

California RoHS Workshop

November 9, 2006



California EPA
Department of Toxic Substances Control
Hazardous Waste Management Program
Regulatory and Program Development Division

What is “RoHS”?

RoHS is an acronym for “Restriction on the use of certain hazardous substances,” which refers to:

- The restriction on the use of hazardous substances in electrical and electronic equipment (EEE) under European Union Directive 2002/95/EC (**EU RoHS**)
- Also to the upcoming prohibition on sales of some electronic devices containing certain hazardous substances in California (**California RoHS**)

EU RoHS

- Its purpose is to restrict the use of hazardous substances in electrical and electronic equipment.
- It applies to new electrical and electronic equipment sold in EU after July 1, 2006
- Hazardous substances restricted in EU are:
 - lead,
 - cadmium,
 - mercury,
 - hexavalent chromium,
 - polybrominated biphenyls (PBBs)
 - polybrominated diphenyl ethers (PBDEs).

EU RoHS

Maximum Concentration Value (MCVs)

Substance	MCV (percent, by weight)
Lead	0.1%
Mercury	0.1%
Cadmium	0.01%
Hexavalent chromium	0.1%
Polybrominated biphenyl (PBB)	0.1%
Polybrominated diphenyl ether (PBDE)	0.1%

California RoHS (HSC 25214.10)

- CA RoHS law requires DTSC to adopt regulations that “prohibit an electronic device from being sold or offered for sale in this state if it is prohibited from being sold or offered for sale in the European Union under EU RoHS due to the presence of certain heavy metals.”

CA RoHS

Restricts the Following:

1. Lead
2. Mercury
3. Cadmium
4. Hexavalent chromium

CA RoHS

Maximum Concentration Value (MCVs)

Substance	MCV (percent, by weight)
Lead	0.1%
Mercury	0.1%
Cadmium	0.01%
Hexavalent chromium	0.1%

Which Products Fall under CA RoHS?

- California's RoHS only applies to eight categories of **covered electronic devices** listed in Appendix X of chapter 11, title 22, California Code of Regulations (CCR).

A covered electronic device is a video display device containing a screen greater than four inches, measured diagonally, that is listed in DTSC's regulations.

The Covered Electronic Devices are:

1. Cathode ray tube containing devices (CRT devices)
2. Cathode ray tubes (CRTs)
3. Computer monitors containing CRTs
4. Laptop computers with liquid crystal displays (LCDs)
5. LCD containing desktop monitors
6. Televisions containing CRTs
7. Televisions containing LCD screens
8. Plasma televisions

EU RoHS Exemptions

The European Commission has granted **29** exemptions to the RoHS directive

1. Mercury in compact fluorescent lamps
2. Mercury in straight fluorescent lamps for general purposes
3. Mercury in compact fluorescent lamps for special purposes
4. Mercury in other lamps not specifically mentioned in the EU Directive
5. Lead in glass of cathode ray tube, electronic components and fluorescent tube (The exemption applies to lead as a constituent in the glass used in CRTs, electronic components and fluorescent tubes)

EU RoHS Exemptions

6. Lead as an alloying element in steel
7. Lead in high melting temperature type solders
 - Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunication
 - Lead in electronic ceramic parts
8. Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EEC.
9. Hexavalent chromium as an anti-corrosive for carbon steel cooling system in absorption refrigerators

EU RoHS Exemptions

10. Deca BDE in polymeric applications

- 11. Lead in lead-bronze bearing shells and bushes
- 12. Lead used in compliant pin connector system
- 13. Lead as a coating material for the thermal conduction module c-ring
- 14. Lead and cadmium in optical and filter glass
- 15. Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors
- 16. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages

