New China RoHS Standard and REACH SVHCs

SJ/T 11364-2014 and December 2014 SVHCs

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Agenda

• Introduction
• New China RoHS Standard
  - Entry into force
  - Changes
  - Recommendations
• New REACH SVHCs
  - Substance overview
  - Priority / risk substances
  - Compliance options
  - Recommendations
• Future restriction of REACH SVHCs
  - Role in other legislations
• Q&A

Webinar is 50 minutes with 10 minutes of Q&A (hopefully)
Claigan - Restricted Materials Services

• Restricted Materials Services
  - RoHS (EU and China)
  - REACH SVHC and Article 67
  - California Proposition 65
  - Conflict Minerals
  - Global requirements

• Capability
  - Consulting
  - Laboratory testing
  - Data gathering
  - Technical files and declaration
  - Auditing

Website Updated
http://www.claigan.com
New China RoHS Standard

• In late 2014, China RoHS standard was updated
  - SJ/T 11364-2014
  - from SJ/T 11364-2006

• Standard into force
  - January 1 2015

• Major changes
  - Wider scope of products
  - Option for digital labelling
  - Removal of packaging recycling marks requirement
  - Options for communicating in logistics process
    • a bit unclear
China RoHS - Overview

• The law
  - Management Methods for Controlling Pollution by Electronic Information Products
  - Ministry of Information Industry Order #39
    • Established in February 2006, into force March 2007

• The new standard
  - SJ/T 11364-2014 is the Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products
    • The aim of this standard is to identify hazardous materials in products and to keep them from being discarded into the regular waste stream and avoiding harm to humans and the environment.
Note on Entry into Force

• Update document was the **standard**
  - the standard is in effect January 1 2015

• But - in conversation with the Chinese government
  - the new standard is held in abeyance until the new China RoHS law is published

• Summary
  - New standard exists, but
  - Not binding until new law is published
    • publishing timeline unclear at this time
China RoHS - Scope

- Electronic and Electrical Products (EEP)
  - Devices and accessory products with rated working electrical voltages that do not exceed 1500V direct current and do not exceed 1000V alternating current and function by means of current or electromagnetic fields and generate, transmit and measure such currents and electromagnetic fields.

- Very similar to EU RoHS
- Will be reflected in new China RoHS law
  - publishing date unknown
- Also unknown, at this time, how it affects components previously under scope of the original standard.
China RoHS - Substance Thresholds

• Substance threshold are identical to the EU RoHS Directive 2011/65EU
  - Only difference is there are no exemptions
  - Not a restriction
  - Declaration only

• Restricted substance thresholds (GB/T 26572)
  - Pb 1000 ppm
  - Hg 1000 ppm
  - Cd 100 ppm
  - Cr6+ 1000 ppm
  - PBB 1000 ppm
  - PBDE 1000 ppm
New China RoHS Standard - Logos

- How do you communicate if your product has a restricted substance above the threshold?
- All EEP that is sold in China shall be marked with China RoHS logos.
  - The ‘E’ inside the circular chasing arrow indicates product does not contain any restricted substances above the threshold. Logos is usually green
  - A logo with a number inside the circular chasing arrows indicates that there is a restricted substance present above the prescribed threshold. Logo is usually orange
  - When these logos are used the product is not intended for the regular waste stream
China RoHS - Logos

- The number inside the logo is the Environmental Friendly Use Period (EFUP).
- EFUP (Environmental Friendly Use Period) is the expected safe use life span (in years) of the product where the substance will not leak out and cause human or environmental harm.
- The EFUP may be displayed in years ranging from 1-5 and then from 5 to 50 in five year increments.
- The size of the logos must not be less than 5mm x 5mm.
- The ratio of the font inside to the inner and outer circle is 5:8:12.

