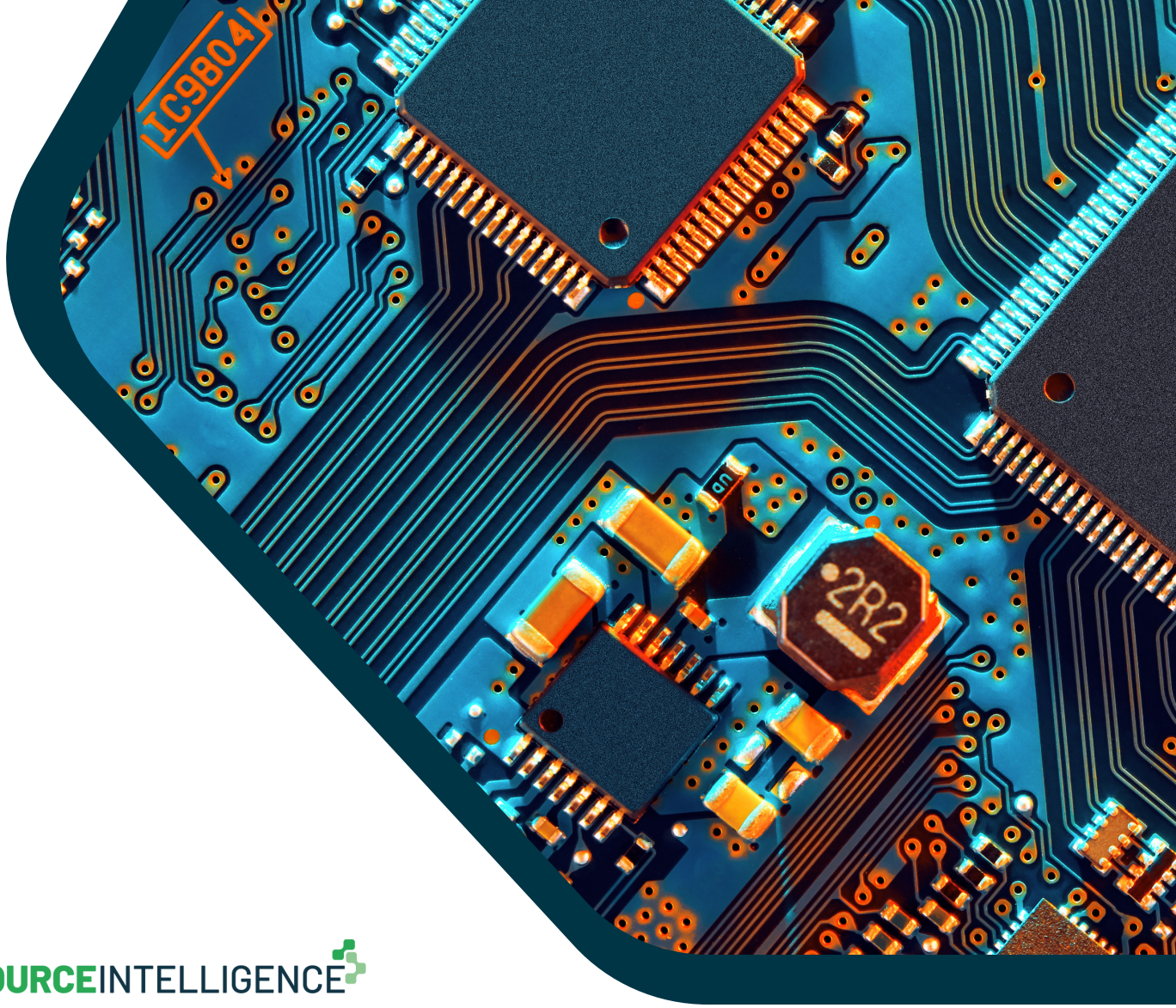

SOURCEINTELLIGENCE

UNDERSTANDING RoHS ON A GLOBAL SCALE

E-BOOK

A Guide to Global RoHS Compliance

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INTRODUCTION

Electrical and electronic equipment, while essential in everyday life, generate a staggering amount of waste each year. These products contain toxic substances that harm human health, animals, and the environment. As a result, many countries worldwide have implemented RoHS programs to minimize hazardous waste generation.

