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RoHS REGULATIONS

Government Guidance Notes

Consultation Draft - July 2004

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This Guide is intended to assist those placing of electrical and electronic equipment on the UK market to understand the application of The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2004 (referred to hereafter as “The RoHS Regulations”). It aims to explain the Regulations as interpreted by the DTI.

The Regulations themselves should always be read and understood (as they constitute the law), in contrast with this Guide, which is informative but has no legal authority.

You should refer to the Regulations themselves for a full statement of the legal requirements and in the case of any doubt take independent advice, including your own legal advice. The Regulations may be revised from time to time, so users should take care to keep themselves informed. In this regard, information may be obtained from the DTI’s Sustainable Development Directorate. Details of contacts for further information are given on page 12.

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RoHS - the law in brief

1. The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2004 (“the RoHS Regulations”) implement the provisions of the European Parliament and Council Directive on the Restrictions of the use of certain Hazardous Substances in electrical and electronic equipment (2002/95/EC) (“the RoHS Directive”).
2. The RoHS Regulations ban the placing on the EU market of new Electrical and Electronic Equipment (EEE) containing more than the set levels of lead, cadmium, mercury, hexavalent chromium and both polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants from 1 July 2006. There are a number of exempted applications for these substances.
3. Manufacturers will need to ensure that their products - and the components of such products - comply with the requirements of the Regulations by the relevant date in order to be placed on the Single Market. The Regulations will also have an impact on those who import EEE into the European Union on a professional basis, those who export to other Member States and those who rebrand other manufacturers’ EEE as their own.
4. These Regulations do not affect the application of existing legal requirements for EEE, including those regarding safety, the protection of health, existing transport requirements or provisions on hazardous waste. In other words, existing legislation on EEE and hazardous substances must also be complied with.

Entry into force

5. The Regulations become enforceable on **1 July 2006**.

Requirements

6. The main requirement of the RoHS Regulations is that from 1 July 2006 a producer (as defined in the Regulations) may not place new EEE containing lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE), in amounts exceeding the set maximum concentration values, on the market in the EU. Certain applications (listed in Annex C) are exempt and there is also an exemption for spare parts for the repair and upgrade of equipment put on the market before 1 July 2006. The Regulations also do not apply to the re-use of equipment that was put on the market before the same date.
7. Producers must be able to demonstrate compliance by submitting technical documentation or other information to the enforcement authority on request and retain such documentation for a period of four years after the EEE is placed on the market.

Enforcement

8. Responsibility for the enforcement of the RoHS Regulations will lie with the Secretary of State for Trade & Industry, who may act through a third party.

RoHS Regulations

Scope

9. The RoHS Regulations apply to all EEE containing hazardous substances placed on the European Union Single Market on or after 1 July 2006, which falls into any of the eight broad categories listed in Annex A - unless the equipment is part of another type of equipment that does not fall into any of these categories. Annex A also includes indicative (but not exhaustive) examples of products under each of the categories. The Regulations also specify a voltage range into which the products in the eight categories must fall to be covered by the scope. This is up to 1,000 volts AC or up to 1,500 volts DC.
10. The eight broad categories mentioned above reflect eight of the ten categories in Annex 1 of the Waste Electrical and Electronic Equipment (WEEE) Directive, (2002/96/EC). In addition, the RoHS Regulations apply both to electric light bulbs and to household luminaires. The two categories **not** included are Medical Devices and Monitoring & Control Instruments, (although Article 6 of the RoHS Directive places an obligation on the European Commission to present proposals, by 13 February 2005, for including EEE falling within those two categories within the scope of the RoHS Directive. It should be noted, however, that this does not mean that those two categories **will** be included – only that the current position will be reviewed).

Assessing products to see if they are included in the scope

11. For many products, the decision on whether they are included within the scope of these Regulations should be reasonably straightforward. However there are a number of products (particularly in specialised or industrial sectors), where there may be significant areas of doubt and uncertainty.
12. An example of a 'decision tree' that could be used by producers to help determine whether their products might come within the scope of the RoHS Regulations or not can be found at Annex B.

