Understanding RoHS and REACH: Impacts on your Global Markets

An overview of two important environmental regulations, their impacts on the global electronics industry and upcoming legislation changes.

Abstract

Companies manufacturing equipment or consumer parts that use hazardous materials in the manufacturing process must comply with environmental regulations from multiple geographic markets. Two key sets of regulations – RoHS and REACH – require compliance if you are selling to markets in the European Union, China, Korea, and parts of the United States. The list of markets with materials controls related to electronics changes periodically.

Compliance with RoHS and REACH requires extensive knowledge of your supply chain, excellent record keeping, and in some cases testing. Whether you are an OEM or a supplier, understanding the restrictions on hazardous materials and compliance is critical to maintaining and expanding market share. This white paper provides a description of the basic RoHS and REACH requirements, enforcement and compliance, and upcoming changes in legislation.
Global markets require awareness and understanding of hundreds of requirements from packaging and transportation to import and export regulations. For electronics original equipment manufacturers (OEMs) and suppliers, there are added environmental requirements. These regulations require OEMs, and by extension their suppliers, to document the materials that the equipment and parts are made of and come in contact with during the manufacturing phase.

**RoHS – The Basics**

Since July 2006, electronics companies with markets in the European Union (EU) have been working with the materials restrictions enforced under the Restriction of Hazardous Substances (RoHS) directive. RoHS regulations are applicable around the world – in one form or another. Since 2007, electronics companies selling in China have needed to comply with RoHS regulations as well.

Unfortunately, countries outside the EU either have slightly different restrictions or may treat classes of products differently. Countries within the EU may handle implementation of RoHS differently as well. This makes the job for equipment manufacturers difficult at best and almost impossible at worst. Environmental regulations inspired by RoHS in the EU
are in effect in China, California in the United States, Japan and Korea. Similar initiatives also exist or are being considered in Australia, New Zealand, Thailand, Taiwan, Malaysia and California, USA.

Compliance with the EU’s RoHS directive requires that manufacturers track the amounts of each restricted substance in their end products, keep records, and report as required by government agencies. For OEMs using hundreds or thousands of parts from multiple suppliers, the task of identifying and keeping track of all the materials used in their products and the amount of each material to demonstrate compliance is one of the most difficult tasks. Finding a quality, comprehensive source for materials information can make or break a company’s effort to comply with RoHS.

Handling RoHS Enforcement

Compliance enforcement for RoHS in the EU has been pretty uneventful from a violation standpoint. The enforcement agency in the UK reports only four product withdrawals between the periods of April 2008 and March 2009. Most enforcement agencies throughout the EU would rather assist companies address weaknesses and errors in their compliance process than issue penalties or take other enforcement action. The UK is one of the major countries that particularly provides extensive assistance to the industry to comply with RoHS. The enforcement authority for RoHS in the UK is the National Measurement Office in partnership with the Department for Business Innovation and Skills (BIS). BIS provides seminars, workshops, online forums, and question and answer opportunities to help OEMs develop and maintain a RoHS compliance program.

The RoHS enforcement report by the National Weights and Measures Laboratory (NWML) states education and distribution of information as actions that support meeting their goal of increased compliance. In addition to these beneficial actions for industry, NWML reported --

“Direct investigation of over 250 individual companies resulting in the establishing of 12 improvement plans, 3 EU notifications, 4 product withdrawals, 5 compliance notices and 3 warning letters.”

These actions were for the period of April 2008 to March 2009.


Was RoHS Worth It?

Some argue that the cost of compliance with RoHS – estimated by a study from Technology Forecasters Inc. to be in excess of $32 billion worldwide – was not worth the benefit. Costs for compliance range from budgets needed to document compliance to the cost of re-designing products to lost revenue due to pulling out of markets or suspending sales in markets while preparing compliance. Whether or not the world is a better place because of RoHS may be debated and may be dependent on whether you have a role in needing to demonstrate compliance.