EU RoHS Exemptions

17. Lead halide as a radiant agent in high-intensity-discharge lamps used for professional reprography applications
18. Lead as an activator in the fluorescent power of discharge lamps when used as suntanning lamps or as specialty lamps for diazo-printing reprography, lithography, insect traps or photochemical or curing processes
19. Lead with PbBiSn-Hg (lead-bismuth-tin-mercury) or PbInSn-Hg (lead-Indium-tin-mercury) in specific compositions as the main amalgam and with PbSn-Hg (lead-bismuth-mercury) as the auxiliary amalgam in very compact energy-saving lamps
20. Lead oxide in glass used for bonding the front and rear substrates of flat fluorescent lamps used for liquid crystal displays
21. Lead and cadmium in printing inks for the application of enamels on borosilicate glass

EU RoHS Exemptions

22. Lead as an impurity in RIG (rare earth iron garnet)
Faraday rotators for fiber optic communications systems
23. Lead in finishes of fine-pitch components other than connectors with a pitch of 0.65 millimeters or less with NiFe lead frames and lead in finishes of fine-pitch components other than connectors with a pitch of 0.65 mm or less with copper-lead frames
24. Lead in solders for the soldering of machined through-hole discoidal and planar array ceramic multilayer capacitors
25. Lead oxide in plasma display panels and surface conduction electron emitter displays used in structural elements, notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and the frit ring, as well as in print pastes
26. Lead oxide in the glass envelope of black-light blue lamps

EU RoHS Exemptions

- 27. Lead alloys as solder for transducers used in high-power loudspeakers (designed to operate for several hours at acoustic power levels of 125 decibels SPL [sound pressure level] and above)
- 28. Hexavalent chromium in corrosion-prevention coatings of unpainted metal sheetings and fasteners used for corrosion protection and electromagnetic interference shielding in equipment falling under a specific EU Directive covering IT and telecommunications equipment (exemption granted until July 1, 2007)
- 29. Lead bound in crystal glass as defined in a specific EU Directive

CA RoHS Exemptions

DTSC needs your help to identify EU exemptions that apply to covered electronic devices under CA RoHS.

Differences between EU RoHS and CA RoHS

EU RoHS	California RoHS
Scope of Products	Scope of Products
Applies to “electrical and electronic equipment,” which fall under WEEE categories 1 to 7 and 10.	Applies only to “covered electronic devices,” which are eight categories of video display devices listed in DTSC’s regulations
Scope of Substances	Scope of Substances
Six substances: Lead, mercury, cadmium, hexavalent chromium, PBBs, and PBDEs	Only four metals: Lead, mercury, cadmium, and hexavalent chromium

California RoHS

DTSC's Proposed Regulations

California RoHS Law

Health and Safety Code 25214.10

“ The department shall adopt regulations, in accordance with this section, that prohibit an electronic device from being sold or offered for sale in this state if the electronic device is prohibited from being sold or offered for sale in the European Union on and after its date of manufacture, to the extent that Directive 2002/95/EC...due to the presence of certain heavy metals”

DTSC's Baseline Proposal is to Adopt Emergency Regulations as Follows:

§66260.202 Restrictions on the Use of Heavy Metals in Covered Electronic Devices.

- (a) On or after January 1, 2007, no person shall sell or offer for sale in California, a covered electronic device if the device is prohibited from being sold or offered for sale in the European Union on or after its date of manufacture due to the concentration of one or more heavy metals in the device exceeding its maximum concentration value, as specified in the Commission Decision of August 18, 2005, amending Directive 2002/95/EC (European Union document 2005/618/EC), or as specified in a subsequent amendment to the Directive.

DTSC's Baseline Proposal (cont.)

(b) In determining the concentrations of metals for compliance with subsection (a), the Department shall not consider any cadmium, chromium, lead, or mercury, or any component containing any of those metals, which has been exempted by Directive 2002/95/EC, or by an amendment to the Directive.

Alternative #2

(Put on the Market)

§66260.202 Restrictions on the Use of Heavy Metals in Covered Electronic Devices.

- (a) Except as provided in subsection (c) or (d), on or after January 1, 2007, no person shall sell or offer for sale in California, a covered electronic device if the device is prohibited from being sold or offered for sale in the European Union on or after its date of manufacture due to the concentration of one or more heavy metals in the device exceeding its maximum concentration value, as specified in the Commission Decision of August 18, 2005, amending Directive 2002/95/EC (European Union document 2005/618/EC), or as specified in a subsequent amendment to the Directive.

