GPC
Global Product Compliance

RoHS Global Overview

Report on The Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) regulations in the globe

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A Global Overview on the RoHS

The RoHS stands for the Restriction of Hazardous Substances, in specific, applies to electrical and electronic equipment (EEE). It aims to prevent pollution in product design, purchase, and production phases by restricting the use of harmful chemicals such as heavy metals, brominated flame retardants, and phthalates in such products. In the EU/EEA, the RoHS prevents the use of certain chemicals in EEEs above a threshold of 1000 ppm and sets out requirements to be applied by manufacturers, importers, and distributors throughout the supply chain.

Despite its undeniably positive impact, the RoHS is facing several challenges. Among these are RoHS's repeated inconsistencies with REACH, and its inability to tackle the negative effects on human health and the environment of the global increase in E-waste. The increase is especially detrimental for low- and middle-income countries, which are often involved in the informal recycling and landfilling of E-waste. These issues, however, are being addressed: low- and middle-income countries are adopting legislation on E-waste management, and the EU Green New Deal will involve a review of RoHS aimed at enhancing consistency with REACH.

As of 2020, over 45 jurisdictions outside of the European Economic Area (EEA) consider adopting or already introduced RoHS-like regulations. The following sections introduce the RoHS regulation, and its impacts on the electronics industry, a global overview of the RoHS, and current challenges. This month, the Newsletter team at GPC brings to you a Global Overview on the RoHS and to stay updated on how increased concern over environmental and health impacts of electronics boost the RoHS-like regulations around the world.

Contents

What is RoHS?

The RoHS stands for the Restriction of Hazardous Substances, in specific, applies to electrical and electronic equipments(EEEs). It aims to prevent pollution in product design, purchase, and production phases by restricting the use of harmful chemicals such as heavy metals, brominated flame retardants, and phthalates in such products. All EEEs producers and importers should ensure that their products do not exceed the maximum thresholds of the restricted chemicals when placing them in a concerned market. The RoHS regulation is first introduced in the EU, and currently, many other countries adopt or implement the RoHS-like regulations.

Impacts on the electronics industry

Since the EU's inception of the RoHS Directive in 2002, there have been ripple effects in a whole supply chain[1]. In order to satisfy these new regulative needs, a brand owner in the EU requests their manufacturers (OEM/ODM) to adopt RoHS requirements. OEM/ODM then re-design and manufacture a new product according to the requirements, and purchase RoHS compliant components from their upstream suppliers. Consequently, a series of these processes are replicated across tiers in the supply chain.

The EU RoHS Directive has induced not only cross-tier ripple effects but also made new internal standards and processes within a company. Often, EEE components suppliers need to prepare documents such as a Declaration of Conformity, a detailed inspection report including a product's material composition, a Bill of Materials, and a third-party lab test. If necessary, temperature profiles and plans to introduce new components are requested. Once these documents are available, OEM/ODM will perform quality verification or auditing. Then as a final step, specific marking is affixed to attest conformity.

From the EU RoHS to a global standard

The first EU RoHS Directive impact assessment report[2] analyzed the environmental and economic impacts of the RoHS implementation. One of the environmental benefits is the reduction of restricted substances in certain product groups such as TV sets, refrigerators, and cell phones. Besides, the restriction of heavy metals decreased human toxicity and ecotoxicity potential. Further EEEs at the end of life released fewer waste emissions to the environment. On the other hand, economic compliance costs e.g. collecting and reviewing information and R&D for new substitutive materials, and administrative burdens are high.

Given the environmental benefits of the RoHS, and considering increasing concerns about environmental and health impacts of electronics, more than 45 jurisdictions adopt and implement the RoHS-like regulation. Many countries follow the same principle as the EU RoHS Directive - restricting certain hazardous chemicals in EEEs to protect human health and the environment as a precautionary measure. Besides, the list of the restricted substances and their maximum thresholds is somewhat similar. Heavy metals and brominated retardants are often restricted, which includes:

- Cadmium < the maximum thresholds of 100ppm
- Lead < 1000ppm
- Mercury < 1000ppm
- Hexavalent Chromium < 1000ppm
- Polybrominated Bipheyls (PBB) < 1000ppm
- Polybrominated Diphenyl Ethers (PBDE) < 1000ppm

Following the EU, South Korea is the only country restricting four phthalates from 2021. It includes:

[1] Koh, Gunasekaran and Tseng, 2012, Cross-tier ripple and indirect effects of directives WEEE and RoHS on greening a supply chain

[2] European Commission DG Enterprise and Industry, 2008, Study on RoHS and WEEE Directives

- Bis(2-Ethylhexyl) phthalate (DEHP) < 1000 ppm
- Benzyl butyl phthalate (BBP): < 1000 ppm
- Dibutyl phthalate (DBP): < 1000 ppm
- Diisobutyl phthalate (DIBP): < 1000 ppm

In order to attest conformity, manufacturers, importers, and distributors whoever place EEE on the market shall prepare technical files, a Declaration of Conformity (DoC), and affix official compliance marking. Technical files include testing results to determine values of the restricted RoHS substances, Bills of Materials, assembly drawings, material declaration, etc. A DoC is an official letter stating conformity to the RoHS requirements of their products, parts, assemblies. A national mark of conformity is required in most countries. Each jurisdiction has varying conformity marks, for instance, CE mark in the EU, EAC mark in the Eurasia Economic Union (EEU), and G mark in Japan.

Electronic products displayed with a conformity mark ensures that they are compliant with the RoHS regulation. However, each conformity marking scheme does not exclusively apply to the EEEs. For instance, CE marking in the EU applies to not only EEEs but also toys, personal protection equipment, and machinery. The marking scheme gives administrative benefits to market surveillance authorities and relevant industries as they can presume the compliance of safety, health, and environmental protection standards. Most countries establish market surveillance by checking the presence of this compliance marking and other technical documents. Also, they set penalties or imprisonment for non-compliance.