Parties from both sides of the worthiness assessment put forward the lack of significant violation cases as proof that RoHS compliance is widespread. So, it seems that the goals of the regulation – reducing the amount of hazardous materials consumers are exposed to – have been met. For RoHS supporters this is part of the argument to continue with this type of regulation. For RoHS nay-sayers, this apparent widespread compliance shows that the regulation wasn’t needed in the first place. There is a third group though that argues that the enforcement of RoHS is not adequate and that additional restrictions are needed. One of the groups advocating additional regulation is the European Commission.

RoHS in the Future

The European Commission’s primary objective is to improve RoHS compliance rates further and reduce the cost of compliance. They are committed to making changes to meet their objective and began recasting RoHS in December, 2008. What started as a five-page revision to the original RoHS directive has grown to include 52 pages of explanation. What the final recast will look like is not completely known, but changes being considered include new materials being added, separation from WEEE, removal of exemptions, and requiring a CE mark for compliance.

REACH Legislation

On June 1, 2007, the EU and member states of the European Economic Area imposed new regulations for the Registration, Evaluation, Authorization, and Restriction of Chemical substances, commonly referred to as REACH. With a goal of better protecting human health as well as the environment, REACH is the strictest law to date regulating chemicals and their safe use, and seeks to replace over 40 existing directives related to chemical management under one regulation. Any company that manufactures, imports, or distributes products in Europe, must comply with REACH legislation.

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“REACH is the most complex legislation in the European Union’s history and the most important in 20 years.”

- Q&A: Reach Chemicals Legislation, BBC News, 28 November 2005

The difference between REACH and RoHS

REACH is much broader in scope than RoHS. While RoHS covers only six hazardous materials and focuses on those used in the manufacturing of electronics, REACH will target and control the use of thousands of substances and is not limited to the electronics industry. For instance, cars, toys, furniture and even clothing can be subject to REACH provisions. Chemicals subject to the legislation include substances on their own; those used as intermediates; those used in the making of a product, such as inks, alloys, solvents and paints; and those used in the final product itself where the substance may be released during normal consumer use. In fact, almost 40,000 chemicals already appear on an intermediate list—more than 1,000 printed pages—of pre-registered substances published by the European Chemicals Agency. The list was created to help downstream users of chemical substances determine whether chemical substances of interest to them are already pre-registered.

The REACH Process

The REACH process is overseen and managed by the European Chemicals Agency (ECHA) in Helsinki, Finland. The agency is also responsible for maintaining a public database of safety information for all registered substances. Under REACH laws, substances go through a four-part process:

1. Registration

Companies that manufacture, import or supply products with substances in quantities of one tonne per year or more are required to register with ECHA. Registration includes preparing a technical dossier and a chemical safety report.

2. Evaluation

The European Chemicals Agency and Member State Competent Authorities evaluate all registered substances and dossiers to assess potential hazards or risks.
3. Authorization

Chemicals containing Substances of Very High Concern (SVHC), such as Polybutylene Terephthalate (PBT), as well as substances which are Very Persistent and Very Bio-accumulative (vPvBs), and/or identified as posing serious health hazards to humans or to the environment, are subject to authorization. Companies are required to submit plans to replace SVHC substances with safer alternatives.

4. Restriction

Chemical substances that pose unacceptable or uncontrollable human health or environment risks may be restricted from the EU.

While REACH legislation applies to the majority of substances manufactured and/or imported within the EU, there are some exceptions and special provisions. For instance, medicinal and veterinary products are exempt from registration. Other exemptions include radioactive substances, substances under customs supervision and those used in the interest of defense. Even so, by the December 1, 2008 deadline, ECHA received approximately 2.75 million pre-registrations for about 150,000 chemical substances from 65,000 companies, worldwide.4

Complying with REACH

REACH regulations state that it is the responsibility of the manufacturer or importer to know the chemical composition of each of their products and to prove the safety of all substances used. For many companies this is a daunting task. According to chemical industry experts, the average manufacturer will be required to register 3,000 substances. But many companies based outside the EU may not be familiar with the regulation, or even know they are subject to it, then unexpectedly face fines and delays for non-compliance.