General guidance on types of products that might be deemed to be outside the scope of the Regulations

13. Given that the scope of the RoHS Directive is drawn from that of the WEEE Directive it is the Department's view that certain provisions in the WEEE Directive may apply to EEE within the RoHS Directive so as to limit its scope. There is, however, no express provision to this effect.
14. The guidance that follows uses some of the criteria for assessing "grey area" products (those whose inclusion within the scope of the RoHS Directive is in doubt) that have been discussed in the Technical Adaptation Committee (TAC) of Member States. It should be noted that this guidance represents the Department's view and, in common with all EC Directives, a definitive view may only be obtained through the courts. Producers must rely on their own legal advice on all questions of scope.

- i. *EEE intended to protect national security and/or for military purposes*

On the basis that there is an exemption in WEEE in relation to EEE intended specifically to protect national security and/or for military purposes, it is the view of the Department that equipment connected with the protection of the essential security interests of the United Kingdom and to arms, munitions and war material may also be considered to be exempt from the provisions of the RoHS Directive. It should be noted, however, that this exemption does not apply to any equipment that is used to protect national security and/or has a military purpose, but is not solely for these purposes.
- ii. *Products where electricity is not the main power source*

Many products contain electrical and electronic components, either for additional functionality or as peripheral parts. A simple example could be an electric thermostat in a gas heating system. The definition of EEE in the Regulations extends only to those products that are dependent on electric currents or electromagnetic fields to work properly, meaning that it is the primary power source. When the electric current is switched off the equipment cannot fulfil its main function. If electricity is used only for control or support functions, the equipment could be considered to be outside the scope of these Regulations. In the above example the electric thermostat could be considered to be in the scope of the Regulations, but the gas heating system could be considered to be outside that scope.
- iii. *Products where the electrical or electronic components are not needed to fulfil the primary function*

This is related to, but not always the same as the above situation. Some products, particularly toys and novelty items contain an electrical or electronic element to give added value. Often there are similar products on the market fulfilling the same function, but without these components. Examples might include musical greetings cards, which still fulfil their primary function without their electronic components and could be considered to be outside the scope of the Directive.

[Please note that the general principle outlined in the following section has been raised by the UK within the TAC. The Commission has agreed to seek an opinion from its Legal Services and report back. This draft Guidance will be amended according to that opinion.]

- iv. *Electrical and electronic equipment that is part of another type of equipment*

The WEEE Directive excludes EEE that is part of another type of equipment that does not fall within the scope of the Directive. On the basis that EEE under RoHS is defined in identical terms, it is the view of the Department that such an exclusion extends to EEE under the RoHS Regulations.

Equipment that is part of another type of equipment or system is considered to be outside the scope of the Directive where it does not have a direct function outside the other item of equipment.

Equipment may also be part of a fixed installation. A “fixed installation” may be a combination of several pieces of equipment, systems, products and/or components (parts) assembled and/or erected by a professional assembler or installer at a given place to operate together in an expected environment and to perform a specific task.

In such a case, elements of a system that are not discernible EEE products in their own right or that do not have a direct function away from the installation are excluded from the scope of the Regulations.

v. *Batteries*

The RoHS Regulations restrict the use of the named hazardous substances in new electrical and electronic equipment, but they are not intended to apply to batteries. This includes batteries that are permanently fixed into the product, as well as disposable batteries. Under the treatment requirements of the WEEE Regulations, batteries must be removed from any separately collected waste electrical and electronic equipment. A new European Commission proposal (published on 21 November 2003) may introduce further requirements on battery manufacturers.

An example of products that may be excluded from the Regulations

15. Using the criteria set out above, it is possible to consider whether certain “grey area” products are included or not within the scope of the Regulations. An example would be lighting equipment for use on aircraft. This equipment would be excluded as it is designed to be part of a product that falls outside the scope of the Directive.

Exemptions

16. The RoHS Regulations do not apply: -

- To large-scale stationary industrial tools. (This is a machine or system, consisting of a combination of equipment, systems or products, each of which is manufactured and intended to be used only in fixed industrial applications.)
- To spare parts for the repair of EEE placed on the market before 1 July 2006 and to replacement components that expand the capacity of and/or upgrade EEE placed on the market before 1 July 2006.
- To the reuse of EEE placed on the market before 1 July 2006.
- To the specific applications of mercury, lead, cadmium and hexavalent chromium set out in Schedule 2 of the Regulations. These are explained in more detail in Annex C of this Guidance Note.