Despite these commonalities, the scope of the RoHS varies across countries. Like the EU RoHS, EEU, Ukraine, China, Taiwan, Turkey has extensive product scope – almost all electrical and electronic products are covered except the ones explicitly exempted. On the other hand, some countries focus on the most common household appliances. For instance, India, Japan, and Singapore list refrigerators, washing machines, TV sets, air conditioners, and IT equipment in the scope. California specifically controls video display devices such as CRTs, LCD.

Among varying products, exemptions are applicable in the case where an alternative substance application is not scientifically or technically impractical. In the EU RoHS, upon industry requests, the Commission assesses whether to exempt such products and updates the exemption list. Annex III and IV outline the lists of exemptions and their expiration date. Still, the use of Lead used as an alloying element, solders, activator, etc.; Cadmium in printing inks are exempted, which will be expired by 2021 or in later years depending on the product categories.

Current challenges and the future of the RoHS

The RoHS-like regulation is an effective tool to change an upstream - EEE product design towards toxin-free electronics and has had a great impact on overall EEE supply chains. Besides, it enables information on the restricted chemical contents of the electronics to be circulated along the supply chain.

Despite the positive impacts of the RoHS-like regulation, still there are challenges. The first is the lack of coherence between different chemical and product policy; lack of investment in sustainable innovation to increase safe recycling. As an example of lead, wastes from cathode ray tubes (CRTs) in TV or computer screens contain a high content of lead. To reduce the hazards, CRT granulates are kept in concrete. As the concrete elements are considered as articles, they are not regulated under the REACH regulation despite lead contents. As a result, as more concretes are reused, more CRT granulates then reused and mixed with other waste streams without any recovery plans. Hazardous concrete is supposed to be differentiated from the non-hazardous however, so far, they are all mixed[3].

[3] Bodar et al, 2018, Risk management of hazardous substances in a circular economy

The second challenge is the increasing consumption of EEEs. As more population becomes affluent, the global consumption of electronics has been increased. According to the UN report[4], every year the world produces almost 50 million tons of electrical and electronic waste (E-waste), which is equivalent to over six kilograms for every person. However, the formal recycling rate is less than 20% and the other 80% are landfilled or recycled informally. Often, low- and middle-income countries are involved in informal E-waste recycling, which threatens workers' health. Also, landfilling E-waste causes contamination in soil and water bodies.

Due to social and environmental issues arising from E-wastes, low- and middle-income countries started to employ RoHS-like regulations. For instance, Brazil, the largest E-waste producer in Latin America as well as a receiver of illegal E-waste[5], drafted the RoHS regulation. Bangladesh adopted the E-Waste Management Rule restricting heavy metals and other toxic substances, which applies to all E-waste producers and manufacturers.

Meanwhile, the EU published Chemical Strategy for Sustainability towards a Toxic-free Environment as a part of the EU Green Deal in October 2020[6]. It is expected that the chemical-extensive electronics also having high potential for circularity will be a focal sector. To ensure non-toxic material cycles, the EU promises to minimize the input of toxic chemicals from the product design phase and to invest in sustainable innovation. Besides, New Circular Electronics Initiative (CEI) in 2020/21 includes plans for reviewing the RoHS Directive to improve coherence with REACH and Eco-design legislations.[7]

If you are interested in country-specific RoHS-like regulations, please refer to the Compendium. The GPC's November newsletter covered updates of toy regulations in the world. The following special section will look into how the EU's electronic toys are regulated under the Toy Safety Directive and RoHS 2.

Special section: How Electronic toys are regulated under the Toy Safety Directive and RoHS 2?

Electric and electronic toys (hereinafter 'EEE toys') are at a crossroads of two major EU product-based directives: directive 2009/48 on the safety of toys (TSD), and directive 2011/65 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2). Despite serving different purposes (the TSD focuses on the protection of users whereas RoHS aims at preventing risks to human health and the environment during waste management) these two directives provide for similar requirements and seem to overlap in several instances.

RoHS restricts the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE), bis(2-ethylhexyl) phthalate (DEHP), butyl benzyl phthalate (BBP), dibutyl phthalate (DBP), and diisobutyl phthalate (DIBP). Under RoHS, the maximum value tolerated by weight for these substances is 0,1%. Out of the ten substances restricted under RoHS, four are also restricted under the TSD, namely lead, mercury, cadmium, and hexavalent chromium. According to the TSD, these four substances may be contained in toys provided that they do not exceed certain migration limits specified in point 13 of Part III of Annex II of the TSD. EEE toys are subject to the substance-based restrictions set out in the TSD and those set out in RoHS. When it comes to the four substances restricted under both directives EEE toys must comply with both the maximum value tolerated under RoHS and the migration limits set out by the TSD.

The RoHS 2 New Legislative Framework created compliance requirements for manufacturers, importers and distributors of EEE, that are almost identical to those provided under the TSD. Here are a few of them:

[4] World Economic Forum, 2019, A New Circular Vision for Electronics – Tiem for a Global Reboot
[5] Ricardo Gabbay Souza, 2020, E-waste situation and current practices in Brazil
[6] The European Commission, 2020, Chemical Strategy for Sustainability towards a Toxic-free Environment
[7] The European Commission, 2020, Circular Economy Action Plan for a cleaner and more competitive Europe

- Both directives require manufacturers to affix the CE marking prior to making their product available on the market. In the case of an EEE toy, the CE marking thus indicates compliance with all applicable requirements (both RoHS 2 and the TSD);
- Both directives require manufacturers to submit their product to conformity tests in order to ensure that they comply with safety requirements. Under the TSD, manufacturers must resort to either an internal production control procedure (self-assessment) or an EC-type examination (third-party assessment) depending on whether they have applied harmonized standards or not. Under RoHS 2, only an internal production control procedure is required;
- Both directives require manufacturers to draft the technical documentation of their product, although information to be included differ according to each text.