Alternative #2

(Put on the Market, Cont.)

(b) In determining the concentrations of metals for compliance with subsection (a), the Department shall not consider any cadmium, chromium, lead, or mercury, or any component containing any of those metals, which has been exempted by Directive 2002/95/EC, or by an amendment to the Directive.

Alternative #2

(Put on the Market, Cont.)

(c)(1) The prohibition established by subsection (a) of this section does not apply to a covered electronic device that is put on the market in California before January 1, 2007.

(2) As used in subsection (c)(1), “put on the market” means the physical transfer or the transfer of ownership of an individual covered electronic device from the manufacturer to the person responsible for distributing the device in California (e.g., the manufacturer’s sales organization, a distributor, a wholesaler, or a retailer) or directly to the final consumer or user of the device.

Alternative #2

(Put on the Market, Cont.)

(d) The prohibition established by subsection (a) of this section does not apply to a covered electronic device that would be prohibited from sale or being offered for sale in California based solely on metals used to meet consumer, health or safety requirements.

NOTE: Authority cited: Section 25214.10, Health and Safety Code. Reference: Section 25214.10, Health and Safety Code.

Alternative #3

(Date of Manufacture)

§66260.202 Restrictions on the Use of Heavy Metals in Covered Electronic Devices.

(a) On or after January 1, 2007, no person shall sell or offer for sale in California, a covered electronic device if the device is prohibited from being sold or offered for sale in the European Union on or after its date of manufacture due to the concentration of one or more heavy metals in the device exceeding its maximum concentration value, as specified in the Commission Decision of August 18, 2005, amending Directive 2002/95/EC (European Union document 2005/618/EC), or as specified in a subsequent amendment to the Directive.

Alternative #3

(Date of Manufacture, Cont.)

- (b) In determining the concentrations of metals for compliance with subsection (a), the Department shall not consider any cadmium, chromium, lead, or mercury, or any component containing any of those metals, which has been exempted by Directive 2002/95/EC, or by an amendment to the Directive.
- (c) The prohibition in subsection (a) applies only to a covered electronic device that is manufactured on or after January 1, 2007.

DTSC' Proposed Regulations

We are Seeking Input

(DTSC must receive your input by next week, 11/16/06.)

Break

(Exemption Questionnaire)

Discussion/FAQs

Q1. Refurbished

A device is first sold before Jan 01, 2007, and later refurbished and resold after 1/1/07. Does this device have to be RoHS compliant?

Discussion/FAQs

A1.

- Under the baseline proposal: The device does not have to be RoHS-compliant if it is **not** sold as a **new product**. Ref: EC FAQ 1.12 & 1.13.
- Under alternative 2: Same
- Under alternative 3: The device that was manufactured prior to 1/1/2007 **does not** need to be RoHS complaint

Discussion/FAQs

Q2. Replacement

a.) Does the law have any impact on a manufacturer who replaces an electronic device under a warranty claim?

b.) If the retailer elects to replace the device with one from stock at no cost, does the replacement have to be compliant?

Discussion/FAQs

A2. Under the baseline proposal:

- a) A manufacturer who replaces a RoHS-compliant covered electronic device, originally sold by a retailer after 01/01/07, under a warranty claim, must provide a RoHS-compliant replacement device, unless the replacement device is one that was manufactured and put on the market in the EU prior to 7/1/2006. Ref: EU FAQ 2.1 & 2.2.

- b) Similarly, if the retailer elects to replace the device with one from stock at no cost, the replacement device must be compliant, unless it is one that was manufactured and put on the market in the EU prior to 7/1/2006.

A2. Under alternative 2:

- a) A manufacturer who replaces a RoHS-compliant covered electronic device, originally sold by a retailer after 01/01/07, under a warranty claim, must provide a RoHS-compliant replacement device, unless the replacement device was put on the market in the California prior to 1/1/2007.
- b) Similarly, if the retailer elects to replace the device with one from stock at no cost, the replacement device must be compliant, unless it was put on the market in the California prior to 1/1/2007.