Possible future exemptions

17. The European Commission is currently reviewing the status of two of the exemptions in Schedule 2 of the Regulations and of light bulbs (in line with the last paragraph of the Annex to the RoHS Directive), of seven new cases for further exemptions and one clarification of one of the existing exemptions in Schedule 2. This review is not due to be completed (and a report published) until early 2005, although a Commission stakeholder consultation document about them was published on 3 May 2004.

18. The seven new cases for possible exemption are: -

- Lead used in compliant-pin VHDM (Very High Density Medium) connector systems
- Lead as a coating material for a thermal conduction module c-ring

- Lead and cadmium in optical and filter glass
 - Lead in optical transceivers for industrial applications
 - Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 85% in proportion to the tin-lead content (*proposed exemption until 2010*)
 - Lead in solders to complete a viable electrical connection internal to certain Integrated Circuit Packages ('Flip Chips') (*proposed exemption until 2010*)
 - Lead in lead-bronze bearing shells and bushes
19. The existing exemption in Schedule 2 of the Regulations that is being reviewed for possible clarification and extension may be amended as follows: -
- Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85% lead) and any lower melting temperature solder required to be used with high melting temperature solder to complete a viable electrical connection.
20. In addition (and also in line with the last paragraph of the Annex to the RoHS Directive), the Commission is reviewing the status of Deca BDE. At the moment, Deca BDE is included within the scope of the Directive.
21. A study, undertaken on behalf of the Commission, has recently concluded that the risk assessment on the use of Deca BDE should be closed without restrictions for any applications. The study also concluded that questions relating to the environmental findings of Deca BDE in Europe should be addressed by the initiation of a monitoring programme and complemented by a further voluntary programme of industrial emissions controls in partnership with the Deca BDE user industries in Europe.
22. The Commission is currently considering how these conclusions should apply in respect of the scope of the RoHS Directive.

Definitions

23. The definitions of "electrical and electronic equipment", "hazardous substances" and "producer" can be found within the RoHS Regulations.
24. **"Put on the market"** is not defined in the Regulations or in the Directive, but it is being interpreted in the same way as the term 'placing on the market', which is defined in the European Commission's *"Guide to the implementation of directives based on the New Approach and the Global Approach"* (commonly referred to as the "Blue Book"). This says that 'placing on the market' is the initial action of making a product available for the first time on the Community market, with a view to distribution or use in the Community. Making available can be either for payment or free of charge.
25. A product is placed on the Community market when it is made available for the first time. This is considered to take place when a product is transferred from the stage of manufacture with the intention of distribution or use on the Community market. Moreover, the concept of placing on the market refers to each **individual**

product, not to a type of product, and whether it was manufactured as an individual unit or in a series.

Maximum Concentration Values

[The values given in the following paragraph are subject to ratification by the EC Environment Council. This ratification may not be confirmed until October 2004 and will be reflected in the final version of the RoHS Regulations.]

26. For the purposes of the RoHS Regulations, a maximum concentration value of up to 0.1% by weight in homogeneous materials for lead, mercury, hexavalent chromium, PBB and PBDE and of up to 0.01% by weight in homogenous materials for cadmium will be permitted in the manufacture of new EEE.

[The definitions and interpretations given in the following six paragraphs are taken from the guidance developed by the European Commission and agreed by the TAC. It is dependent on the ratification of the Commission's draft Decision establishing the maximum concentration values outlined above.]

27. 'Homogeneous material' means a material that cannot be mechanically disjointed into different materials.
28. The term 'homogeneous' is understood as "of uniform composition throughout", so examples of "homogeneous materials" would be individual types of plastics, ceramics, glass, metals, alloys, paper, board, resins and coatings.
29. The term "mechanically disjointed" means that the materials can be, in principle, separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.
30. Using these interpretations, a plastic cover (for example) would be a 'homogeneous material' if it consisted exclusively of one type of plastic that was not coated with or had attached to it (or inside it) any other kinds of materials. In this case, the maximum concentration values of the RoHS Regulations would apply to the plastic.
31. On the other hand, an electric cable that consisted of metal wires surrounded by non-metallic insulation materials would be an example of something that is not 'homogeneous material' because mechanical processes could separate the different materials. In this case the maximum concentration values of the RoHS Regulations would apply to each of the separated materials individually.
32. A semi-conductor package (as a final example) would contain many homogeneous materials, which include the plastic moulding material, the tin-electroplating coatings on the lead frame, the lead frame alloy and the gold-bonding wires.