Compendium

European Union

Country	European Union
Official Name	EU Restriction of Hazardous Substances Directive (2011/65/EU) – often referred to as RoHS 2
Objective	Contributing to the protection of human health and the environment, including the environmentally sound recovery and disposal of waste EEE
Implementation date	RoHS 1 started from 1 Feb 2008; the recast RoHS 2 applied on 1 Jul 2011
Restricted substances and maximum thresholds	Cadmium (Cd): < 100 ppm, 0.01% by weight Lead (Pb): < 1000 ppm, 0.1% by weight Mercury (Hg): < 1000 ppm, 0.1% by weight Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% by weight Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% by weight Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% by weight Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm, 0.1% by weight Benzyl butyl phthalate (BBP): < 1000 ppm, 0.1% by weight Dibutyl phthalate (DBP): < 1000 ppm, 0.1% by weight Diisobutyl phthalate (DIBP): < 1000 ppm, 0.1% by weight
Scope	The scope is extended to all Electric Electronic Equipments from July 2019
Product group	Annex II used to define 10 product categories as follows: Category 1 (Large household appliances) Category 2 (Small household appliances) Category 3 (IT and telecommunications equipment) Category 4 (Consumer equipement) Category 5 (Lightning equipment) Category 6 (Electrical and electronic tools) Category 7 (Toys, leisure, and sports equipment) Category 8 (medical devices) Category 9 (control and monitoring instruments) Category 10 (Automatic dispensers) Category 11 (other EEE not covered by any of the categories above) • The restriction of DEHP, BBP, DBP, and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021. • The restriction of DEHP, BBP, DBP, and DIBP shall not apply to cables or spare parts for the repair, the reuse, the updating of functionalities or upgrading of the capacity of EEE placed on the market before 22 July 2019, and of medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, placed on the market before 22 July 2021. • The restriction of DEHP, BBP, and DBP shall not apply to toys that are already subject to the restriction of DEHP, BBP, and DBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.
Exemption	Product group that the regulations do not apply to: • some equipment for military use or specifically designed to be sent into space • products integral to equipment that is out of scope • large-scale stationary industrial tools and large-scale fixed installations • photovoltaic (solar) panels produced for permanent use at specific locations • means of transport (apart from certain two-wheeled electric vehicles) • non-road mobile machinery specifically for professional use • products specifically for research and development available on a business-to-business basis • pipe organs • active implantable medical devices

	Besides, Annex III (Applications exempted from the restriction in Article 4(1)); and Annex IV (Applications exempted from the restriction in Article 4(1) specific to medical devices and monitoring and control instruments) are exempted • Have varying expiration dates so to see all the list and the dates, please refer to this document
Affected stakeholders and sectors	Electrical and Electronic Equipment Manufacturers, Authorized representative, Importers/distributors/traders
Compliance requirements	Technical file to show compliance, including: • Description of the EEE • Product design and description showing the relationship of conformity documentation with parts, their materials, and subassemblies • Risk assessment of the parts, materials, and subassemblies • Conformity information • Harmonized standards and conformity procedures that have been applied • Manufacturing documentation • Test reports signed by an authorized laboratory (e.g. International Laboratory Accreditation Cooperation) Declaration of Conformity Display the CE mark 
Enforcement	Fines, withdrawal, imprisonment

Norway

Country	Norway
Official Name	Prohibition on Certain Hazardous Substances in Consumer Products (PoHS)
Objective	To limit the harmful effects on human health and the the environment from consumer products, as well as to limit the content of hazardous substances in waste.
Implementation date	Drafted a revised proposal on 20 Dec 2011; still pending phase and not implemented
Restricted substances	Lead: 0.01% by weight in any product or a homogeneous material • Exemptions: Crystal and lead glass, rust protection paint, non-food contact glazes, and enamels, etc PCP (Pentachlorophenol) or its salts and esters: 0.0005% PFOA and individual salts and esters: 0.0001% • Exemptions: Some textiles and leather are regulated by other regulations. MCCP (Medium-chained Chlorinated paraffins): 0.01 % in any product or a homogeneous material • Exemptions: products with special flame-retardant (fire-safety) requirements and where no satisfactory alternatives can be found
Scope	All consumer goods with a few exceptions
Product group	Consumer goods are defined as “by consumer product what is meant is any product that is intended for consumers or that can reasonably be expected to be used by consumers" e.g. clothing, bags, construction, toys, etc.
Exemption	Except for food products, cosmetics, food packaging, fertilizer, tobacco, medicine, means of transport, permanently mounted equipment for means of transport and tires and similar accessories for means of transport
Affected stakeholders and sectors	Not applicable
Compliance requirements	Not applicable
Enforcement	Not applicable

UK

Country	UK
Official Name	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulation • After the Transition Period of Brexit, still, the same RoHS regulations will be enforced in the UK
Objective	To control the levels of hazardous substances and chemicals they contain and prevent them from entering the waste stream with consequential adverse impacts on human and animal health
Implementation date	RoHS 1 started from 1 Feb 2008; the recast RoHS 2 applied on 1 Jul 2011
Restricted substances	Cadmium (Cd): < 100 ppm, 0.01% by weight Lead (Pb): < 1000 ppm, 0.1% by weight Mercury (Hg): < 1000 ppm, 0.1% by weight Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% by weight Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% by weight Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% by weight Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm, 0.1% by weight Benzyl butyl phthalate (BBP): < 1000 ppm, 0.1% by weight Dibutyl phthalate (DBP): < 1000 ppm, 0.1% by weight Diisobutyl phthalate (DIBP): < 1000 ppm, 0.1% by weight
Scope	The scope is extended to all Electric Electronic Equipments from July 2019
Product group	Annex II used to define 10 product categories as follows: Category 1 (Large household appliances) Category 2 (Small household appliances) Category 3 (IT and telecommunications equipment) Category 4 (Consumer equipement) Category 5 (Lightning equipment) Category 6 (Electrical and electronic tools) Category 7 (Toys, leisure, and sports equipment) Category 8 (medical devices) Category 9 (control and monitoring instruments) Category 10 (Automatic dispensers) Category 11 (other EEE not covered by any of the categories above)
Exemption	Product group that the regulations do not apply to: • some equipment for military use or specifically designed to be sent into space • products integral to equipment that is out of scope • large-scale stationary industrial tools and large-scale fixed installations • photovoltaic (solar) panels produced for permanent use at specific locations • means of transport (apart from certain two-wheeled electric vehicles) • non-road mobile machinery specifically for professional use • products specifically for research and development available on a business-to-business basis • pipe organs • active implantable medical devices Besides, Annex III (Applications exempted from the restriction in Article 4(1)); and Annex IV (Applications exempted from the restriction in Article 4(1) specific to medical devices and monitoring and control instruments) are exempted • Have varying expiration dates so to see all the list and the dates, please refer to this document (link)
Affected stakeholders and sectors	Manufacturers or importers placing EEE on the UK market as well as the distributors and retailers

