

Restriction of Hazardous Substances Directive

European Union Directive 2002/95/EC, entered into force 1 July 2006

With the aim of limiting the environmental impact of electronic products during their waste phase, the Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) prohibits the marketing of electrical and electronic equipment containing six hazardous substances in the territories of the European Union and European Economic Area. Similar legislation has also been adopted in other jurisdictions.

The Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) was adopted by the European Union (EU) in January 2003 and effectively entered into force across the EU member states and the European Economic Area (EEA) on 1 July 2006. Its restrictions on the use of six hazardous substances in electrical and electronic equipment are among the first binding environmental design requirements to be imposed on electrical and electronic equipment marketed across Europe. Moreover, RoHS effectively became a global environmental standard for the international electronics industry and was a regulatory model for similar legislation in other jurisdictions, such as California, South Korea, and the People's Republic of China.

RoHS is the sister directive of the EU Directive on Waste Electrical and Electronic Equipment (WEEE). RoHS and WEEE are binding rules that are based on the principle of producer responsibility and are intended to limit the environmental impact of electrical and electronic equipment when it becomes waste. Under the principle of producer responsibility, producers are responsible for the environmental impact of their products and must pay for the prevention and remediation of such impact. WEEE imposes take-back requirements (i.e., collection, treatment, reuse, recovery, recycling, and sound disposal)

on producers of electrical and electronic equipment with respect to the waste resulting from their products. In contrast, RoHS imposes chemical restrictions on the electrical and electronic equipment itself. The European Union saw that RoHS was necessary in addition to WEEE in order to further reduce the risks to the environment and human health resulting from the possible leach of hazardous substances to the environment during the waste phase of electrical and electronic equipment.

Application of RoHS

RoHS applies to eight categories of electrical and electronic equipment as well as electric bulbs and luminaires in households. Electrical and electronic equipment is defined as equipment that is dependent on electric currents or electromagnetic fields in order to work properly. It also includes equipment for the generation, transfer, and measurement of such currents and designed for use with a voltage rating not exceeding 1,000 volts for alternating current and 1,500 volts for direct current. The eight categories of electrical and electronic equipment that are subject to the RoHS restrictions are listed in the WEEE and include (1) large house appliances (e.g., freezers, washing machines), (2) small house appliances (e.g., toasters, electric knives), (3) information technology and telecommunication equipment (e.g., laptop computers, cellular phones), (4) consumer equipment (e.g., video recorders, electronic musical instruments), (5) lighting equipment, (6) electrical and electronic tools (e.g., sewing machines), (7) toys and leisure and sports equipment (e.g., video games), and (8) automatic dispensers.

Thus, RoHS applies to virtually all electronic products with the exception of electrical medical devices, large fixed installations, and monitoring and control instruments. The

European Commission has interpreted RoHS also as effectively excluding equipment specifically intended for military purposes as well as products designed to be used as part of equipment that does not fall within the definition of electrical and electronic equipment, such as products used in cars and aircraft. Cars and equipment installed in cars, however, are subject to similar restrictions under the EU Directive on End of Life Vehicles. The restrictions of the RoHS Directive and those of the Directive on End of Life Vehicles are enforced by the national or regional authorities of each member state.

Since 1 July 2006, RoHS has prohibited the marketing of covered electrical and electronic equipment in the European Union and EEA if it contains any of the following six categories of substances: cadmium, hexavalent chromium, lead, mercury, polybrominated biphenyls, and polybrominated diphenyl ethers. The restriction on lead, in particular, entailed a significant design and manufacturing change in the electronics industry as lead was widely used in the manufacturing of semiconductors.

Exemptions and Compliance

The RoHS restrictions, however, are subject to certain exemptions. First, the restrictions do not apply to spare parts for the repair or reuse of electrical and electronic equipment that was put on the market before 1 July 2006. European authorities have also taken the position that this exemption applies to materials used to upgrade or expand the capacity of equipment put on the market before 1 July 2006, provided that the upgraded or expanded equipment is not marketed as a new product. Retrofitting, however, is not covered by this exemption.