Compliance

33. Producers must demonstrate compliance with the Regulations by providing the enforcement authority (on request) with satisfactory evidence of such compliance in the form of relevant technical documentation or information. The UK intends to accept self-declaration as the basis of the compliance regime. The enforcement authority will carry out market surveillance to detect non-compliant products and may conduct tests for this purpose.

34. There is no prescribed method to demonstrate compliance but producers may consider the following suggestions: -

Supplier declarations

35. Producers of EEE could obtain an assurance from their suppliers that any materials, components, assemblies or equipment provided do not contain more than the permitted level of any of the six restricted substances, except where the application of any of those substances comes within the scope of the RoHS Regulations' exempted applications. Producers are required to keep appropriate records for a period of up to four years after the particular EEE product was placed on the market.
36. A variety of materials declarations for suppliers are being developed by industry at the moment. Some finished or end product manufacturers are already starting to publish such data on their websites.

Producer analysis

37. Producers of EEE to be placed on the UK market may wish to undertake their own analysis of the components or materials that they use in their products, either to verify supplier declarations or to establish the presence or otherwise of the restricted substances in those cases where no declaration is available. Producers may employ any suitable analytical technique in order to establish that their products comply with the maximum concentration values of the six restricted substances. The criteria for analysis will depend on the quantity of product put onto the market (less for small producers than for large producers), the relationship with suppliers, the risk of a banned substance being present, and the potential impact of that substance on the environment. Producers must ensure that they understand and take into account any limitations of the analytical technique they use.
38. At Annex D, you will find an example of a flow chart that has been designed to clarify the compliance process and could help producers determine when analysis of components might be advisable.

Enforcement

39. It shall be the duty of the Secretary of State for Trade and Industry to enforce these Regulations.
40. Various powers of enforcement will be available, including: -
- Making test purchases.
 - Requesting compliance documentation, inspecting processes and performing analytical tests.
 - Issuing of a compliance notice requiring certain action to be taken.

Offences and Penalties

41. The RoHS Regulations introduce the following offences:

- i. Contravening or failing to comply with the prohibition on hazardous substances in the RoHS Regulations could result in those held responsible facing a fine not exceeding the statutory maximum (currently £5,000) on summary conviction or an unlimited fine on conviction on indictment.
- ii. Those failing to submit compliance documentation at the request of the enforcement authority may be liable to a fine up to level five on the standard scale.

42. The defence of 'due diligence' is available where a person can show he took all reasonable steps and exercised all due diligence to avoid committing an offence. This may include reference to an act or default or information given by a third party, in which case it must be accompanied by information identifying the third party, or that information in possession of the person making the claim. The Regulations also provide for the 'liability of persons other than the principle offender' and allow a third party to be prosecuted as though they had committed the offence.

43. Where an offence by a corporate body is shown to have been committed with the consent, connivance or through neglect of any director, manager or similar officer of the corporate body, they shall be regarded as having committed the offence as well as the corporate body.

Contact points for further information

Enquiries should be addressed, in the first instance, to the Department of Trade and Industry: -

Department of Trade and Industry

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Sustainable Development Directorate
151 Buckingham Palace Road
London SW1W 9SS

Tel: +44 (0) 20 7215 1036

Fax: +44 (0) 20 7215 5835

Email: sustainability@dti.gov.uk

Website: www.dti.gov.uk/sustainability

Environmental Helpline

0800 585 794 (UK calls only)

Website: www.envirowise.gov.uk

This Helpline is a telephone enquiry service, jointly funded by DTI and Defra, providing a comprehensive information and signposting service for firms seeking advice on a wide range of environmental issues that may affect their business.