Compliance requirements	Technical file to show compliance Declaration of Conformity Affix appropriate labeling Display the CE mark
Enforcement	The enforcement authority is undertaking market surveillance activities to detect non-compliant products and is also conducting tests for this purpose. Various powers of enforcement are available, including: • Requiring the production of compliance documentation and other information which may provide evidence as to whether or not the Regulations have complied within a particular case or class of cases • Inspecting processes and performing analytical tests • Issuing a compliance notice requiring certain action to be taken • Issuing an enforcement notice requiring non-compliant goods to be withdrawn from the market or prohibiting or restricting the placing of non-compliant goods on the market • Contravening or failing to comply with the prohibition on hazardous substances in the RoHS Regulations, or with an enforcement notice, could result in those held responsible facing a fine up to the statutory maximum (currently £5000) on summary conviction or an unlimited fine on conviction on indictment • Those failing to submit compliance documentation at the request of the enforcement authority may be liable on summary conviction to a fine up to level five on the standard scale (currently £5000) • Procedural offenses (obstruction of an enforcement officer, providing false or misleading information to the enforcement authority) are also punishable on summary conviction by a fine up to level five on the standard scale

Eurasia Economic Union

Country	Eurasia Economic Union (EEA) - Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia
Official Name	The technical regulation of the Eurasian Economic Union On the Limitation of the Use of Hazardous Substances in Electrical and Radioelectronics Products (TR EAEU 037/2016)
Objective	To ensure the protection of human life and health, the environment, as well as to prevent actions that mislead consumers of electrical equipment and radio electronics regarding the content of hazardous substances in them
Implementation date	Drafted on 1 Mar 2018 with two years of the transition period; became mandatory on 1 Mar 2020
Restricted substances	Cadmium (Cd): < 100 ppm, 0.01% by weight Lead (Pb): < 1000 ppm, 0.1% by weight Mercury (Hg): < 1000 ppm, 0.1% by weight Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% by weight Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% by weight Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% by weight
Scope	The regulation applies to the following 12 defined electrotechnical and electronic product categories
Product group	Category 1 (Electrical apparatus and appliances for household use) Category 2 (Electronic computers and devices connected to them, including their combinations) Category 3 (Telecommunication facilities (terminal telecommunication devices)) Category 4 (Copiers and other electrical office equipment) Category 5 (Electrified tools (manual machines and portable electrics)) Category 6 (Sources of light and lighting equipment, including equipment built into furniture) Category 7 (Electromusical tools) Category 8 (Game and automatic trading machines) Category 9 (Cash registers, ticket printing machines, ID card readers, ATMs, information kiosks) Category 10 (Cables, wires, and cords intended for use with a rated voltage not exceeding 500 V AC and/or DC, except for fiber optic cables) Category 11 (Automatic switches and residual current devices) Category 12 (Fire-security detectors)
Exemption	Annex 3 of EAEU TR 037/2016 • Electrical and electronic products for use with nominal voltage up to 1000 V AC and 1500 V DC, unless otherwise specified in Annex № 1 of the Technical Regulations • Electric and electronic products, which are intended exclusively for use as components in electrical devices, as long as not specified otherwise in Annex № 1 of the Technical Regulation • Electronic toys • Photovoltaic modules • Electrical and electronic products intended for use in land and space objects • Electrical equipment intended exclusively for use in air, water, land, and underground transport • Batteries and accumulators • Used electrical and electronic products • Measuring equipment • Medical equipment
Affected stakeholders and sectors	Manufacturers, authorized representatives, or importers placing electrotechnical and electronic products on the Eurasian Economic Union
Compliance requirements	EAC Declaration of Conformity issued by manufacturer, importer or in some cases by the lab; this is applicable in case of following Declaration Schemes 1d, 2d, 3d, or 4d, 6d EAC Certificate of Conformity issued by the notified bodies and test labs of the EAEU, which is valid for 5 years; this is applicable in case of following Certification Schemes 1c, 2c, 3c, 6c Display the EAC mark

	EAC
Enforcement	Conformity assurance procedures that can be achieved by: • testing by an in-country notified the lab • manufacturer's tests demonstration of technical documentation conforming to IEC 63000 or test report to an EAWU-accredited test center when making the EAC declaration analogous to RL 2011/65/EU Without conformity assurance, the equipment cannot be placed on the market