Second, batteries used in electrical and electronic equipment are not subject to the RoHS restrictions. Instead, batteries must comply with a specific EU Directive on Batteries; this directive restricts the use of mercury and lead in certain types of batteries and accumulators and also imposes waste take back and recycling obligations on producers of batteries and accumulators and of equipment containing them.

Third, a European Commission decision provides for a tolerated maximum concentration value of 0.1 percent for lead, mercury, hexavalent chromium, polybrominated biphenyls, and polybrominated diphenyl ethers, and of 0.01

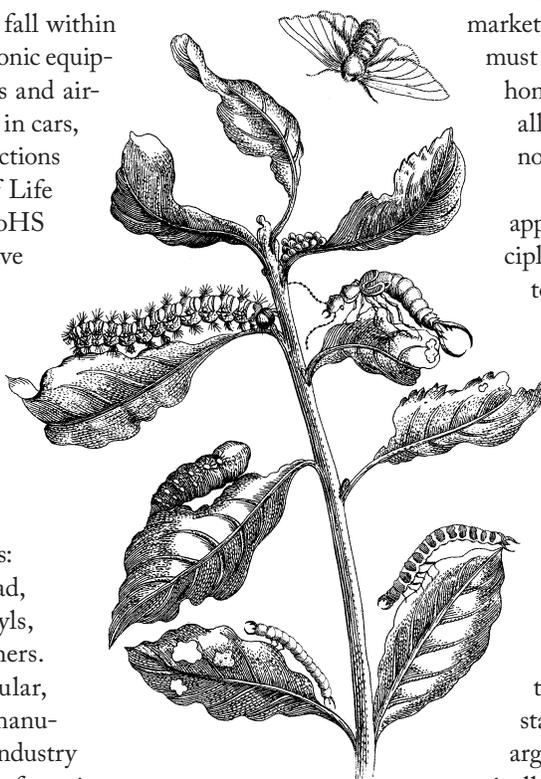
percent for cadmium. Thus, electrical and electronic equipment containing the prohibited substances in concentrations below these thresholds may still be marketed in Europe. The concentration must be measured on the basis of the homogenous material (e.g., plastics, alloys, glass) of the equipment and not its component parts.

Fourth, RoHS provides for the application of the substitution principle by requiring the commission to grant exemptions for specific applications of the substances if substitution is technically or scientifically impracticable, or if the negative environmental, health, and/or consumer-safety impacts caused by substitution are likely to outweigh the environmental, health, and/or consumer-safety benefits. These criteria for exemptions do not include the costs of replacing the substance for particular companies, but arguably the “technically or scientifically impracticable” criterion should include a consideration of the economic

impact of substitution for the industry as a whole.

Any party may request an exemption, and once the commission grants the exemption it applies to all equipment using the exempted application, not only those of the producer who requested it. Before deciding whether to grant an exemption, the commission must hold a public consultation procedure with producers, recyclers, environmental organizations, and employee and consumer associations.

On the basis of this criteria and procedure, the European Commission has exempted around thirty-nine specific applications of the restricted substances. Examples of these exemptions include mercury in straight fluorescent lamps for special purposes, lead in solders for servers, lead oxide in the glass envelope of blacklight blue lamps, and hexavalent chromium as an anti-corrosion agent of the carbon steel cooling system in absorption refrigerators. The European Commission must review the exemptions every four years and remove them where justified on the basis of the criteria. As RoHS is an EU directive, it must be transposed into the national laws of the different EU and EEA member states; individual states are also responsible for its enforcement. Thus the level of enforcement and the penalties that can be imposed for noncompliance may vary from one member state to another.