Figure 4: Image specification of logo 2
China RoHS - Logos

• Location of logo has been elaborated on
  - Ideally on the front of the product or another recognizable location
  - The mark may be moulded, painted, printed or on a sticker
  - Recommend colours of the logos are specified but may appear how the manufacturer wishes (Orange and Green)

• If the product is an odd shape
• Too small (less than 5mm x 10mm²),
• Unable to be marked due to surface or function
  - The markings may be placed in the:
    • Manual
    • Website
      • steps must be provided in the manual to access the China RoHS info
    • CD/DVD
    • Packaging material
    • Additional new option for digital display is available for products with screens
China RoHS - Digital Display option

• Logo must appear for 2s if displayed upon boot up
• If displayed along with other info,
  - duration and size of the logo must be appropriate so the logo is distinguishable
• May be viewed through the user interface
  - The table must be able to be viewed as well
  - Instructions must be able to point the user to this information
• This information must be read only
• Manufacture must retain the digital data for the product 3 years after its life span.
China RoHS - Hazardous Substance Tables

• **Tables**
  - Must be included with the shipment either as a
    • separate sheet, in the manual, website referenced by manual, or digitally available on the product
  - Main attributes of hazardous substance table unchanged
  - New standard to be referenced in table
  - Some additional specifics on size and requirements
    • The height of the Chinese characters and symbols used in the marking shall be clear and legible and not be smaller than 1.8 mm.

• **English translation (must normally be in Chinese)**

![Table 1 Marking Styles for the Names and Contents of the Hazardous Substances]

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lead (Pb)</td>
</tr>
</tbody>
</table>

This table is prepared in accordance with the provisions of SJ/T 11364.

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

(Enterprises may further provide in this box technical explanation for marking “X” based on their actual circumstances.)
### China RoHS - Example Table

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Toxic and Hazardous Substances or Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>铅 (Pb)</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>地膜覆盖及配件 (Plastic Covering and Fittings)</td>
<td>O</td>
</tr>
<tr>
<td>外层塑料外壳 (Outer Plastic Housings)</td>
<td>O</td>
</tr>
<tr>
<td>塑料电纤断件及配件 (Wire and Connector Housing)</td>
<td>O</td>
</tr>
<tr>
<td>金属五金紧固件 (Metal Hardware and Fasteners)</td>
<td>X</td>
</tr>
<tr>
<td>金属连接器和住房 (Metal Connectors and Housing)</td>
<td>O</td>
</tr>
<tr>
<td>印刷电路组件 (PCB)</td>
<td>O</td>
</tr>
</tbody>
</table>

O: 表示该项目中涉及的所有物料，其包含的有害物质的含量低于 GB/T 26572-2011 标准的限制要求 (indicates that the content of the toxic and hazardous substance in all the Homogeneous Materials of the part is below the concentration limit requirement as described in GB/T 26572-2011).

X: 表示该项目中涉及的所有物料中至少有一种，其包含的有害物质的含量高于 GB/T 26572-2011 标准的限制要求 (indicates that the content of the toxic and hazardous substance in at least one Homogeneous Material of the part exceeds the concentration limit requirement as described in GB/T 26572-2011).
Recommendations

- Principal recommendations
  - Products currently in scope of China RoHS and EU RoHS
    - Update China RoHS tables
  - Components in scope of China RoHS but not directly EU RoHS
    - Wait for law update
  - Products currently not in scope of China RoHS but likely in scope of new China RoHS standard
    - Start the process for becoming compliant to China RoHS

- Overall
  - Verify that China RoHS tables are accurate
    - The majority of China RoHS tables review by Claigan are not even remotely accurate
New REACH SVHCs

• New substances
  - UV-320
    • 2-benzotriazol-2-yl-4,6-di-tert-butylphenol
  - UV-328
    • 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol
  - DOTE
    • 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate
  - Reaction mass of DOTE and MOTE
  - Cadmium fluoride
  - Cadmium sulphate

• Re-listing under new hazard
  - Bis(2-ethylhexyl) phthalate (DEHP)
Cadmium Fluoride and Sulphate

- **Salts**
- **Notes**
  - Not likely to be present in a salt in an article
  - Will not be present in an RoHS compliant product
    - No exemptions in RoHS for these salts
- **Low concern for articles**
DEHP as Endocrine Disruptor