Further copies of these guidance notes are available from: -

DTI Publications Orderline
Admail 528
London SW1W 8YT

Tel: 0870 1502 500

Fax: 0870 1502 333

Annex A

Categories of electrical and electronic equipment covered by the RoHS Regulations

1. Large household appliances

(Such as large cooling appliances; refrigerators; freezers; other large appliances used for refrigeration, conservation and storage of food; washing machines; clothes dryers; dish washing machines; cooking; electric stoves; electric hot plates; microwaves; other large appliances used for cooking and other processing of food; electric heating appliances; electric radiators; other large appliances for heating rooms, beds, seating furniture; electric fans; air conditioner appliances; other fanning, exhaust ventilation and conditioning equipment)

2. Small household appliances

(Such as vacuum cleaners; carpet sweepers; other appliances for cleaning; appliances used for sewing, knitting, weaving and other processing for textiles; irons and other appliances for ironing, mangling and other care of clothing; toasters; fryers; grinders, coffee machines and equipment for opening or sealing of containers or packages; electric knives; appliances for hair-cutting, hair drying, tooth brushing, shaving, massage and other body care appliances; clocks, watches and equipment for the purpose of measuring, indicating or registering time; scales)

3. IT and telecommunications equipment

(Such as centralised data processing; mainframes; minicomputers; printer units; personal computing; personal computers, including the CPU, mouse and keyboard; laptop computers, including the CPU, mouse and keyboard; notebook computers; notepad computers; printers; copying equipment; electrical and electronic typewriters; pocket and desk calculators; other products and equipment for the collection, storage, processing, presentation or communication of information by electronic means; user terminals and systems; facsimile; telex; telephones; pay telephones; cordless telephones; cellular telephones; answering systems; other products or equipment of transmitting sound, images or other information by telecommunications)

4. Consumer equipment

(Such as radio sets; television sets; video cameras; video recorders; hi-fi recorders; audio amplifiers; musical instruments; other products or equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image than by telecommunications)

5. Lighting equipment, (including electric light bulbs and household luminaires)

(Such as luminaires for fluorescent lamps; straight fluorescent lamps; compact fluorescent lamps; high intensity discharge lamps, including pressure sodium lamps and metal halide lamps; low pressure sodium lamps; other lighting equipment for the purpose of spreading or controlling light)

6. Electrical and electronic tools (with the exception of large-scale stationary industrial tools)

(Such as drills; saws; sewing machines; equipment for turning, milling, sanding, grinding, sawing; cutting; shearing; drilling; making holes; punching; folding; bending or similar processing of wood, metal and other materials; tools for riveting, nailing or screwing or removing rivets, nails, screws or similar uses; tools for welding, soldering or similar use; equipment for spraying, spreading, dispersing or other treatment of liquid or gaseous substances by other means; tools for mowing or other gardening activities)

