Implementing a Successful Compliance Program for the EU's RoHS and WEEE Directives: Disclosure Levels, Roadblocks and Lessoned Learned

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As the electronics industry prepares for the elimination of the six chemical substances banned by the European Union's Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Directive and the waste recovery requirements of the Waste Electrical and Electronic Equipment Directive, there is a great deal of concern over how to prepare for the requirements of this legislation and other similar legislation. The implementation of a program for ensuring compliance with these requirements is a daunting task and one that will not be accomplished overnight. There are some key areas to focus on, roadblocks to avoid, and lessons learned that can make this implementation process far easier.

Data Collection and Disclosure Levels

The RoHS Directive requires electronics manufacturers to eliminate lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers from their products by July 1, 2006. Common flawed thinking throughout the industry leads some to focus on complying with the RoHS Directive now and deal with the WEEE Directive later or let another department deal with it.

To assure compliance, a company must identify what chemicals are in the products they manufacture. This involves the review of the supplied components and materials used to manufacture products or subassemblies. Some level of material content disclosure is required from a company's suppliers, promoting a debate over disclosure levels. At first glance, setting up a system where suppliers only disclose whether or not their components or materials contain any of the six restricted substances and, if present where used for comparison with the exemptions in the annex of the RoHS Directive, seems to allow for a program which assures compliance. This level of disclosure which allows a supplier to state that their products do not contain any RoHS substances seems desirable; however, it fails to address some key concerns involved in complying with the RoHS Directive.

A top concern in the movement to RoHS compliance is not only eliminating the restricted substances from your product but also ensuring that the elimination of these substances does not adversely affect the quality or performance. The issue of whether or not supplied components will be compatible with the lead-free solder processes necessary to manufacture RoHS Compliant Products is the key item to address in moving to RoHS compliance. Therefore, it quickly becomes apparent that one must not only collect data on the RoHS substance content of supplied parts but also on manufacturing criteria such as maximum re-flow temperature.

The second concern is the requirement in the WEEE directive requiring producers to provide reuse and treatment facilities with information necessary for recycling, including the identification and location of dangerous substances in their products. These substances include not only the six RoHS substances, but also substances such as chlorofluorocarbons, ceramic fibers and asbestos. Therefore it is beneficial when collecting data from suppliers to identify the six RoHS substances and also any other substances which may be identified as hazardous.

To provide the electronics industry with a list of declarable substance, EIA (US), JEDEC, and JGPSSI (Japan), with involvement from EICTA (Europe), developed the Joint Industry Guide for Materials Declaration(JIG). This list contains an "A" list of substances which are banned or restricted by law and a "B" list of metals and metal compounds which must be disclosed when present above 100 ppm. Collecting information on all of the JIG A and B list substances goes a long way towards identifying all of the hazardous substances which a company may be required to disclose under the RoHS and WEEE Directives, as well as other legislation applying to electronic products around the world.

At a minimum, the companies collecting information to prove compliance with the RoHS and WEEE Directives should require their suppliers to report information on the content of JIG substances in their components and certain manufacturing criteria, such as maximum re-flow temperature to assure the items being supplied are compliant with the lead-free solder processes. This leads to the debate as to whether to disclose only the JIG substances, or to require full disclosure (100% material and substance content disclosure). Review of the experience gained in the auto industry in attempting to collect data for compliance with the End of life Vehicle Directive provides some insights for the electronics market.

Lesson Learned from Automotive Industry

Before the WEEE and RoHS Directives were passed in 2003 the automotive industry had to contend with the European Union's End of Life Vehicle Directive which required auto manufacturers to eliminate lead, mercury, cadmium and hexavalent chromium from their vehicles by July 1, 2003, and to meet recycling and reuse targets of 85% by 2006 and 95% by 2015.