- Re-list of DEHP
  - First substance to be listed under two criteria

- Reasons for inclusion
  - Toxic for reproduction (article 57c) (2008)
  - Equivalent level of concern having probable serious effects to the environment (Article 57 f) (2014)

- New inclusion
  - Long name for being included as an endocrine disruptor

- First listed of a substance as an endocrine disruptor

- Endocrine disruptors expected to be further regulation under new medical device regulation
UV Stabilizers

- Benzotriazoles family of substances
- UV-320 is related to specific UV stabilizer at 320nm
- 2013
  - UV 320, 327, 328, and 350 were proposed for SVHC list
  - Rejected in 2013 due to problems with ‘read across’ data between substances
- 2014
  - UV 320 and 328 re-submitted under their own data
  - Included in Dec 2014 REACH SVHC list
UV-320 and UV-328

• ‘Problem child’

• Principal use
  - UV stabilizer in plastics
  - ABS / Nylon / PE / PP / Polyester / PS / PUR / PVC

• Most plastics have a high UV absorbance up to 350 nm
  - UV stabilization required to prevent breakdown in sunlight
  - UV 320 and 328 commonly used up to 0.5% w/w

• Risk based focus
  - Plastic components over 20% w/w of an article (primarily enclosures)
    • ie. UV stabilizers not normally present in plastics over 0.5% w/w
DOTE and DOTE/MOTE

• ‘Problem child’
• Octyltin thermal stabilizer
  - Rigid and flexible PVC
• Primarily related to DOTE
  - Dioctyltin bis(2-ethylhexyl mercaptoacetate)
• Screening method
  - Sn measured in PVC
  - Normally in the ~2,000 ppm level
  - Indicates possibility of
    • methyltin (unregulated)
    • dibutyltin (common, but banned in consumer products in the EU)
    • octyltin
Overall - Compliance Issues

• UV stabilizers and DOTE
  - Not otherwise regulated
    • Therefore expect very limited supplier knowledge
  - Common usage
    • Especially in China
  - Brings into question a large range of plastics that were otherwise low risk for REACH SVHC

• Risk based approach
  - Due to the low concentration of DOTE and UV stabilizers (0.1 to 0.5%), the only plastics of concern are plastics that make up over 20% of the weight of an article
  - Which does bring plastic packaging into the equation
Grind Testing for REACH SVHCs

- Source of most of the incorrect declarations reviewed or received by Claigan
- Not an effective compliance method
  - Metals, plastics, and circuit boards are ground separately then recombined
  - Different solubilities of different plastics make the resulting powder incompatible with many test methodologies
  - Cannot identify the part that caused the issue
    - ie. No ability to replace the offending part
    - Which is a serious issue with the four phthalates being added to RoHS
- Decent for measuring base metals
  - Which leads to the main source of error
    - All Pb (such as Pb in Brass) being report as PbO, etc..
    - All Sn (ie. solder) being reported as DOTE
Risk Based Methodology

• Claigan standard approach
  - Risk based evaluation of materials
  - Segregation of materials into high risk / low risk
  - Testing of high risk materials for specific substances

• Advantages
  - Higher accuracy
  - Lower cost
  - No false fails
  - Specific parts or materials at cause of the failure can be identified and replaced
Recommendations

• Risk based approach
  - More accurate and effective
  - More practical if elimination of SVHCs is a goal

• New REACH SVHC
  - DOTE and UV stabilizers likely be a problem
  - But focus on plastic parts over 20% of the weight of the unit
  - Plastic packaging now more of a concern
  - Do not expect suppliers to have any valid data on these materials
Future Restriction

- Important note on the importance of REACH SVHCs
  - All new EU directives with substance restrictions will reference REACH SVHC
  - Examples
    - RoHS, medical device regulation, construction products, textiles, toys, etc..
- Expect many of the current REACH SVHCs to be restricted under new regulations for other products
  - As opposed to restricted in articles under authorisation
- Declaration today. Restriction tomorrow.
Claigan - Restricted Materials Services

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