7. Toys, leisure and sports equipment

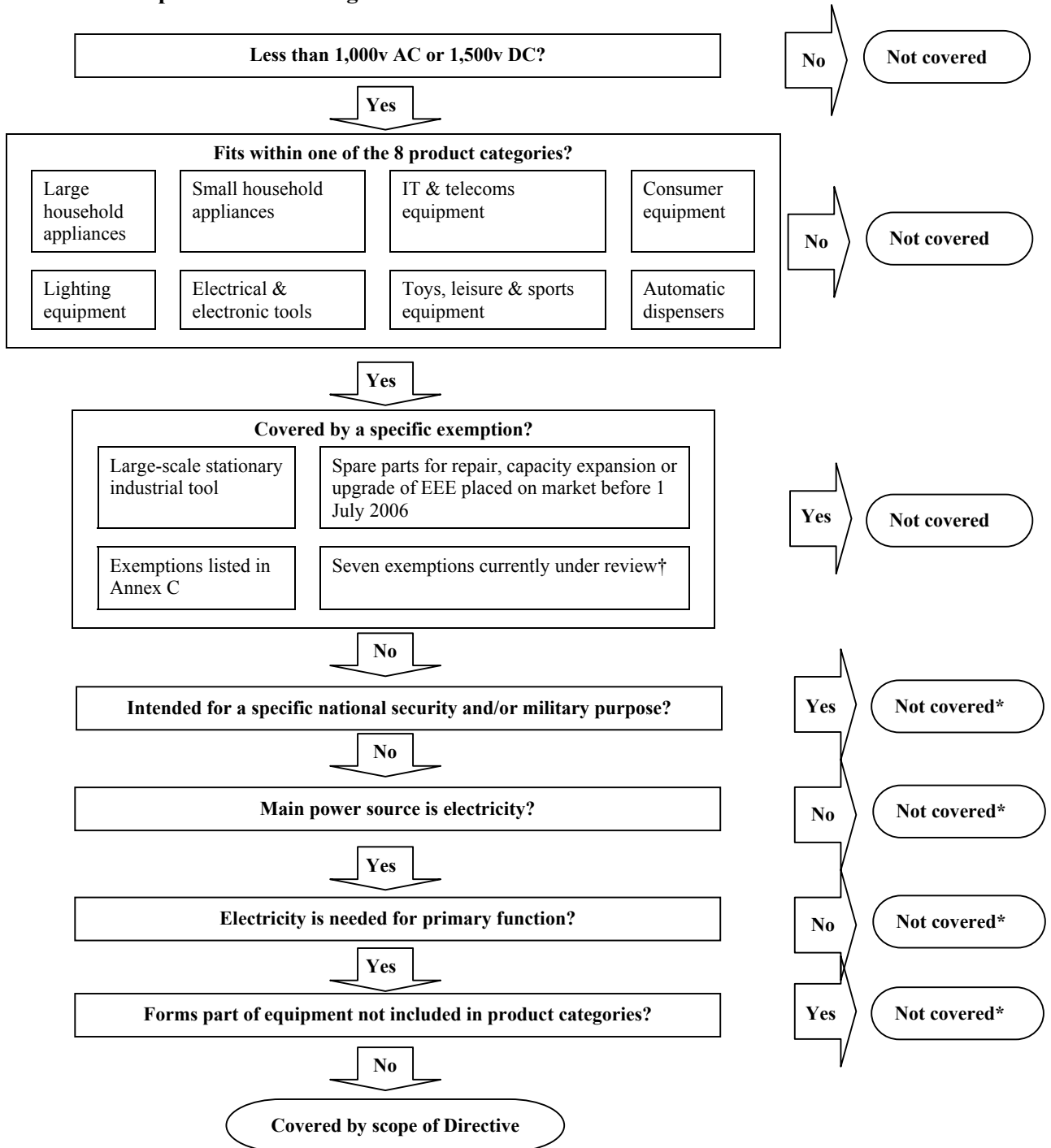
(Such as electric trains or car racing sets; hand-held video game consoles; video games; computers for biking, diving, running, rowing, etc.; sports equipment with electric or electronic components; coin slot machines)

8. Automatic dispensers

(Such as automatic dispensers for hot drinks; automatic dispensers for hot or cold bottles or cans; automatic dispensers for solid products; automatic dispensers for money; all appliances which deliver automatically all kind of products)

Annex B

A 'decision tree' that could be used to decide whether or not a product might come within the scope of the RoHS Regulations.



*While these exclusions are not expressly provided for in the Directive, it is the UK view that they apply. It should be noted, however, that a definitive legal interpretation is only available from the court. Producers should rely on independent legal advice on compliance.

†It cannot be assumed that these exemptions will be granted. The review is not due to be completed until early 2005.

Annex C

Guidance on the specific applications of mercury, lead, cadmium and hexavalent chromium set out in Schedule 2 of the RoHS Regulations, which are exempt from its requirements: -

1. Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.

A compact fluorescent lamp (CFL) is usually defined as a single-ended fluorescent lamp with a bent discharge tube of small diameter, of around 10-16 mm, to form a very compact unit. These lamps can be either integral, whereby the lamp and ballast are combined (also known as self-ballasted or self-supporting), or pin-based.

For the purpose of this exemption, CFLs can contain no more than 5 mg of mercury per lamp.

2. Mercury in straight fluorescent lamps for general purposes not exceeding:

- 10 mg in halophosphate lamps
- 5 mg in triphosphate lamps with a normal lifetime
- 8 mg in triphosphate lamps with a long lifetime.

A straight, or linear, fluorescent lamp is a fluorescent lamp of straight tubular form and bi-pin electrical connections at either end.

The colour properties of straight fluorescent lamps are determined by the phosphors used to coat the inside of the tube. Halophosphate and triphosphate are examples of such phosphorous materials.

Straight fluorescent lamps for general purpose can be defined as lamps used for general lighting solutions, in contrast to lamps used for special purposes (see item 3 below).

3. Mercury in straight fluorescent lamps for special purposes.

Examples of such lamps are black light lamps, disinfection lamps, medical/therapy lamps, pet care lamps (e.g. aquaria lamps), lamps with special components (e.g. integrated reflectors or external protection sleeves), lamps with special ignition features (e.g. designed for low temperatures), long length lamps (length > 1800mm) and amalgam lamps.