The Impact of RoHS

Overall, RoHS has changed the way the electronics industry thinks about the design and manufacture of its products (Overbeek 2008; personal communication between author and client base). While there are still concerns that electrical and electronic equipment imported from third parties may not always be RoHS compliant, most equipment marketed in Europe is compliant. Importantly, RoHS encouraged producers to significantly enhance their communication with their suppliers and customers in order to ensure that supplied materials complied with the restrictions. Large manufacturers were also forced to take responsibility and adopt internal procedures to ensure that their suppliers and contract manufacturers supplied compliant materials. Not surprisingly, this prompted other jurisdictions to impose similar requirements. To some extent, RoHS was good training for the electronics industry in preparation for the many additional requirements that were later imposed under the REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) regulation.

In December 2008, the European Commission proposed a new directive that would recast the RoHS Directive. The European Parliament and Council are currently considering this proposal; its adoption is not likely until 2011. The proposed directive is intended to, among other things, clarify the equipment covered, include medical devices and monitoring and control instruments within the scope of the restrictions, speed up the procedure to restrict additional substances, clarify the relationship between REACH and RoHS, provide for self-certification of conformity, strengthen the procedure to grant the exemptions, and improve the enforcement of the RoHS restrictions.

The debate in the parliament and council, however, has also highlighted the need to reconsider some important aspects of the RoHS Directive. These include (1) whether RoHS is necessary now that REACH has entered into force, (2) whether substances should be restricted purely on the basis of their hazard or only after considering their risks, (3) the extent to which any additional restrictions of substances should be based on a prior scientific review and not simply on political considerations, (4) whether all electrical and electronic equipment (including solar panels) should be subject to the restrictions, (5) whether nanomaterials in electrical and electronic equipment should be subject to specific restrictions, and (5) whether any specific

substances should be blacklisted as priority substances to be restricted in electrical and electronic equipment.

Cándido GARCÍA MOLYNEUX
Covington & Burling LLP

See also Chemicals Legislation and Policy; Environmental Law (several articles: China; East Asia; Europe); Polluter Pays Principle; Nanotechnology Legislation; Registration, Evaluation, Authorisation, and Restriction of Chemicals; Waste Shipment Law

FURTHER READINGS

- California Department of Toxic Substances Control (DTSC). (2003). Electronic Waste Recycling Act of 2003 (SB 20).
- European Commission. (2010). Frequently asked questions on Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) and Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). Retrieved September 29, 2010, from http://ec.europa.eu/environment/waste/weee/pdf/faq_weee.pdf
- European Parliament & the Council of the European Union. (2003, January 27). Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment (EEE), as amended. *Official Journal of the European Union*, L37, 19.
- García Molyneux, Cándido. (2001). Important stage reached in drafting of controversial electrical and electronic equipment devices. *EuroWatch*, 13(20), 1, 10–19.
- García Molyneux, Cándido. (2007). Chemicals. *The Yearbook of European Environmental Law*, 7, 331–367.
- García Molyneux, Cándido. (2008). The regulation of electrical and electronic equipment and chemicals in the European Union. In Albert H. Kritzer et al. (Series Eds.), *International Contract Manual: Vol. 2, Part 1. Contract Checklists* (pp. 38-1 to 38-26). Eagan, MN: Thomson Reuters/West.
- Kalimo, Harri. (2005). Reflections on the scope and pre-emptive effect of environmental directives—A case study on the RoHS Directive 2002/95/EC. *The Yearbook of European Environmental Law*, 5, 157–215.
- McLoughlin, Aaron. (2005). What is in a name? Regulation of electrical and electronic products. *European Environmental Law Review*, 5, 252–264.
- Ministry of Commerce of the People's Republic of China. (2006). Measures for administration of electronic information products of 2006.
- Ministry of Environment, Republic of Korea. (2008). Act for Resource Recycling of Electrical/Electronic Products and Automobiles of 2008.
- Overbeek, Ruud. (2008). The impact of RoHS now and in the future. *EE Times*. Retrieved November 3, 2010, from <http://www.eetimes.com/design/smart-energy-design/4013553/The-impact-of-RoHS-now-and-in-the-future>
- European Parliament and Kingdom of Denmark v. European Commission (DecaBDE)*, (2008), Joined Cases C-14/06 and C-295/06, European Courts Reports (I-01649).