A2. Under alternative 3:

- a) A manufacturer who replaces a RoHS-compliant covered electronic device, originally sold by a retailer after 01/01/07, under a warranty claim, must provide a RoHS-compliant replacement device, **unless the replacement device was manufactured prior to 1/1/2007**.

- b) Similarly, if the retailer elects to replace the device with one from stock at no cost, the replacement device must be compliant, **unless it was manufactured prior to 1/1/2007**.

Discussion/FAQs

Q3. **Replacement**

A manufacturer wants to replace a defective device that is under warranty with another device. If the original device was sold after 01/01/07, and was RoHS compliant, does the replacement device have to be compliant in either, or both, of the following cases?

a) The replacement device was first made prior to 01/01/07, but was/is never "sold."

b) The replacement device is made after 01/01/07, but was/is never sold.

Discussion/FAQs

A3. Under the baseline proposal:

- a) Unless the replacement device is one that was manufactured and put on the market in the EU prior to July 1, 2006 , it must be RoHS-compliant.
- b) A manufacturer is always obligated to provide a RoHS-compliant replacement covered electronic device when the replacement device is manufactured on or after Jan 01, 2007.

Discussion/FAQs

A3. Under alternative 2:

- a) A manufacturer's obligation to provide a RoHS compliant replacement covered electronic device, when the replacement device was first manufactured prior to Jan 01, 2007, is related to the date that the replacement device is first "put on the market" in California. This term applies to the transfer of an individual device from the manufacturer to any person in the distribution chain that extends from the initial distributor to the final consumer, and includes a transfer by the manufacturer to its California commercial chain. Unless the replacement device is one that was transferred to the manufacturer's California commercial chain prior to January 1, 2007 , it must be RoHS-compliant.

Discussion/FAQs

A3. Under alternative 2:

b) A manufacturer is always obligated to provide a RoHS-compliant replacement covered electronic device when the replacement device is first manufactured on or after Jan 01, 2007.

Discussion/FAQs

A3. Under alternative 3:

a & b) A manufacturer is required to provide a RoHS-compliant replacement covered electronic device only when the replacement device was manufactured on or after January 1, 2007.

Discussion/FAQs

Q4. The original device was sold prior to 01/01/07 and was not RoHS compliant. Can the manufacturer replace this device with an equivalent non-complaint device manufactured either prior to, or after, 01/01/07?

(A replacement device manufactured after 01/01/07 must always be RoHS-compliant.)

Discussion/FAQs

A4. Under baseline proposal:

If the non-compliant replacement device is one that was manufactured and put on the market in the EU prior to 7/1/2006, it need not be RoHS-compliant. (Ref: EC FAQ 2.1 & 2.2.) If the non-complaint device is one that was not manufactured and put on the market in the EU prior to 7/1/2006, it may not be used as a replacement.

Discussion/FAQs

A4. Under alternative 2:

If the non-compliant replacement device is one that was transferred to the manufacturer's California commercial chain prior to January 1, 2007, it need not be RoHS compliant. If the non-complaint device is one that was not transferred to the manufacturer's California commercial chain prior to January 1, 2007, it may not be used as a replacement.

Discussion/FAQs

A4. Under alternative 3:

If the non-compliant replacement device is one that was manufactured prior to January 1, 2007, it need not be RoHS-compliant. If the non-complaint device is one that was manufactured after January 1, 2007, it may not be used as a replacement.

Discussion/FAQs

Q5. ELV Directive

Are devices that fall under the ELV directive in the EU (and therefore do not come under the RoHS directive, per EU guidance) subject to the California prohibitions?

Discussion/FAQs

A5. Covered electronic devices that do not come under the RoHS directive in the EU because they fall under the EU ELV directive in the EU **are not** subject to the California prohibitions.

Ref: EC FAQ 1.11.

