

Manual of European Environmental Policy

The following pages are a section from the Manual of European Environmental Policy written by the Institute for European Environmental Policy.

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Farmer, A.M. (2012) (Editor). Manual of European Environmental Policy. 1043pp. Routledge, London.



Hazardous substances in electrical/electronic equipment (ROHS)

Formal references	
<u>2011/65/EU</u> (OJ L174 1.7.2011)	Directive on the restriction of the use of certain
<u>2011/05/LO</u> (05 L1/4 1.7.2011)	hazardous substances in electrical and electronic
	equipment (recast), repealing Directive 2002/95/EC
Proposed 3.12.2008 –	equipment (recust), repeating Directive 2002/95/De
<u>COM(2008)809</u>	
Legal base	Article 114 TFEU (originally Article 95 TEC)
Binding dates	Antele 114 11 Le (originally Antele 55 1Le)
Entry into force	21 July 2011
Formal compliance	2 January 2013
Repeal of Directive 2002/95/EC	3 January 2013
Review and amendment of list of	22 July 2014
restricted substances in Annex II to	22 July 2014
be considered before:	
EEE outside the scope of	22 July 2019
2002/95/EC but which would not	22 July 2017
comply with 2011/65/EC may be	
placed on the market until:	
Commission to conduct general	22 July 2021
review of the Directive by:	22 July 2021
Directive to be repealed on 3 Januar	ry 2013.
<u>2002/95/EC</u> (OJ L37 13.2.2003)	Directive on the restriction of the use of certain
$\frac{2002/95/\text{EC}}{13.2.2003}$	hazardous substances in electrical and electronic
	equipment
Proposed 13.6.2000 –	equipment
COM(2000)347	
Modified proposal 6.6.2001 –	
COM(2001)316	
<u>2005/618/EC</u> (OJ L214 19.08.2005)	Commission Decision of 18 August 2005 amending
	Directive $2002/95/EC$ of the European Parliament and
	of the Council for the purpose of establishing the
	maximum concentration values for certain hazardous
	substances in electrical and electronic equipment
2008/35/EC (OJ 181 20.3.2008)	Directive Amending Directive 2002/95/EC taking into
	account of constitutional changes made to the
	comitology system and its Committee procedures
Decisions Amending the Directive's	
Annex – exempting specific	
products from the restrictions placed	
on hazardous substances are in	
Table 1	
Legal base	Article 114 TFEU (originally Article 95 TEC)
Binding dates	· · · · · · · · · · · · · · · · · · ·

Entry into force	13 February 2003
Formal compliance	13 August 2004
New electrical and electronic	1 July 2006
equipment put on the market not to	
contain certain hazardous	
substances.	
Commission to review the Directive	13 February 2005

Purpose of the Directive

Directive 2011/65/EU, commonly known as the ROHS (the Restriction of Hazardous Substances) Directive, contributes to the objectives of Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) by restricting the use in electrical and electronic equipment (EEE) of substances that cause risks to human health or the environment during the waste management phase. The Directive requires that certain hazardous substances be excluded from EEE imported into the European Union, acting as a product standard. In combination the ROHS and WEEE Directives aim to reduce the hazardousness of the EEE supply chain and to better manage waste that ultimately results. The Directive will repeal and replace the previous ROHS Directive (2002/95/EC) on 3 January 2013.

Summary of Directive 2011/65/EU

The Directive prevents the use of the following hazardous substances (as listed in Annex II) in new EEE (including cables and spare parts) placed on the market: lead (0.1 per cent), mercury (0.1 per cent), cadmium (0.01 per cent), hexavalent chromium (0.1 per cent), polybrominated biphenyls (PBB) (0.1 per cent) and polybrominated diphenyl ethers (PBDE) (0.1 per cent). The Directive applies to the following categories of EEE:

- 1. Large household appliances;
- 2. Small household appliances;
- 3. IT and telecommunications equipment;
- 4. Consumer equipment;
- 5. Lighting equipment;
- 6. Electrical and electronic tools;
- 7. Toys, leisure and sports equipment;
- 8. Medical devices (placed on the market from 22 July 2014);
- 9. Monitoring and control instruments (placed on the market from 22 July 2014) and industrial monitoring and control instruments (placed on the market from 22 July 2017);
- 10. Automatic dispensers; and
- 11. Other EEE not covered by any of the categories above.