In response to the ELV Directive, most of the world's auto manufacturers formed a coalition and contracted with Electronic Data Systems to provide an online database for suppliers called the International Material Data System (IMDS). The IMDS requires suppliers to disclose every component, material, and substance in the parts they supply, with some allowance for protecting confidentiality through the use of substance jokers such as "miscellaneous" in place of declaring actual substances.

The requirement by the auto manufacturers to provide full disclosure and a full accounting for every part used in their vehicles has some interesting results. Prior to the launch of IMDS, several auto manufacturers required some form of material content disclosure from their suppliers by requiring suppliers to identify any parts which contained any substances on a particular auto manufacturer's restricted substance list and signing off annually that the remainder of the supplied parts were compliant. For example, General Motors required suppliers to identify any parts they supplied to GM that contained substances on GM's GMW3059 list. Ford had their Restricted Substance Management Standard which worked in much the same manner. The change from these programs to IMDS forced the suppliers to look deeper into the content of their products and materials resulting in the identification of many noncompliant parts.

The case of what occurred to one large tier one supplier provides a strong argument for considering full disclosure. As data began to arrive from the Tier One's suppliers through IMDS, the Tier One began to analyze the data for ELV prohibited substances. The general feeling at the Tier One was that the elimination of lead, mercury and hexavalent chromium from their products may present a challenge, but that the elimination of cadmium would not. The Tier One had a policy in place for over eight years that parts supplied to them would be cadmium free. As the supplier combed through the data from its suppliers, it discovered hundreds of parts which contained cadmium. While the automotive industry's experience provides a strong argument for full disclosure, this should be done with sensitivity to confidentiality and proprietary concerns. Some automotive manufacturers allowed for the liberal use of these jokers, such as "miscellaneous" provided they did not represent a restricted substance. Others were quite restrictive, mandating that the amount of the joker specified in any material not exceed 10%. It quickly became clear that the more restrictive the requirement for reporting, the longer the time and the greater the effort required to obtain data.

This was not the only lesson learned in the auto industry. The early handling of IMDS reporting showed the importance of both internal and external communication. Initially there was a great deal of confusion in the industry - the message was not consistently carried through to suppliers. Several automotive manufacturers sent letters to the CEOs of their suppliers asking them to report material content information through IMDS. The problem was that they did not also contact the sales representatives or quality departments that are often tasked with meeting customer requirements. Several of the CEOs did not understand the importance or process involved so it did not get the attention it deserved. This led to the first years of IMDS reporting having minimal success. It was not until companies began requiring their purchasing departments to inform their suppliers' sales departments that IMDS that information began to flow properly. The introduction of IMDS reporting requirements into the new part approval process also greatly improved the response rate among suppliers.

There was also a problem with consistency of the message in the automotive industry. To comply with the Directive, several automotive manufacturers' purchasing departments were telling suppliers to eliminate lead, mercury, cadmium and hexavalent chromium from their parts. At the same time, engineering departments were writing specifications requiring suppliers to use products and processes which put these same restricted substances into the parts. The use of a centralized database eased the burden on the suppliers in that one reporting format could be used to report to multiple customers. This lowered some of the learning curve required for this reporting.

Lessons the electronic industry can take away from the automotive experience are:

- utilize a common format for reporting
- be cautious of exception reporting - consider some level of full disclosure
- be sensitive to confidentiality and proprietary concerns
- follow the normal communication channels for contacting suppliers
- ensure your company has a consistent message regarding material content reporting.

Conclusion

Those implementing a program to ensure compliance with the RoHS and WEEE Directives need to make every effort to establish a program that deals with all the requirements these directives place on their company. This includes not only collecting data on RoHS-banned substance content from their suppliers, but also identifying the manufacturing specifications and other restricted substance information from suppliers. Every effort should be made to collect this information at one time to avoid the increased effort in contacting suppliers repeatedly. Programs that allow suppliers to simply sign off on compliance without conducting a full review should be avoided. A strong communication plan should be included in the compliance program to be sure the suppliers understand what is required of them and the proper individuals are identified to handle reporting.