The European Union's RoHS directive was the first RoHS program introduced to the global market in 2002, but RoHS programs have rapidly expanded since then and are expected to continue growing over time. Understanding RoHS compliance is critical for actors within the supply chain—particularly manufacturers, distributors, retailers, and importers—to avoid disruptions and legal consequences.

In this e-book, we will explore:

- The foundations of RoHS compliance
- Examples of RoHS programs around the world
- Common challenges of global RoHS compliance
- How Source Intelligence can simplify RoHS compliance

GLOBAL RoHS COMPLIANCE EXPLAINED

WHAT IS THE RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS) COMPLIANCE?

RoHS is a set of laws that restrict the use of hazardous substances in electrical and electronic products above specific concentrations. While the EU was the first to introduce its RoHS program, RoHS now extends far beyond Europe with active programs in several countries worldwide. This growth is expected to continue with more countries implementing RoHS requirements as the quantity of hazardous electronic waste increases and the dangers of these substances become more widely known.

WHICH SUBSTANCES ARE RESTRICTED UNDER RoHS?

In general, RoHS programs target hazardous compounds typically found in electronics and electrical equipment. This includes heavy metals, such as lead and cadmium, as well as specific classes of compounds often found in plastics. Both categories are known to be harmful to humans, and many substances within those categories are banned from use in other types of products, such as house paint, children's toys, and food ware.

For example, lead used to be a common ingredient in house paint, yet it was banned in the U.S. in 1978 after it was linked to significant health concerns for children. (1) However, lead and other regulated substances are key components of electronics, so RoHS restricts the use of certain compounds rather than banning them.

WHICH COMPANIES ARE OBLIGATED TO COMPLY WITH RoHS?

Given that each country with a RoHS program has its own requirements, the scope of companies with compliance obligations varies between countries. Generally, companies that manufacture, import, distribute, or sell electronics and electrical equipment can be subject to RoHS obligations. Additionally, RoHS programs often extend beyond finished products to include parts, components, and accessories. Companies must check for RoHS requirements within each country they operate in to confirm their obligations.

EXAMPLES OF GLOBAL RoHS COMPLIANCE PROGRAMS

While RoHS policies exist on a global scale, and obligation requirements vary by country, the European Union (EU), United Kingdom (UK), and China are often the primary influencers in the development of RoHS in new countries, making them great examples for understanding how RoHS differs around the world. Let's explore the RoHS policies and compliance obligations of the EU, UK, and China in further detail.

EUROPEAN UNION (EU) RoHS

EU RoHS was introduced in 2002 before being replaced by RoHS 2, officially named Directive 2011/65/EU, in 2013. RoHS 2 expanded the exemption list, updated the compliance process, added the Conformité Européene (CE) marking as a requirement to demonstrate compliance, and more.

Scope

Any business that manufactures, imports, or sells applicable electrical and electronic equipment (EEE) in the EU must comply with RoHS. This includes companies that do not directly sell to consumers but instead sell to resellers, distributors, or other businesses that place their products on the market.