Ukraine

Country	Ukraine
Official Name	Technical Regulation Decree No. 139
Objective	To ensure human health protection and protection of the environment, including ecologically safe disposal and removal of electric and electronic equipment waste
Implementation date	Effective on 10 Mar 2017; the amendment is effective on 22 Jul 2019
Restricted substances	Cadmium (Cd): < 100 ppm, 0.01% w/w Lead (Pb): < 1000 ppm, 0.1% w/w Mercury (Hg): < 1000 ppm, 0.1% w/w Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% w/w Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% w/w Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% w/w Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm, 0.1% w/w Benzyl butyl phthalate (BBP): < 1000 ppm, 0.1% w/w Dibutyl phthalate (DBP): < 1000 ppm, 0.1% w/w Diisobutyl phthalate (DIBP): < 1000 ppm, 0.1% w/w
Scope	The defined 10 product categories are the scope
Product group	Category 1 (Large household appliances) Category 2 (Small household appliances) Category 3 (IT and telecommunications equipment) Category 4 (Consumer equipment) Category 5 (Lightning equipment) Category 6 (Electrical and electronic tools) Category 7 (Toys, leisure, and sports equipment) Category 8 (medical devices) Category 9 (control and monitoring instruments) Category 10 (Automatic dispensers) Category 11 (other EEE not covered by any of the categories above) • Restrictions on the use of the four phthalates (DEHP, BBP, DBP, and DIBP) shall not apply before July 22, 2019, for certain categories of EEE and July 22, 2021, for the remaining categories
Exemption	Product group that the regulations do not apply to: • some equipment for military use or specifically designed to be sent into space • products integral to equipment that is out of scope • large-scale fixed industrial equipment and facilities • means of transport of people and goods, except electric two-wheel transport means • off-road mobile vehicles of special purpose • active medical products subject to implantation • photoelectric panels • equipment used for scientific research, engineering works provided on a B2B basis • Chemical current sources used in EEE Besides, Appendix 3 and 4 outline the exemption list including medical devices
Affected stakeholders and sectors	Applicable to EEE manufacturers, authorized representative, importers
Compliance requirements	Declaration of Conformity in Ukrainian - inspection is done when companies apply for Electromagnetic compatibility (EMC) certification Technical documentation National mark of conformity (Decree No. 1184, 2015) 

Enforcement	Corrective measures are required in case something is wrong

China

Country	China
Official Name	Requirements of concentration limits for certain restricted substances in electrical and electronic products - GB/T 26572 2011 (often called, China RoHS 2) Mark requirements for restriction of Hazardous Substances in electrical and electronic products - SJ/T 11364-2014
Objective	To control and reduce pollution of the environment caused by electrical and electronic products upon being discarded; protecting Chinese consumers and the environment
Implementation date	Effective on 1 Jul 2016; only mandatory in Mainland Chian; Not applicable in Hong Kong, Macau
Restricted substances	Cadmium and its compounds < 0.01% by weight Mercury and its compounds < 0.1% by weight Lead and its compounds < 0.1% by weight Hexavalent chromium and its compounds < 0.1% by weight Polybrominated biphenyls (PBBs) < 0.1% by weight Polybrominated diphenyl ethers (PBDEs) < 0.1% by weight
Scope	Electrical and electronic products according to Article 3
Product group	Category 1 (Communication equipment, fixed or mobile) Category 2 (Professional broadcast and TV equipment) Category 3 (Computer and office equipment) Category 4 (Household appliances) Category 5 (Electronic instruments for monitoring and control applications) Category 6 (Industrial electrical and electronic equipment, including monitoring and control equipment) Category 7 (Power tools) Category 8 (Medical electronics and devices) Category 9 (Lighting products, including electric light sources (lamps) and luminaires) Category 10 (Sports and entertainment products)
Exemption	Involving energy production, transmission, and distribution equipment, such as power plants, transmission and distribution power stations, building supply and distribution systems, and equipment used. Besides, • Electrical and electronic equipment for defense and military use • Electrical and electronic equipment used in special environments or extreme environments • Electrical and electronic equipment for export • Electrical transportation equipment • Used equipment manufactured before July 1st, 2016 • Temporary entry of imported products or maintenance service, not for sale • Prototype for research/development, testing purposes • For exhibition and other purposes, not for sale, etc.
Affected stakeholders and sectors	Electrical and Electronic Product (EEP) manufacturers, importers, distributors
Compliance requirements	Risk evaluation for hazardous substances in EEP (Design, Procurement, Manufacturing, Others) Collect necessary information and technical documentation (Applicable regulations, supplier declaration, contractual agreement, testing report, etc.) Assess the information and documents concerning its quality and trustworthiness, and implement the evaluation (timeline, validity, efficiency, quality) Compile conformity declaration document Affix China RoHS marking • When a product contains no hazardous substances, attach a Green marking 

	• When having hazardous substances, attach an orange marking 
Enforcement	Everyone in the supply chain has responsibilities and is subject to penalties for non-compliance

Taiwan

<table>
<tr><td>Country</td><td>Taiwan</td></tr>
<tr><td>Official Name</td><td>CNS 15663 “Guidance to a reduction of the restricted chemical substances in electrical and electronic equipment”</td></tr>
<tr><td>Objective</td><td>Encouraging industries to reduce the use of the restricted chemical substances and to control these in each stage of the supply chain and during the life of the product</td></tr>
<tr><td>Implementation dadte</td><td>Enforced on 1 Dec 2016; extended deadline by product types until 1 Jan 2019</td></tr>
<tr><td>Restricted substances</td><td>Cadmium (Cd) and its compounds: 0.01% by weight
Lead (Pb) and its compounds: 0.1% by weight
Mercury (Hg) and its compounds: 0.1% by weight
Chromium VI (Cr+6) and its compounds: 0.1% by weight
Polybrominated biphenyls (PBB): 0.1% by weight
Polybrominated diphenyl ethers (PBDE): 0.1% by weight</td></tr>
<tr><td>Scope</td><td>Defined Electrical and electronic equipment categories</td></tr>
<tr><td>Product group</td><td>Category 1 (Large household appliances)
Category 2 (Small household appliances)
Category 3 (IT and telecommunication equipment)
Category 4 (Consumer equipment)
Category 5 (Lighting equipment (including electric light bulbs and household luminaires))
Category 6 (Electrical and electronic tools (except for large-scale stationary industrial tools))
Category 7 (Toys, leisure, and sports equipment)
Category 8 (Automatic dispensers)
Category 9 (Other equipment covered by CNS 3765, CNS 14408 and CNS 14336-1)</td></tr>
<tr><td>Exemption</td><td>EEEs meeting one of the criteria below are not regulated by Taiwan RoHS;
Products intended to protect national security and/or for military purposes
Products where electricity is not the main power source
Products where the electrical and electronic components are not needed to fulfill the primary function
Electrical and electronic equipment that is part of another type of product
Batteries
Large-scale stationary industrial tools</td></tr>
<tr><td>Affected stakeholders and sectors</td><td>EEE manufacturers, importers, distributors</td></tr>
<tr><td>Compliance requirements</td><td>EEEs marking is required
EEEs exceeding the maximum thresholds of the restricted substances can be placed on the market, however, the detailed marking of the presence of the restricted substances (hazardous substance content table) is required
<table>
<tr><td colspan="7">Equipment name: Water Dispenser, Type designation: XXX</td></tr>
<tr><td rowspan="2">Unit</td><td colspan="6">Restricted substances and its chemical symbols</td></tr>
<tr><td>Lead
(Pb)</td><td>Mercury
(Hg)</td><td>Cadmium
(Cd)</td><td>Hexavalent chromium
(Cr^{+6})</td><td>Polybrominated biphenyls
(PBB)</td><td>Polybrominated diphenyl ethers
(PBDE)</td></tr>
<tr><td>PCB</td><td>Exceeding 0.1 wt %</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>Heater</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>Hot Water tank</td><td>○</td><td>Exceeding 0.1 wt %</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>Accessories(ex: cord etc.)</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td colspan="7">Note 1: “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.
Note 2: “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.
Note 3: The “–” indicates that the restricted substance corresponds to the exemption.</td></tr>
</table></td></tr>
</table>