In this context, there appears to be no restriction on the use of mercury in these lamps.

4. Mercury in other lamps not specifically mentioned in this Annex.

Examples of other lamps containing mercury are high intensity discharge (HID) lamps (e.g. sodium lamps and metal halide lamps), circular fluorescent lamps and U-shaped fluorescent lamps.

In this context, there appears to be no restriction on the use of mercury in these lamps.

5. Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

Lead, or more specifically lead oxide, is often used in glass for electrical and electronic equipment to obtain specific characteristics, such as radiation protection (CRTs, medical applications), filtering (photography, image processing) and strengthening purposes (e.g. production of fluorescent tubes). This exemption has been introduced because viable alternatives for these applications have not yet been identified.

For clarity, the exemption applies to lead in the glass parts of cathode ray tubes, lead in the glass parts of electronic components and lead in the glass parts of fluorescent tubes. Electronic components in the context of this exemption could also include glass parts when they are part of an electronic component or electrical and electronic equipment.

6. Lead as an alloying element in steel containing up to 0.35% lead by weight, aluminium containing up to 0.4% lead by weight and as a copper alloy containing up to 4% lead by weight.

Lead is often used as an alloying element to obtain specific properties of a metal alloy. This exemption applies to the use of lead in steel up to 0.35% by weight, in aluminium up to 0.4% by weight and in copper up to 4% by weight. In the context of this exemption, 'percentage by weight' has to be interpreted as 'the percentage of lead per homogeneous material per discreet part'. For example, if the steel housing of a computer consists of two separate parts, each part can contain up to 0.35% lead by weight of that part.

7. Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85% lead).

For the purposes of applications 7, 8 and 9 in this Annex, it is useful to clarify the term 'solder'. In these Guidance Notes, 'solder' is defined as "alloys used to create metallurgical bonds between two or more metal surfaces to achieve an electrical and/or physical connection". In this context, the term 'solder' also includes all materials that become part of the final solder joint, including solder finishes on components or printed circuit boards.

The high melting temperature type solder exemption has been introduced to allow the use of lead in solders for specific applications (such as in chip manufacturing), for which viable lead-free alternatives have not yet been identified. The high electrical conductivity and unique mechanical properties of such a high melting point tin-lead alloy make the material malleable and better able to withstand both temperature and physical stress. Such properties ensure fewer defects during manufacturing and high reliability throughout the life of the component, thereby also resulting in fewer components going into the waste stream.

Since these high melting temperature solders are used in combination with lower melting temperature solders to complete a viable electrical connection (i.e. to properly connect the chip to the semiconductor package), it has been proposed that any lower melting temperature solder required to be used in conjunction with high melting temperature solder should also be considered to fall under this exemption. An assessment of this proposal is included in the review of existing and possible additional exemptions being undertaken by the European Commission and mentioned in the **Exemptions** section of these Guidance Notes.

8. Lead in solders for servers, storage and storage array systems (exemption granted until 2010).

See definition of 'solder' given for application 7 above.

This exemption has been introduced to allow the use of lead in solders for high reliability applications, such as servers, for which viable lead-free alternatives have not yet been identified.

In this context, a '**server**' is seen as a computer that meets one of the technology criteria that are set out in section (a) below, and the functional criteria set out in section (b) below.

(a) Technology criteria for a server

- 1) Designed and placed on the market as a Class A product as per EN55022:1994 under the EMC Directive 89/336/EEC (intended primarily for use in the professional environment) and designed and capable of having a single or dual processor capability (one or more sockets on board); or
- 2) Designed and placed on the market as a Class B product (intended primarily for use in the domestic environment) as per EN55022:1994 under the EMC Directive 89/336/EEC and designed and capable of having at least dual processor capability (two sockets on board).

(b) Functional design criteria for a server

- 1) Designed and capable of operating in a mission-critical, high-reliability, high-availability application in which use may be 24 hours per day and 7 days per week, and unscheduled downtime is extremely low (minutes per year).

Examples of typical server functions are the provision of network infrastructure, gateway or switching services, the hosting and management of data on behalf of multiple users, or the running of server-capable operating systems (e.g. as for a web server).