ELV Directive limited to vehicles which carry:

- 8 or less passenger seats, plus driver seat
- No more than 3.5 metric tons

Discussion/FAQs

Q6. If all returned devices from around the world are sent to one location for repair, refurbishment, and resale, warranty replacement, salvage of parts, etc. are manufacturers required to be able to document that any used non-RoHS compliant product that we sell was either originally put on the market 1) in the EU prior to July 1, 2006, or 2) in Ca. prior to 01/01/07?

Discussion/FAQs

A6.

The EU Directive does not prohibit the sale of a refurbished covered electronic device that is not RoHS-compliant if the refurbished device was first put on the EU market prior to July 1, 2006. **Ref: EC FAQ 2.1.**

-Under the baseline proposal, accordingly, a refurbished device first “put on the market” in the EU prior to July 1, 2006 does not have to be California RoHS-compliant. Also under baseline proposal, a manufacturer who sells a refurbished device that is not RoHS compliant in California on or after January 1, 2007 will be required to document that **the device was first put on the EU prior to July 1, 2006.**

Discussion/FAQs

A6.

-Under Alternative #2, a refurbished device first “put on the market” in California prior to January 1, 2007 does not have to be California RoHS-compliant. Also under Alternative #2, a manufacturer who sells a refurbished device that is not RoHS compliant in California on or after January 1, 2007 will be required to document that the device was first put on the California market prior to January 1, 2007.

Discussion/FAQs

A6.

Under Alternative #3, a refurbished device manufactured prior to January 1, 2007 does not have to be California RoHS-compliant. A manufacturer who sells a refurbished device that is not RoHS compliant in California on or after January 1, 2007 will be required to document that **the device was originally manufactured prior to January 1, 2007.**

Discussion/FAQs

Q7. Sale/wholesale

Does the prohibition on sale apply only to retail sales, or are sales made by manufacturers and distributors (i.e., wholesale sales) also subject to the prohibition? Would this include sales within a multi-part corporation, such as HP?

Discussion/FAQs

A7. The prohibition is not limited to retail sales. It applies to all sales made by manufacturers, distributors, and retailers. It also applies to transfer of a CED from a manufacturer's manufacturing component to its commercial component.

Should DTSC define “sale” in its regulations?

Discussion/FAQs

Q8. Are medical monitors exempted from CA RoHS?

Discussion/FAQs

A8. Medical devices cleared by FDA are exempt.

Should DTSC clarify this in its regulations?

Comments and/or Questions

- Please submit all comments and/or questions to:

Cindy Chain-Britton

Waste Identification and Recycling
Section

Email: CChainbr@dtsc.ca.gov

Phone: (916) 445-4413

Fax: (916) 322-1005

Manufacturer Reporting

California's Electronic Waste Recycling Program

November 2006

*Matt McCarron, SR. IWMS
CIWMB Electronic Waste Recycling Program
www.ciwmb.ca.gov*

Manufacturer Responsibilities in the ACT

- ✓ Labeling of Products buy 1/1/05 (State of Cal. Public Resources Code (PRC) **Sec. 42465.1**
- ✓ Notification to Retailer every **APRIL 1** describing which products are to be assessed the fee. Ca. Health and Safety Code (H&S) **Sec. 25214.10.1(c).**
- ✓ Copy to be sent to State BOE (H& S sec. **25214.10.1(c)(2)**
- ✓ Provide Consumer information on how and where to dispose of the waste products. PRC sec. **42465.2(a)(2)**

Manufacturer Responsibilities in the ACT (Cont.)

- ✓ Manufacturer Report due every July 1- **PRC 42465.2**
- ✓ Manufacturers on advisory committee for
 - ✓ Recycling Rate Goals - **PRC 42475.4**
 - ✓ State Procurement guidelines – **PRC 42475.3**

Manufacturer – Penalties for Non-Compliance

- ✓ **PRC 42465 –Sales Ban in CA.**
- ✓ **Up to \$25,000 per violation**

Manufacturer Reporting

- **Who is required to Report?**
 - **Manufacturer by Brand Name that make the Covered Electronic Devices sold to people for use in California**
 - **See PRC. Sec 42463(n)**
- **Exemptions (PRC sec. 42463(f)(2)**
 - **Medical Equipment –Automotive Manufacture installed**
 - **Commercial and Industrial equipment**
 - **Needs to be part of the units, not attached**