	Inspect the product according to the Commodity Inspection Act & a certificate of "registration of product certification" and an inspection mark labeled: • Registration of Product (RPC)   • Type Approved Batch Inspection (TABI)   • Declaration of Confirmation (DoC) – obligatory  
Non-compliance	Need to pass the inspection otherwise cannot place the product on the market

South Korea

Country	South Korea
Official Name	The Act for Resource Recycling of Electrical and Electronic Equipment and Vehicles
Objective	to establish a resource recycling system for the efficient use of resources and contribute to environmental conservation and the sound growth of the national economy by placing restrictions on the use of hazardous substances
Implementation date	Initially enacted in 2008; New proposal will be implemented on 1 Jan 2021
Restricted substances	Cadmium(Cd) and its compounds: 0.01% Mercury and its compounds: 0.1% Lead(Pb) and its compounds : 0.1% Hexavalent chromium (Cr6+) and its compounds: 0.1% Polybrominated biphenyls (PBB): 0.1 %; Polybrominated diphenyl ethers (PBDE): 0.1 % • NEW Proposal including four phthalates Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm, 0.1% by weight Benzyl butyl phthalate (BBP): < 1000 ppm, 0.1% by weight Dibutyl phthalate (DBP): < 1000 ppm, 0.1% by weight Diisobutyl phthalate (DIBP): < 1000 ppm, 0.1% by weight
Scope	Defined product categories
Product group	• 26 types: Television, refrigerator, washing machine, air conditioner, personal computer, printer, copying machine, fax machine, electric water purifier, electric oven, microwave oven, food processor, tableware dryer (including dishwasher), electric bidet, air purifier, electric heater, loudspeaker box, electric rice cooker, water softener, humidifier, electric iron, electric fan, blender, dust collector, video player, and mobile telephone terminal • New Proposal includes 23 product types: Vending machine, avigraph, wired and wireless router, treadmill, scanner, food dryer, drug-decocting machine, electronic frying pan, video game machine, electric water heater, foot bath machine, sewing machine, bread maker, dehumidifier, coffee maker, dehydrator, toaster, fryer, hairdryer, projector, electric massager, monitor camera, and electric kettle.
Exemption	Annex II specifies the exempted cases including Lead in solder, ceramics, etc., Mercury in lamps, hexavalent chromium in cooling solution, cadmium in IR-cut
Affected stakeholders and sectors	EEEs manufacturers, importers, distributors
Compliance requirements	Description of Environmental Management System showing how a company meets the RoHS requirements, monitoring their compliance across the whole supply chain Declaration of Conformity Test result as proof showing the compliance e.g. contents of the restricted substances in a product
Non-compliance	Fines under 30M KRW(27,500 USD)

Japan

Country	Japan
Official Name	Law for Promotion of Effective Utilization of Resources in Japan with the JIS C 0950 standard "The marking for the presence of the specific chemical substances for EEE"
Objective	Design for Environment including, rationalize the use of raw materials, use recyclable resources and reusable parts, promote long term use of products
Implementation date	Originally effective on 1 Jul 2006; amended the standard on 2008
Restricted substances	Cadmium(Cd) and its compounds: 0.01% by weight Mercury and its compounds: 0.1% by weight Lead(Pb) and its compounds: 0.1% by weight Hexavalent chromium (Cr6+) and its compounds: 0.1% by weight Polybrominated biphenyls (PBB): 0.1 % by weight Polybrominated diphenyl ethers (PBDE): 0.1 % by weight
Scope	The defined product categories
Product group	Personal computers Unit-type air conditioners TV sets Refrigerators Washing machines Clothes dryers Microwaves
Exemption	Annex B of the JIS C 0950: 2008
Affected stakeholders and sectors	The manufacturers and importers of the target products in Japan
Compliance requirements	make “marking of presence” on the website in Japanese and this is possible with their office in Japan or by taking services of some trading companies having their existence in Japan a Declaration of Conformity Affix appropriate marks • green G mark (voluntary, for the products that are exempted or having less or equal contents of the restricted substances) • orange R mark (mandatory, when the products exceeding the maximum limit of the restricted substances) • Different industry associations publish Green G mark (often called J-Moss green mark) guidelines - JEITA (electronics and information), JEMA (electrical), JRAIA (refrigeration and air conditioning)