Items within scope of the EU RoHS directive include (but are not limited to) products, equipment, sub-assemblies, spare parts, components, and cables. The directive separates EEE into eleven categories:

1. Large home appliances
2. Small home appliances
3. IT & telecommunication equipment
4. Consumer equipment
5. Lighting equipment
6. Electrical and electronic tools
7. Sports equipment and toys
8. Medical devices
9. Monitoring and control equipment
10. Automatic dispensers
11. Other electrical and electronic equipment outside of these categories

Restricted Substances

There are currently ten restricted substances under the EU RoHS directive. The restricted compounds and their maximum allowable threshold at the homogeneous level are listed below:

1. Lead (Pb) – 0.1%
2. Cadmium (Cd) – 0.01%
3. Hexavalent Chromium (Cr VI) – 0.1%
4. Mercury (Hg) – 0.1%
5. Polybrominated Diphenyl Ethers (PBDE) – 0.1%
6. Polybrominated Biphenyls (PBB) – 0.1%
7. Benzyl butyl phthalate (BBP) – 0.1%
8. Bis(2-ethylhexyl) phthalate (DEHP) – 0.1%
9. Diisobutyl phthalate (DIBP) – 0.1%
10. Dibutyl phthalate (DBP) - 0.1%

Exemptions

There are exemptions to RoHS compliance in Article 4(1) within the directive. Annexes III & IV list restricted substances that are exempt when used in specific applications. Exemption use must be disclosed in RoHS compliance declarations. (2)

Compliance Process

EU RoHS is a self-declaring directive that requires companies to generate a technical file. A technical file contains information about the product (lab test results, bill of materials, etc.) and the steps taken to ensure RoHS compliance. Companies must keep a technical file for 10 years following a product being placed on the market.

Once the Technical File is generated and RoHS compliance is verified, the liable party must submit a RoHS Declaration of Conformity (DoC).
The appropriate country's customs will approve the DoC and issue a CE trademark certifying RoHS compliance. The CE marking must be displayed on the product, or the product's packaging must display the CE trademark. (3)

CE

Figure 1. CE trademark certifying RoHS compliance.

UNITED KINGDOM (UK) RoHS

UK RoHS, named Regulation 2012 No. 3032 – The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations, was implemented in 2012. While the regulation is the foundational legislation of the UK, there are differences in how it is applied in Great Britain and Northern Ireland.

Scope

UK RoHS refers to companies within the scope of the regulation as economic operators, which includes manufacturers, importers, distributors, and retailers. UK RoHS applies to any EEE placed or made available on the market.

Restricted Substances

UK RoHS restricts the same ten substances as EU RoHS to the same maximum thresholds.

Exemptions

Economic operators can apply for an exemption under UK RoHS for certain technical applications. However, Great Britain has its own exemptions system independent of the EU, while Northern Ireland follows. However, Great Britain has its own EU exemption list. (4) (4)

UK RoHS covers all EEE, spare parts, and cables, but exempt items include:

- Pipe organs
- Space equipment
- Military equipment
- Professional non-road machinery
- Solar or photovoltaic panels
- Large stationary industrial tools
- Implantable medical devices

Compliance Process

The UK RoHS compliance process is like EU RoHS. Economic operators must submit a Technical Package, including a Declaration of Conformity, a record of the conformity assessment, and any additional production control documentation (such as laboratory test reports). The Technical Package must be kept for 10 years after the product was first placed on the market and made available for the Office of Product Safety Standards (OPSS) if requested. Some EEE items require

the Technical Package to be kept for longer than 10 years.

After submitting a technical file, manufacturers must declare their products RoHS compliant by affixing either a UKCA mark (for Great Britain) or a CE mark (for Northern Ireland) to the product. However, starting in 2025, the CE mark will no longer be accepted, and the UKCA mark will be standard. (5)

Figure 2. UKCA mark certifying RoHS compliance for Great Britain.

CHINA RoHS

China RoHS was originally implemented in 2006 by the Ministry of Industry and Information Technology (MIIT). In 2016, the Chinese government introduced a new regulation that replaced the original, named Administrative Measures for Restriction of Use of Hazardous Substances in Electrical and Electronic Products (EEP), which is more commonly known as China RoHS 2.