Manufacturer Reporting

- **Report Requirements –PRC 42465.2**
 - **Regulations Sec. 18660.41**
 1. Name and Contact information
 2. Sales by Product Category and screen sizes for Previous Calendar Year
 3. Estimates in PPMs of Lead, Cadmium, Mercury, Hex-Chromium and PBBs
 4. Estimates on the amount in Tons of Recyclable Materials in the products
 5. Design for Recycling
 6. List of Retailers
 7. Samples of Consumer Information

Manufacturer Reporting

What Does RoHS do in the E-waste Act?

- ✓ Provisions to meet EU directive for covered devices by 1/2007 – DTSC to implement regulations
- ✓ CIWMB Manufacturer Reporting exemptions for RoHS compliant and DTSC “certified” equipment, but you will still need to report on components that are exempted by the RoHS directive.
- ✓ See Directive 2002.95.EC Annex

How to Keep up

—CIWMB Manufacturer Page with information

- <http://www.ciwmb.ca.gov/Electronics/Act2003/Manufacturer/>

- coming soon “Report template” and revise guidance document.

—List Serve for periodic program updates:

- <http://www.ciwmb.ca.gov/Electronics/Act2003/Stakeholder/Updates/>

Contact Info

Matt McCarron

CIWMB

Electronic Waste Recycling Program

1001 I Street MS-12

Sacramento, Ca 95812

916-341-6456

mmccarro@ciwmb.ca.gov

www.ciwmb.ca.gov/electronics

Portable DVD Players

- DTSC recently tested portable DVD players (with LCDs greater than four inches when measured diagonally) for hazardous waste characteristics.
- What we found, and our plans regarding portable DVD players, are summarized on the following slides.

Contact Information

If you have any comments, questions, or concerns regarding this issue, you may contact:

Robert Brushia
916-324-1814
rbrushia@dtsc.ca.gov

How Were Portable DVD Players with LCD Screens Tested?

- Five different portable DVD players were randomly selected from five different manufactures, and each was tested for hazardous characteristics of toxicity.
- The devices tested had LCDs of varying sizes (ranging from 5.8" to 10.2", measured diagonally).
- The samples where disassembled into Cold Cathode Fluorescent Lamp, plastic, LCD, and circuit board fractions. Each of the fractions were analyzed for metals.
- Testing methods used for the analysis include U.S. EPA method 3050B for the determination of total metals in each device, the California Waste Extraction Test (WET) for the determination of extractable metals in each device, and/or U.S. EPA method 7471A for the determination of mercury in each device.

Portable DVD Player



Portable DVD Player Components After Disassembly



What Were the Test Results?

All of the devices exhibited at least one of the State's criteria for toxicity:

- Three of the devices exhibited the toxicity characteristic for lead;
- One of the devices exhibited the toxicity characteristic for nickel;
- One of the devices exhibited the toxicity characteristic for antimony; and,
- All five of the devices exhibited the toxicity characteristic for copper.

***More information can be obtained on DTSC's website at:
<http://www.dtsc.ca.gov/HazardousWaste/EWaste/index.cfm>**

What Are DTSC's Plans Regarding Portable DVD Players with LCD Screens?

- DTSC plans to adopt a regulation adding portable DVD players with LCDs greater than four inches measured diagonally to the list of electronic devices that are presumed to be hazardous wastes when discarded (Cal. Code of Regs., title 22, chapter 11, appendix X, subsection (c))
- DTSC plans to adopt this regulation as an emergency regulation by December 31, 2006.

What would the regulation do, and what are DTSC's plans in the future?

- The regulation would make portable DVD players with LCDs greater than four inches measured diagonally “covered electronic devices” , subject to all provisions of EWRA, including CA RoHS, and collection of the electronic waste recycling fee, effective July 1, 2007.
- DTSC plans to adopt this regulation as a final regulation in 2007.