India

Country	India
Official Name	The E-Waste (Management) Rules 2016
Objective	Electronic waste or e-waste cause a great impact on the environment, therefore, there is a need to curve this menace • India has combined legislation of WEEE and RoHS
Implementation date	The E-waste (Management and Handling) Rules being effective 1 May 2012; the amended version of the E-Waste (Management) Rules effective on 1 Oct 2016
Restricted substances	Cadmium (Cd): < 100 ppm, 0.01% by weight Lead (Pb): < 1000 ppm, 0.1% by weight Mercury (Hg): < 1000 ppm, 0.1% by weight Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% by weight Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% by weight Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% by weight
Scope	The defined product categories
Product group	Category 1 (Only refrigerators, washing machines, air-conditioning units (except centralized A/C)) Category 3 (All except for calculators, printer cartridges, and electronic equipment for collecting, storing, processing, or transmitting data) Category 4 (Television sets only)
Exemption	Products for military and national defense Products where electricity is not the primary power source Products where the primary function does not require electricity (e.g. talking dolls) Sub-assembly or component of the exempted product category Products that serve small manufacturing and service businesses as defined under the Micro, Small & Medium Enterprises Development Act of 2006 Batteries Radioactive waste India has several specific use lead exemptions similar to that for EU RoHS Annex III Exemptions, as well as for cadmium and mercury. Compliance enforcement protocols and penalties for non-compliance are not specified
Affected stakeholders and sectors	EEEs Producers, Consumers, Collection centers, Dismantlers, Recyclers
Compliance requirements	The Certification process takes 10-15 days for approval and to become RoHS certified and it consists of the following key stages: • Application • Application/Contract Review • Initial Certification Audit (stage-1 audit) • Assessment (stage-2 audit) • Continual assessment (surveillance audit)
Non-compliance	Not specified

Bangladesh

Country	Bangladesh
Official Name	The Hazardous Waste (E-Waste) Management Rules
Objective	To reduce the use of hazardous substances in electrical products "within five years", by an anticipated 10% this year and 50% by the fifth year
Implementation date	Adopted and entered into force by the end of 2020
Restricted substances	short-chain chloroparaffins, alkanes, C10-13 ≤ 25% by weight antimony trioxide ≤ 1% by weight beryllium metal and its oxide ≤ 0.1% by weight nickel, cadmium, cadmium oxide, and cadmium sulphate≤ 0.1% by weight chromium VI (hexavalent chromium)≤ 0.25% by weight copper beryllium alloys≤ 3% by weight lead and its oxide≤ 0.1% by weight mercury≤ 0.1% by weight mineral wool≤ 2% by weight octabromodiphenylether (OBDE)≤ 2% by weight polychlorobiphenyls (PCBs)≤ 0.25% by weight refractory ceramic fibres≤ 20% by weight liquid crystals (commercially available mixtures of ten to 20 substances that belong to the group of substituted phenylcyclohexanes, alkylbenzenes and cyclohexylbenzenes. They contain oxygen, fluorine, hydrogen, and carbon. About 250 chemical substances are used for formulating more than 1,000 marketed liquid crystals) ≤ 0.15% by weight polyvinyl chloride (PVC) ≤ 0.15% by weight tetrabromobisphenol-A (TBBPA) ≤ 0.15% by weight
Scope	Defined product categories
Product group	Household appliances Monitoring and control equipment Medical equipment Automatic machines IT and telecommunication equipment
Exemption	Not applicable
Affected stakeholders and sectors	Every e-waste producer, manufacturer, large importer, dismantler, recycler, trader or shopkeeper, hoarder, transporter, repairer, collection center, auctioneer, exporter and large users of electrical and electronic products and other relevant persons
Compliance requirements	Affected stakeholders register in the Department of Environment (DoE) and submit an e-waste management plan list the hazardous substances contained in a product in its information booklet
Non-compliance	Not applicable

Singapore

Country	Singapore
Official Name	Singapore RoHS
Objective	To reduce the use of hazardous substances in electrical and electronic equipment
Implementation date	1 Jun 2017
Restricted substances	Cadmium (Cd): < 100 ppm, 0.01% by weight Lead (Pb): < 1000 ppm, 0.1% by weight Mercury (Hg): < 1000 ppm, 0.1% by weight Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% by weight Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% by weight Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% by weight
Scope	The defined product categories
Product group	Refrigerators Washing machines Air conditioners Portable computers Mobile phones Flat-panel TVs
Exemption	All other products e.g. spare parts, batteries, used or second-hand, packaging are exempted
Affected stakeholders and sectors	Local manufacturers, authorized representative, importers/distributors/traders
Compliance requirements	Declaration of Conformity Technical file as per IEC 63000 (EN 50581) No marking required
Non-compliance	Non-compliant products still are manufactured for export but not for local sale. A hazardous substance (HS) license/permit application is needed from the National Environment Agency

Gulf Cooperation Council

Country	Gulf Cooperation Council – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE, and Yemen
Official Name	Draft technical regulation on the use of some hazardous substances in electronics
Objective	To reduce the use of hazardous substances in electrical and electronic equipment
Implementation date	Pending; no harmonization of the RoHS as only UAE, Oman and Saudi Arabia agreed on the draft; However, Oman only agreed on the regulation application on the particular sectors • UAE published RoHS-like requirements implemented since 2017 (Decision No. 10) of 2017 • Similar application and structure as the EU RoHS
Restricted substances	Maximum permissible concentration in weight of 0.1% for the following substances: • lead • mercury • hexavalent chromium • polybrominated biphenyls (PBBs) • polybrominated diphenyl ethers (PBDEs) • bis(2-Ethylhexyl) phthalate (DEHP) • butyl benzyl phthalate (BBP) • dibutyl phthalate (DBP) • diisobutyl phthalate (DIBP) for Cadmium 0.01%
Scope	The defined product categories in Annex 1
Product group	Category 1 (Small and large household appliances e.g. refrigerators and vacuum cleaners) Category 2 (IT and telecommunication equipment e.g. cellphones) Category 3 (Consumer equipment) Category 4 (Lighting equipment) Category 5 (Electrical and electronic tools) Category 6 (Medical devices -with some exceptions) Category 7 (Monitoring and control instruments) Category 8 (Automatic dispensers) Category 9 (Toys, leisure and sports equipment e.g. video games) Category 10 (Other electrical and electronic equipment not covered by the above categories)
Exemption	Certain substances and applications are exempted: • mercury in single capped (compact) fluorescent lamps (subject to restrictions) • lead bound in crystal glass • lead and cadmium in filter glasses and glasses used for reflectance standards, among other exemptions. • Medical equipment and control instruments e.g. equipment utilizing or detecting ionizing radiation, such as lead bearings in X-ray tubes, among others Certain exemptions come with an expiration date e.g. the exemption for the lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionizing radiation expires on 30 June 2021
Affected stakeholders and sectors	EEEs manufacturers, the manufacturer representative, importers, and product distributors
Compliance requirements	Manufacturer • risk analysis associated with the use of their equipment • conduct a conformity assessment and records keeping • safety and usage instruction in Arabic Importer – fill out Importer Declaration of Conformity Distributor – only allowed to put the regulation-compliant products
Non-compliance	Not applicable

