RoHS definition of electrical and electronic equipment is specific towards devices that are dependent on electric currents or electromagnetic fields for correct operation or use. The voltage ratings of electric and electronic devices will not exceed 1,000 volts DC or 1,500 volts AC. There is a specific provision in the RoHS directive concerning tolerated amounts of the targeted materials. It states: "...a maximum concentration of up to 0.1% by weight in homogenous materials for lead, mercury, hexavalent chromium, PBB, and PBDE and of up to 0.01% by weight in homogenous materials for cadmium will be permitted in the manufacture of new electric and electronic equipment." They define a homogenous material as something that cannot be disjointed by mechanical means into different materials. For any process conversions, substituting one hazardous material for another may be approved in the short term, but not in the long term.

Are We Ready?

How prepared are institutions, industries, manufacturers, and end product users? Development of analytical techniques and improved instrumental analysis have vastly increased the specter of accuracy and precision. Therefore, certified labs, using calibrated instruments and methods, can detect and measure for the levels of any of the banned agents in the appropriate ppm or ppb range. Suppliers of metal finishing processes have now developed specific systems that eliminate the source of RoHS banned materials. These include electroless nickel, typically mid phosphorous deposits, eliminating cadmium and lead. Also, trivalent chromates—clear,

yellow, and black—eliminating hexavalent chromium. Higher purity anodes are used, certified by analysis, to be free of the listed metals. Manufacturers specify that strict adherence to eliminating banned materials is achieved, coordinating efforts with metal finishing departments in captive installations and job shops. These efforts are facilitated by suppliers, who have diligently worked to develop the alternative processes and finishes. Performance testing, corrosion evaluations, and standard specifications have determined these newer systems will meet the specific requirements of the electrical and electronic parts. All of the related industrial and metal finishing concerns have done so and will continue to issue the appropriate certificates of compliance and analysis. This is critical support for the ability of manufacturers to sell their finished electric and electronic products to European Union countries.

Directives in RoHS require the European Commission to review the overall status by February 13, 2005. At that time, manufacturers of medical devices (including control and monitoring) may be included into meeting the mandate. This will, however, only occur on the targeted date, if the review favors doing so.

The metal finishing community should be aware of these directives:

- ELV—End of Life Vehicle Directive
- WEEE—Waste Electrical and Electronic Equipment Directive
- RoHS—Restrictions on The Use of Certain Hazardous Substances

RoHS compliments WEEE. They are related based on scope and application. ELV has been more widely known for several years. Implementation of ELV in the U.S. is under way for some time. RoHS is now stepping up to prime time. *P&SF*