Scope

Manufacturers or importers of EEP fall within the scope of China RoHS 2. EEP that fall into the following 12 product types are within scope of RoHS restrictions or must be compliant by exemption:

- Air conditioners
- Refrigerators
- Electric water heaters
- Washing machines
- Smartphones
- Monitors
- Photocopiers
- Printers
- Televisions
- Fax machines
- Mobile devices
- Microcomputers

Restricted Substances

China RoHS has six restricted hazardous substances. The restricted compounds and their maximum allowable threshold are listed below:

1. Cadmium (Cd) – 0.01%
2. Mercury (Hg) – 0.1%
3. Lead (Pb) - 0.1%
4. Hexavalent chromium (Cr VI) - 0.1%
5. PBDEs (polybrominated diphenyl ethers) - 0.1%
6. PBBs (polybrominated biphenyls) - 0.1%

Exemptions

Like the EU and the UK, China's RoHS 2 has exemptions for specific use cases. Some examples include EEP that is utilized in the following ways:

- For military purposes
- For special or extreme environments
- Designated for export
- For research or testing purposes

Compliance Process

Under China RoHS, producers and importers of EEP must display information about hazardous substances present in their products, including information such as:

- *The names of the substances*
- *The quantities of the substances*
- *The reusability/recyclability of the products and their components*
- *The impact on the environment and human health if used or processed inappropriately*
- *The environment-friendly use periods*

RoHS 2 has a "two-step" enforcement process: 1) all in-scope EEP must meet the regulation's labeling requirements according to the current standards, and 2) quantities of the restricted substances must not exceed specified levels established by national and industry standards in EEP listed in the Qualification Management Catalogue (i.e., products within the scope of the regulation). EEP must be labeled whether they contain or do not contain hazardous substances. [AP1]

- *If a product does not contain hazardous substances, it should display a green label with a lowercase letter e in the center.*
- *If a product does contain a hazardous substance, it should display an orange label with a number in the center, along with a statement including the name and amount of the substance in the product's manual. The number on the orange label indicates the product's Environment Friendly Use Period (EFUP), which is the length of time the product can be used safely. This label must also be displayed on EEP exempt from the regulation. (6)*

Figure 3. Examples of China RoHS labels indicating if a product does not contain hazardous substances (in green), and the Environment Friendly Use Period (EFUP) labels indicating the amount of time in years a product can be used (in orange).

ADDITIONAL COUNTRIES WITH RoHS COMPLIANCE PROGRAMS

As mentioned earlier, RoHS requirements exist worldwide. Many other countries are adopting RoHS programs beyond the EU, the UK, and China. In most cases, the purpose is the same: to restrict the use of hazardous substances in electronic and electrical equipment to protect the health of humans and animals. Examples of other countries with existing RoHS programs include:

- United Arab Emirates (UAE)
- Taiwan
- Saudi Arabia
- Norway
- Malta
- Korea
- Japan
- Belgium

CHALLENGES OF GLOBAL RoHS COMPLIANCE

CHALLENGES OF GLOBAL RoHS COMPLIANCE

Regardless of which RoHS compliance programs you are obligated to comply with around the world, companies often face the same common challenges, such as understanding their products and the markets they sell in, staying up to date on regulatory obligations, obtaining accurate documentation from suppliers (while also combating supplier fatigue), and having a dedicated system in place to manage the data.

Without the proper tools or resources, you could potentially expose your company to risk—especially if you are required to comply with several RoHS programs worldwide. Partnering with a supply chain compliance provider, such as Source Intelligence, can streamline your RoHS compliance efforts while also reducing risk and cost.

SIMPLIFY GLOBAL RoHS COMPLIANCE OBLIGATIONS

SOURCE INTELLIGENCE'S GLOBAL RoHS PROGRAM

Our spectrum of solutions for global RoHS compliance facilitates supplier engagement, data analysis, and documentation generation through powerful compliance software with fully managed service options. Regardless of the level of support required, we deliver peace of mind knowing that every product complies with the RoHS obligations of each country where you do business.

With our global RoHS program, you will be able to:

Reduce internal resource burdens

Streamline due diligence efforts, such as supplier engagement, data collection, and report generation, and refocus internal resources on managing other parts of your business.