Turkey

Country	Turkey
Official Name	Restriction of Hazardous Substances (RoHS) - Atık elektrikli ve elektronik eşyalar Kontrolü Yönetmeliği (AEEE, regulation number 28300)
Objective	To reduce the use of certain dangerous substances commonly used in electric and electronic equipment (EEE)
Implementation date	1 Jun 2019
Restricted substances	Cadmium (Cd): < 100 ppm, 0.01% by weight Lead (Pb): < 1000 ppm, 0.1% by weight Mercury (Hg): < 1000 ppm, 0.1% by weight Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% by weight Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% by weight Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% by weight
Scope	The defined product groups
Product group	Category 1 (Large household appliances) Category 2 (Small household appliances) Category 3 (IT and telecommunications equipment) Category 4 (Consumer equipment) Category 5 (Lightning equipment) Category 6 (Electrical and electronic tools) Category 7 (Toys, leisure, and sports equipment) Category 8 (medical devices) Category 9 (control and monitoring instruments) Category 10 (Automatic dispensers)
Exemption	Any equipment with voltages of over 1000V (AC) or 1500V (DC) Replacement parts for equipment manufactured before June 2009 Equipment designed for integration into another piece of equipment Weapons and other equipment used for exclusively military purposes
Affected stakeholders and sectors	Manufacturer, seller, brand owner, trader, and distributors
Compliance requirements	Prepare documentation showing that the product meets the criteria for 5 years Submit a Conformity Declaration Form every year to the Turkish enforcement agency (the Turkey Ministry of Environment and Forestry)
Non-compliance	Penalties and sanctions

United States

Country	The US – California; Similarly, in Illinois, New Jersey, Minnesota, Colorado, Wisconsin, Indiana, Rhode Island, New Mexico, and New York
Official Name	California RoHS - Law (Health and Safety Code sections 25214.9-25214.10.2) - Regulation (California Code of Regulations, title 22, section 66260.202)
Objective	To reduce the environmental effect and health impact of electronics
Implementation date	1 Jan 2007
Restricted substances	Lead, mercury, hexavalent chromium 0.1% by weight cadmium 0.01% by weight
Scope	The defined product groups
Product group	Only applies to "covered electronic devices" - a video display device with a screen greater than four inches, measured diagonally The current list of covered electronic devices 1. Cathode ray tube containing devices (CRT devices) 2. Cathode ray tubes (CRTs) 3. Computer monitors containing CRTs 4. Laptop computers with liquid crystal display (LCD) 5. LCD containing desktop monitors 6. Televisions containing CRTs 7. Televisions containing LCD screens 8. Plasma televisions 9. Portable DVD players with LCD screens
Exemption	Not specified
Affected stakeholders and sectors	Manufacturers, distributors, wholesalers, and retailers who sell covered electronic devices in California
Compliance requirements	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
Non-compliance	Penalties applied for the violation

Brazil

Country	Brazil
Official Name	Draft regulation on the control and use of hazardous substances in Electrical and Electronic Equipment
Objective	To regulate the presence of substances considered hazardous in electronic and electric equipment
Implementation date	The regulation review was stalled after the election in October 2018; Associação Brasileira de Normas Técnicas (ABNT) initiated stakeholder consultation for IEC 63000 standards, which was closed 10 Dec 2019
Restricted substances	Cadmium (Cd): < 100 ppm, 0.01% by weight Lead (Pb): < 1000 ppm, 0.1% by weight Mercury (Hg): < 1000 ppm, 0.1% by weight Hexavalent Chromium: (Cr VI) < 1000 ppm, 0.1% by weight Polybrominated Biphenyls (PBB): < 1000 ppm, 0.1% by weight Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm, 0.1% by weight Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm, 0.1% by weight Benzyl butyl phthalate (BBP): < 1000 ppm, 0.1% by weight Dibutyl phthalate (DBP): < 1000 ppm, 0.1% by weight Diisobutyl phthalate (DIBP): < 1000 ppm, 0.1% by weight
Scope	The 10 defined product groups
Product group	Category 1 (Large household appliances) Category 2 (Small household appliances) Category 3 (IT and telecommunications equipment) Category 4 (Consumer equipment) Category 5 (Lightning equipment) Category 6 (Electrical and electronic tools) Category 7 (Toys, leisure, and sports equipment) Category 8 (medical devices) Category 9 (control and monitoring instruments) Category 10 (Automatic dispensers) Category 11 (other EEE not covered by any of the categories above) * Potentially include car under the scope as Brazil has no separate End of Life Vehicle regulations
Exemption	The exemption list will follow the ones in the EU RoHS as the draft regulation in Brazil will adopt the EU RoHS 2
Affected stakeholders and sectors	Electronic and electric equipment manufacturers, importers, retailers, distributors
Compliance requirements	Technical file following IEC 63000 in Portuguese Declaration of Conformity
Non-compliance	Not applicable

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