The scope is now explicitly stated in Annex I of the ROHS Directive itself; in Directive 2002/95/EC, the scope relied on a reference to Directive 2002/96/EC. Categories 8 and 9 were not included in the scope of the Directive 2002/96/EC, and Category 11 (other EEE) is also additional to the previous scope.

Specific types of equipment exempt from the scope of the Directive are listed in Article 2(4). These are military equipment, equipment to be sent into space, equipment that forms an

integral part of another type of equipment and that does not have an independent function, large-scale industrial tools and large-scale fixed installations, means of transport, professional non-road mobile machinery, active implantable medical devices, non-mobile photovoltaic panels, and R&D equipment only made available on a business-to-business basis.

In accordance with the principles of the EU waste hierarchy (see section on overview of EU policy: waste), the ban on the use of hazardous substances shall not apply to reused spare parts that are recovered from EEE placed on the market before 1 July 2006 and used in EEE placed on the market before 1 July 2016. There are also exemptions for a number of specific applications of substances, as listed in Annexes III and IV; Annex III is to be adapted to scientific and technical progress by means of individual delegated acts at least every 5 years (for categories 1-7 and 10 of Annex I), and at least every 7 years (for categories 8 and 9 of Annex I); Annex IV is to be adapted at least every 7 years. Before the Annexes are amended, the Commission shall, *inter alia*, consult economic operators, recyclers, treatment operators, environmental organisations and employee and consumer associations, and make their comments publicly available. Annex V sets out the application process for granting, renewing or revoking exemptions.

The Directive includes a series of obligations for manufacturers (Article 7), authorised representatives (of manufacturers) (Article 8), importers (Article 9) and distributors (Article 10) which did not feature explicitly in Directive 2002/95/EC, and which the Member States must ensure are met. Article 11 highlights cases in which the obligations of manufacturers apply to importers and distributors.

Manufacturers must: conform with the hazardous substance ban, draw up a declaration of conformity and affix the CE marking on the finished product; keep a register of non-conforming EEE and product recalls, and inform distributors thereof; ensure their EEE bears a type/batch/serial number allowing its identification; indicate their name/trade name/registered trade mark and address on the EEE or its packaging/accompanying documentation; take corrective measures to bring non-conforming EEE into conformity; and provide, on request from a competent national authority, information and documentation demonstrating conformity. Manufacturers may appoint an authorised representative to perform certain tasks; in this case that authorised representative must be mandated to at least: keep, and provide when asked by a competent national authority, the declaration of conformity, technical documentation and other documentation demonstrating conformity with the Directive.

Importers must: only place on the market EEE that complies with the Directive; ensure the conformity of EEE placed on the market; indicate their name/trade name/registered trade mark and address on the EEE or its packaging/accompanying documentation; keep a register of non-compliant EEE and product recalls, and inform distributors thereof; take corrective measures to bring non-conforming EEE into conformity, withdraw or recall it, and inform the relevant competent national authorities; keep, and provide when asked by a competent national authority, the declaration of conformity, technical documentation and other documentation demonstrating conformity with the Directive.

Distributors must: act with due care to ensure that manufacturers and importers meet certain of their obligations; not place on the market EEE that they believe is not in conformity with the Directive; take corrective measures to bring non-conforming EEE into conformity; and

provide, on request from a competent national authority, information and documentation demonstrating conformity.

Articles 13-16 deal with the EU declaration of conformity, the CE marking and the presumption of conformity.

Summary of Directive 2002/95/EC

The Directive places a ban on the use of the following hazardous substances in new EEE placed on the market after 1 July 2006: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). It applies to categories 1–7 and 10 of Annex 1A of Directive 2002/96/EC on WEEE. In addition, it also applies to electric light bulbs and luminaries in households.

In accordance with the EU waste hierarchy, which states a preference for reuse over recycling, the ban does not apply to spare parts for the repair, or to the reuse, of EEE placed on the market before 1 July 2006. There are also exemptions for a number of applications, listed in the Annex to the Directive. Any amendments to this list of exemptions resulting from new scientific or technical progress are adopted under the comitology procedure and published as Commission Decisions. A list of the Decisions amending the Annex is presented in the Table 1.

