

## RoHS Compliance : Think You're Exempt?

The RoHS (Restriction of Hazardous Substances) Directive stipulates that electrical and electronic products destined for sale in Europe must be free of six hazardous substances by July 1, 2006. The six substances identified by RoHS are Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, and PBDEs.



With the compliance deadline drawing near, companies that manufacture, rebrand, or import electrical or electronic equipment destined for Europe must take action immediately to review existing products as well as new product designs and bring them into compliance with RoHS requirements. Although the burden of RoHS compliance lies with the producer, the entire supply chain is affected. Suppliers will play a key role in supporting your efforts to achieve compliance for all products by July 1, 2006.

### Think your company is Exempt from RoHS and WEEE Directives?

You may not think your business falls under the RoHS directive and are planning to keep your products leaded. The electronics supply chain, unfortunately, may have other ideas.

The industries that will be impacted are extensive. However, maybe you fall outside these industries or your production does not go to the European Market Place.

So why should you worry?

One important aspect is although the European Union has implemented the directive, a number of states in the United States have mandated green initiatives on their own. It will not be long before this spreads to encompass the entire US. The length of time for these initiatives to impact your product is unknown.

So why worry today?



This chart shows the six substances that are banned by RoHS Directive. In the electronics industry the most significant substance is lead. The majority of components have lead as part of their makeup. The solder used in the assembly of these components to the printed circuit board is composed of lead.

### **Substances Covered by RoHS**

<b>Banned/Restricted Substance</b>	<b>Use/Where Found in Electronics</b>
Cadmium	Batteries, paints, yellow pigment, plastics additives (especially PVC used in cable assemblies), phosphorescent coatings, detectors/devices/LEDs.
Mercury	Switches, pigments, paints, polyurethane materials (high gloss windows), lamps, bulbs/lighting (displays, scanners, projectors).
Hexavalent Chromium	Metal finishes for corrosion protection (chasses, fasteners), aluminum conversion coatings, alloys, pigments paints.
Polybrominated Biphenyls (PBBs)	Flame retardants (plastics, housings, cables, connectors, fans, components, paints).
Polybrominated Diphenyl Ethers (PBDE)	Same as PBBs.
Lead	Solder and interconnects, batteries, paints, pigments, piezoelectric devices*, discrete components, sealing glasses, CRT glass*, PVC cables (UV/heat stabilizer), metal parts, chasses, washers.

\*Exempt under RoHS

Component Manufacturers are moving at an accelerated pace to convert their parts to lead-free. Those manufacturers may in the short term supply leaded components, but many are making plans to eliminate the leaded versions of their products.

### **If Leaded Parts Are Available**

The electronics supply chain will dictate your future. If the leaded components remain in supply by the manufacturers it will not be long before the shrinking demand drives up prices and lead times extend due to priority of running lead-free parts. Obsolescence will occur. It will only be a matter of time.

If leaded components remain available, you should expect:

- Higher prices as demand shrinks
- Longer lead times as priorities shift
- Uncertainty as obsolescence looms

### **If Leaded Components Become Obsolete**

If the leaded components become obsolete and substitutes are available, the design community will be under pressure to initiate change orders to process the substitute in a timely fashion and engineering time maybe required to qualify the substitute.

If the leaded components become obsolete, you should expect:

- Substitute qualification
- Significant change order processing
- High Pressure on the design community

### **If Leaded Components Become Obsolete and No Substitutes Are Available**

If the leaded components are obsolete and substitutes are not available your company will be faced with decisions on the product's future. Should it be decided to continue with the product, the design community will be under pressure to re-design the circuitry with a new available part. It would not be likely that the redesign would result in the change to lead-free to eliminate the need to go around again when another leaded part becomes obsolete.

If leaded components become obsolete and substitutes not available, you should expect:

- Product obsolescence decision
- Re-design in a critical time mode
- High Pressure on the design community

### **What About BGA's?**

Today we are experiencing component manufacturers changing their BGA products to lead-free and subsequently not offering leaded options. If the decision is made not to change all components used in the product to lead-free, then at a minimum the printed circuit board will need to be changed to lead-free due to the BGA. The product will go through a leaded process for all other components. The BGA will need to be added in a rework station manually.

If BGA conversion to lead-free is required without a leaded version available, you should expect:

- Costly two - process assembly
- PCB will need to be changed to lead-free
- BGA's will require manual assembly
- Quality will suffer due to manual assembly



## What Should We Do?

### First Steps: Get a Plan

MEC can provide the resources to verify printed circuit board Bills of Material for component compliance at reasonable cost. MEC will provide a plan to get your product ready to meet RoHS.

MEC can provide a spreadsheet report breaking down each component

- stating whether it is or is not in compliance
- providing a new part number of compliant component or the date the manufacture has declared component is in compliance
- identifying alternative manufacturers and part numbers of compliant components should the original manufacturer not offer a compliant component
- or, state if no compliant component exists. Should no compliant component exist, MEC will provide alternative solutions to bringing the product into compliance.

Leadtime of RoHS components may create deadline issues. Change over to the RoHS components may create obsolescence issues that will have to be managed. Should a component be discontinued by the manufacturer with no form fit or function compatible substitute available, a circuit design change will be necessary.

### First Steps: Review PCB Impact

It is known that changes in the manufacturing of the printed circuit board due to the elimination of lead processes will lead to higher costs. Depending on the substituted components changes to the printed circuit board to accommodate a different pad stack may be necessary. Changes to the printed circuit board will necessarily result in retooling costs for the board.

The PCB change may impact or require:

- The price of the PCB material
- PCB Layout changes to accommodate component pad needs
- PCB Tooling costs due to board layout change
- Circuit redesign due to discontinuance of part.
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Your ability to become RoHS-compliant depends on the quality of support available to you. MEC has the knowledge and resources to provide the total support you need. For additional information about the RoHS Directive and MEC compliance solutions, ask your MEC representative or contact us at the numbers listed below below.

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