



January 2004

Are You Ready to Get the Lead Out by July 2006?

Industrial control components manufacturers are racing toward the July 2006 deadline to remove lead, cadmium and other hazardous substances from consumable electronic component parts. Removal of Hazardous Substances (RoHS) requirements set out by the European Union are driving the effort. A related regulation concerned with disposal of hazardous materials called Waste for Electrical and Electronic Equipment (WEEE) takes effect August 2005. Similar regulations will go into effect in China, Southeast Asian countries and the US starting January 2005.

What the Directives Say

RoHS prohibits the use of Lead (Pb), Cadmium (Cd), Hexavalent Chromium (Cr-6), Mercury (Hg) and bromide flame retardants (Polybrominated Biphenyls and Polybrominated Diphenyl Ethers). One exception is lead alloys (e.g. in metal housings) where up to 4% Pb is allowed. WEEE curtails disposal of electronic components containing these hazardous materials. The WEEE definition: each individual component shall contain no more than 0.1% of its weight in lead, mercury, and hexavalent chromium; 0.01% by weight for cadmium. The exemption here is high-temperature solders used for internal connections on some components. You can accelerate compliance for your machinery by choosing lead-free products from Omron and other suppliers.

Lead- and Cadmium-Free Products

- Plug-in industrial relays G2R-S(S)
- Inductive proximity sensors E2A
- Photoelectric sensors E3Z
- Safety light curtains F3SN
- Fiber-optic cables with sensing heads E32 series
- Safety door switches D4N
- And many others

How They Affect US Industries

Machines and other equipment exported to European Union and Asian countries must comply with these directives to pass incoming inspection. Failure to comply will result in reduced market opportunities and lost business with established customers. US companies that are moving manufacturing to countries with lower labor costs may face delays in production start-up if the machinery fails to comply with these environmental directives. The good news is that most controls and components manufacturers are racing to deliver products that do not contain the prohibited heavy metals. Some are already providing products to help your machinery comply with the regulations.

Conducting a Component Audit

Once the wrangling over details of RoHS settled down in April 2001, machine manufacturers started requesting component and controls manufacturers to complete detailed audits of the components they supply. The questionnaire helps determine if each component they use complies or needs redesign, and verifies when or if a redesigned part will be available from the supplier. Once all the

audits are in, engineering and purchasing work out the strategy to handle the two outcomes from the audit:

1. Update drawings and order the different part numbers for the equivalent compliant products
2. Select alternative suppliers whose components comply when existing suppliers indicate no intention to make comparable compliant parts.

Omron's Leading Environmental Position

In 1994, Omron committed to manufacturing environmentally friendly products, first by reducing lead then cadmium content.

By 1998, lead-free soldering was tested for the first products. At that time it was discovered that lead-free soldering required component housings designed to withstand higher temperatures for a longer time to prevent "popcorn" effects.

In 2000, Omron studied printed circuit board fabrication to understand the effects of lead-free soldering processes to develop techniques for automated in-line optical inspection equipment. The results turned up wide variations in solder joint surface and appearance depending on cooling temperature/speed. Adaptations to Omron's VT-WIN color highlight circuit board inspection technique successfully detected the wide range of lead-free solder joint conditions to spot solder imperfections.

Today many Omron product families follow the environmental directives and are completely lead- and cadmium-free. See the sidebar for some recent product additions.

For more information:

["Get the Lead Out"](#) by Jim Carbone, *Purchasing Magazine*, October 23, 2003.

EU legislation link showing discussions and agreements on RoHS and WEEE: http://europa.eu.int/prelex/liste_resultats.cfm?CL=en&ReqId=0&DocType=COM&DocYear=2000&DocNum=0347

Omron's environmental activities link: http://www.omron.com/corporate/about_omron/envir.html

Contact your local Omron sales representative for products that comply with RoHS and WEEE.

**For information on Omron's new products,
visit the What's New website at <http://www.whatsnew.omron.com>.**