Commission Decision	Products exempted under each Decision	
<u>2005/717/EC</u>	- Lead in lead-bronze bearing shells and bushes (this measure also exempts	
	DecaBDE in polymeric applications, however, this Decision was over turned by a ruling of the ECJ <u>C-14/06 and C-295/06</u>).	
2005/747/EC	- Lead in high melting temperature type solders (i.e. lead-based alloys	
	containing 85 per cent by weight or more lead).	
	- Lead in solders for servers, storage and storage array systems, network	
	infrastructure equipment for switching, signalling, transmission as well as	
	network management for telecommunications.	
	 Lead in electronic ceramic parts (e.g. piezoelectronic devices). 	
	- Cadmium and its compounds in electrical contacts and cadmium plating	
	except for applications banned under Directive <u>91/338/EEC</u> amending	
	Directive <u>76/769/EEC</u> relating to restrictions on the marketing and use of	
	certain dangerous substances and preparations.	
	 Lead used in compliant pin connector systems. 	
	- Lead as a coating material for the thermal conduction module c-ring;	
	Lead and cadmium in optical and filter glass.	
	- 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 80 per cent and less than 85 per cent by weight.	
	 Lead in solders to complete a viable electrical connection between 	
	semiconductor die and carrier within integrated circuit Flip Chip packages.	
<u>2006/310/EC</u>	 Lead in linear incandescent lamps with silicate-coated tubes. 	

Table 1. Relevant Commission Decisions amending the Annex of Directive 2002/95/EC and exempting specific products from the restrictions placed on hazardous substances.

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	- Lead halide as radiant agent in High Intensity Discharge (HID) lamps	
	used for professional reprography applications.	
	- Lead as activator in the fluorescent powder (1 per cent lead by weight or	
	less) of discharge lamps when used as sun tanning lamps containing	
	phosphors such as BSP (BaSi2O5:Pb) as well as when used as speciality	
	lamps for diazo-printing reprography, lithography, insect traps,	
	photochemical and curing processes containing phosphors such as SMS	
	$((Sr,Ba)2MgSi_2O_7:Pb).$	
	- Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main	
	amalgam and with PbSn-Hg as auxiliary amalgam in very compact Energy	
	Saving Lamps (ESL).	
	– Lead oxide in glass used for bonding front and rear substrates of flat	
	fluorescent lamps used for Liquid Crystal Displays (LCD).	
2006/690/EC	- Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and	
	4) of Council Directive <u>69/493/EEC</u> .	
2006/691/EC	 Lead and cadmium in printing inks for the application of enamels on 	
	borosilicate glass.	
	 Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for 	
	fibre optic communications systems.	
	 Lead in finishes of fine pitch components other than connectors with a 	
	pitch of 0.65 mm or less with NiFe lead frames and lead in finishes of fine	
	pitch components other than connectors with a pitch of 0.65 mm or less with	
	copper lead frames.	
	 Lead in solders for the soldering to machined through hole discoidal and 	
	planar array ceramic multilayer capacitors.	
	 Lead oxide in plasma display panels (PDP) and surface conduction 	
	electron emitter displays (SED) used in structural elements, notably in the	
	front and rear glass dielectric layer, the bus electrode, the black stripe, the	
	address electrode, the barrier ribs, the seal frit and frit ring as well as in print	
	pastes.	
	- Lead oxide in the glass envelope of Black Light Blue (BLB) lamps; Lead	
	alloys as solder for transducers used in high-powered (designated to operate	
	for several hours at acoustic power levels of 125 dB SPL and above)	
	loudspeakers.	
<u>2008/385/EC</u>	 Cadmium alloys as electrical/mechanical solder joints to electrical 	
	conductors located directly on the voice coil in transducers used in high-	
	powered loudspeakers with sound pressure levels of 100 dB (A) and more.	
	- Lead in soldering materials in mercury free flat fluorescent lamps (which	
	e.g. are used for liquid crystal displays, design or industrial lighting).	
	- Lead oxide in seal frit used for making window assemblies for Argon and	
	Krypton laser tubes.	
<u>2009/443/EC</u>	- Lead in solders for the soldering of thin copper wires of 100 µm diameter	
	and less in power transformers.	
	 Lead in cermet-based trimmer potentiometer elements. 	
	– Mercury used as a cathode sputtering inhibitor in DC plasma displays	
	with a content up to 30 mg per display until 1 July 2010.	
	- Lead in the plating layer of high voltage diodes on the basis of a zinc	
	borate glass body.	
	 Cadmium and cadmium oxide in thick film pastes used on aluminium 	
	bonded beryllium oxide.	
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On 19 August 2005 Commission Decision 2005/618/EC was published. This measure sets maximum concentration values for certain hazardous substances in WEEE – these levels are outlined in Table 2 below.