This exemption is viewed as applying to the whole of the computer and its components including processors, memory boards, power converters, power supplies, enclosed housings, modular power subsystems and adapter cards. It would also seem to apply to the components that are integrated into the whole computer or that are sold separately for use in an exempt server. Cables and cable assemblies, and all connectors and connector assemblies used to provide interconnections for the server, would also be covered.

It should be noted that this exemption is not viewed as applying to parts or components that are peripheral to the server, nor does it apply to parts or components when they are used other than in an exempt server.

For the purpose of the RoHS Regulations, a '**storage or storage array system**' is viewed as any storage device or subsystem that meets one of the following criteria:

- 1) Designed and placed on the market as a Class A product as per EN55022:1994 under the EMC Directive 89/336/EEC; or

- 2) Designed and placed on the market as a Class B product as per EN55022:1994 under the EMC Directive 89/336/EEC and designed to meet one of the following two criteria: -
 - a) Any storage device capable of accepting direct or switched input from more than one computer, for example fibre channel and SCSI devices, or
 - b) Any storage fabric or switching device for interconnecting storage devices to server products.

The exemption is viewed as applying to the whole of the device or subsystem. It should be noted that this exemption does not apply to parts or components that are peripheral to the storage or storage array system, nor does it apply to parts or components when they are used other than in an exempt storage or storage array system.

9. Lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunication,

See definition of 'solder' given for application 7 above.

This exemption has been introduced to allow the use of lead in solders for high reliability applications, such as network infrastructure equipment, for which viable lead-free alternatives have not yet been identified. In this context network infrastructure equipment for telecommunication purposes is viewed as equipment meeting one or more of the following criteria:

- 1) Any system used for routing, switching, signalling, transmission, or network management or network security;
- 2) Any system which can simultaneously enable more than one end user terminating equipment to connect to a network;
- 3) Any system in a network except for end user terminating equipment such as voice terminals and facsimile machines.

This would appear to include all components, power suppliers, display devices and similar electronic units that are incorporated into network infrastructure equipment. It would also include all cables and cable assemblies, and all connectors and connector assemblies used to provide interconnections for network infrastructure equipment.

10. Lead in electronic ceramic parts (e.g. piezoelectronic devices).

Ceramic materials are used in a variety of electronic devices including capacitors, insulators, piezoelectrics, magnets and integrated circuit packages. Some of these ceramic materials contain lead, for example lead zirconate titanate and lead magnesium niobate. The specific chemical composition and manufacturing process of these materials determine their electrical parameters, such as dielectric constant and the dissipation, that is essential for the functioning of the component in which they are used. Hence, lead used in the ceramic parts of components in electrical and electronic equipment is exempt from these Regulations.

11. Cadmium plating except for applications banned under Directive 91/338/EEC (OJ No. L 186, 12 July 1991, p. 59) amending Directive 76/769/EEC (OJ No. L262, 27 September 1976, p. 201) relating to restrictions on the marketing and use of certain dangerous substances and preparations.

Directive 91/338/EEC amending Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations, gives the following definition of cadmium plating: "Within the meaning of this Directive, 'cadmium plating' means any deposit or coating of metallic cadmium on a metallic surface." This definition is seen as applying for the purpose of the RoHS Regulations.

Subsequently, the Marketing and Use Directive (as amended) bans the use of cadmium plating in a variety of product sectors. However, that Directive allows the use of cadmium plating for "electrical contacts in any sector of use, on account of the reliability required of the apparatus on which they are installed."

As a result, in this context cadmium plating is prohibited for products manufactured in the household goods and central heating and air conditioning plant sectors. However, it is viewed as being permitted for electrical contacts in all the WEEE categories to which the RoHS Regulations apply.

12. Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators.

As absorption cooling works on several different types of energy sources such as gas, kerosene, batteries or electricity, absorption fridges are often used in recreational vehicles (e.g. motor homes and caravans) or remote places where electricity is not available. Another typical application is for minibars in hotel rooms as these fridges are virtually noiseless.

The applied heat and use of a water-ammonia mixture results in a corrosive environment that warrants the use of hexavalent chromium. This exemption has been introduced, since viable alternatives for this specific application have so far not been identified.

Annex D

An example of a flow chart designed to clarify the compliance process and that could help producers determine when analysis of components might be advisable