Minimize business risk

Easily provide documentation on demand. Your compliance data is housed in a centralized location, so you can efficiently generate reports and declarations to fulfill customer requests.

Gain supply chain visibility

Quickly identify issues with a complete view of your compliance and product data. Our configurable dashboards and BOM rollups display compliance verdicts for every part and component.

Increase risk foresight

Our regulatory experts guide our solution development, ensuring you have the right tools to anticipate changes to your compliance obligations and set you up for compliance success.

SCHEDULE A DEMO

Our team is here to help you achieve your RoHS compliance goals. Whether you need a self-service or a fully managed program, database access, or expert consulting, we will guide you through every step of your compliance journey. Schedule a demo to explore our RoHS program, learn about our services, and discover how simple RoHS compliance can be.

Request a demo

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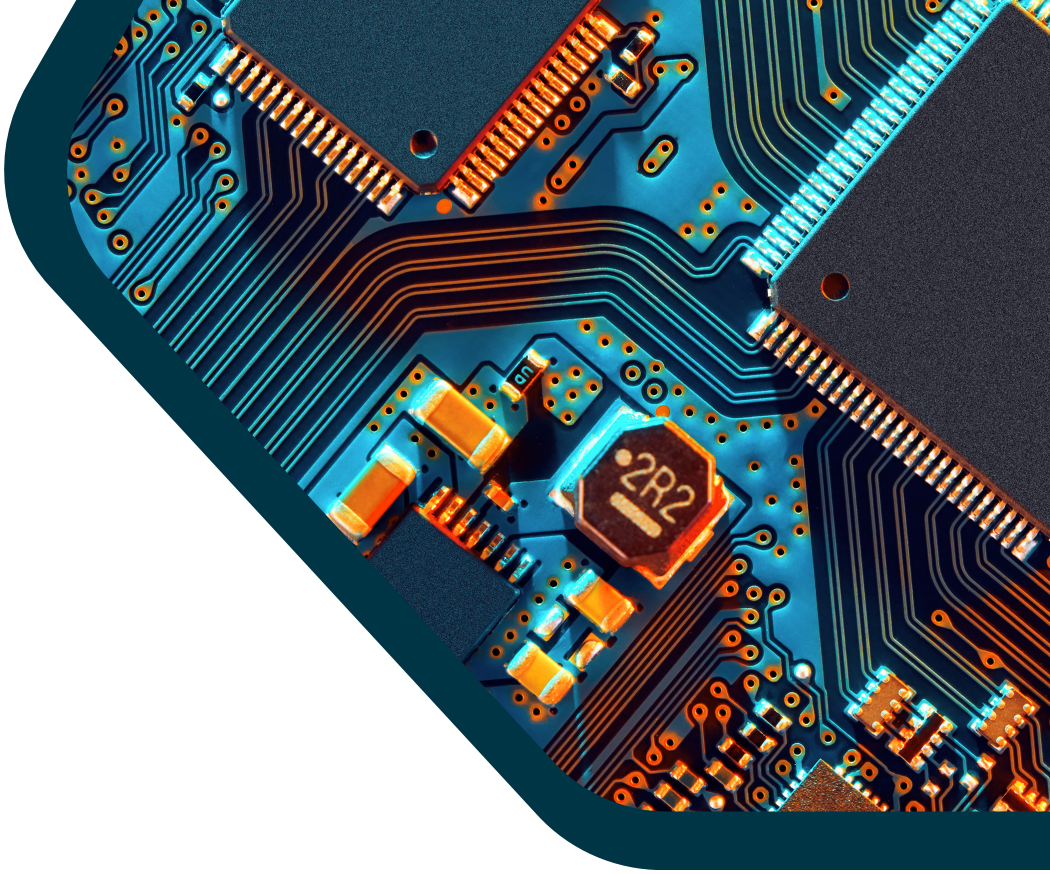

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