The cost of non-compliance is difficult to calculate but can be significant. Fines and penalties vary by country, and by the level of offense. But fees represent only a small portion of the price for compliance failure—hidden costs can take a toll. For instance, non-compliance can result in litigation, public relations issues, lost market share, and overall business disruption. In addition, companies that must remove a product from the market face lost sales and revenues. Costs can also be incurred to design, manage, test and launch new products that are compliant. To avoid potentially significant impacts to revenues, companies should not take a chance of being non-compliant and be thoroughly educated on the provisions, rules, and processes of REACH.

Any company using chemicals in their products and exporting to the EU must be familiar with European chemical hazard classifications and clearly identify all substances being used to ensure REACH compliance. This can be achieved by establishing a sound and reliable inventory and, as new substances are added to the regulation, reviewing and updating records on a regular basis. Each substance should also be identified using a Chemical Abstracts Service (CAS) or European Commission number, along with information about how much of the substance is being exported. For companies that use mixtures of substances, the chemical composition of these mixtures must be known, as well as the manufacturer of each of the substances. Third party electronic component databases, such as those offered by SiliconExpert Technologies, help companies procure environmental compliance data more easily, including related CAS numbers.

REACH regulations also require companies to work with an EU subsidiary to meet registration and other requirements. While appointing representatives or outsourcing the compliance process are also acceptable methods, the original equipment manufacturer must play an active role during the substance pre-registration and registration processes. Regulations also require that companies maintain REACH-compliant documentation for 10 years after the release of a product.

2010 Deadlines for REACH

REACH has used a phased approach for the registration requirements of phase-in substances, a term used to describe substances currently on the market. The registration requirements for phase-in substances will continue to be incorporated over the next 11 years. The next registration deadline is December 1, 2010. Before this date, all manufacturers and importers must have registered phase-in substances produced or imported in volumes of over 1,000 tonnes per year. Companies must also have registered substances that are carcinogenic, mutagenic or toxic to reproduction (CMR) with volumes of over one tonne per year. Substances not registered by this date will be withdrawn from the market under the REACH ‘no data, no market’ rule.

RoHS and REACH: Here to Stay

For manufacturers and importers, understanding and complying with RoHS and REACH will remain a challenging and ever-changing issue—especially as
more and more countries adopt similar regulations. Moreover, as public pressure mounts to add more substances faster under REACH, companies will be pressured to stay up to date with new registration rules and deadlines. In response, forward-thinking companies are making safer products with fewer hazardous chemicals. Most are proactive about compliance, as well as understanding new changes to the laws. And to help ensure compliance with RoHS and REACH, many companies take advantage of electronic component databases such as those provided by SiliconExpert Technologies. Because as costly and time-consuming as RoHS and REACH legislation may be, they are here to stay.

About SiliconExpert Technologies

Founded in 2000, SiliconExpert Technologies has built the world’s largest electronic components database and provides this data through a secure, on-demand web-service to the electronics industry. SiliconExpert provides extensive compliance data for electronic components for EU RoHS, China RoHS, REACH, WEEE and other environmental regulations. In particular, chemical data, material declarations, RoHS compliance and SVHCs for REACH are easily accessible for millions of components in SiliconExpert’s Parts Database. End-of-life (EOL) forecasting, finding Cross References (form, fit and function alternatives), Lifecycle statuses, Parametric Data and Product Change Notice (PCN) alerts are a few of the features of SiliconExpert’s suite of products that provide Part Search, BOM Management and Obsolescence mitigation solutions. SiliconExpert’s customer base includes leading commercial and government OEMs, top-tier authorized distributors, contract manufacturers and component suppliers. Learn more about SiliconExpert Technologies’ solutions at http://www.siliconexpert.com.