Table 2. The maximum concentrations of contaminants to be contained in WEEE, as adopted in Commission Decision 2005/618/EC

Contaminant	Maximum Concentration
Lead, mercury, hexavalent chromium, polybrominated	Value of 0.1 per cent by weight
biphenyls (PBB) and polybrominated diphenyl ethers	in homogeneous materials
(PBDE)	_
Cadmium	0.01 per cent by weight in
	homogeneous materials

Development of Directive 2011/65/EU

On 3 December 2008, the Commission tabled a proposal (COM(2008)809) to clarify and recast Directive 2002/95/EC, in order to simplify its implementation, improve its application by the Member States, adapt it to scientific and technical progress and ensure its coherence with other relevant EU legislation. The basic objectives and mechanisms of the Directive were not changed. Key proposed modifications included: harmonisation and clarification of the scope, through two new annexes; clarification of some definitions; the setting of maximum concentration values for banned substances and the extension of permission to use non-compliant spare parts; the setting of a 4-year maximum validity period for exemptions; and new provisions to evaluate product conformity and ensure market surveillance.

The Council debated the proposal (and the parallel proposal for a recast WEEE Directive) on 21 October 2009. A majority of delegations supported the idea that the WEEE and RoHS Directives could have separate scopes, but the Commission underlined that harmonised scopes should improve their implementation and increase legal certainty. There was broad support for widening the scope of the RoHS Directive to include all EEE unless explicitly excluded.

On 15 June 2010 the European Parliament's Environment Committee tabled its report on the recast proposal (A7-1096/2010). MEPs: supported extension of the scope to cover cables, parts and accessories, and 'other EEE'; proposed exclusion of ELVs and their components from the scope; called for a report by the Commission examining the Directive's scope by 31 December 2014; urged consideration of the EU's obligations on POPs and adaptation to the REACH Regulation; called for the Directive not to hinder the development of renewable energy technologies (e.g. photovoltaic panels); advised that nanomaterials be taken into account as soon as information on their safety is available; called for adaptation of the Directive to be undertaken through delegated acts; called for obligations on distributors (with regards to CE marking and the language of accompanying documents); and proposed the creation of a Consultation Forum to ensure continuous structured stakeholder dialogue during the Directive's implementation.

On 11 June 2010 the Council Presidency presented a progress note on the recast. Outstanding issues included: the scope (four delegations and the Commission wanted the scope to be defined by a reference to the Annexes, as per the original proposal, and three delegations suggested that cables, consumables and accessories be included); new wording for some exclusions (in particular large scale industrial stationary tools, large scale industrial fixed installations, motor driven transport equipment and non-road mobile machinery) and additional exclusions for means of transport and equipment for the generation of renewable energy; the addition of some new definitions; disagreements over the content of, and how to present, the list of banned substances; the addition of a new article devoted to the review of Annex IV. There was some disagreement over the addition of environmental protection to the main objectives of the Directive, revisions to the articles related to enforcement, and provisions on CE marking.

On 24 November 2011, the European Parliament adopted by an overwhelming majority (640 votes to 3 with 12 abstentions) its resolution on the proposed recast Directive (P7_TA(2010)0431). This was the Parliament's first reading, under the ordinary legislative procedure. The amendments included in the report were the result of a compromise negotiated between the Parliament and the Council. Key amendments included: stating that the Directive should contribute to protection of human health and the environment, as well as the environmentally sound recovery and disposal of WEEE; transitional provisions for EEE outside the scope of Directive 2002/95/EC, but which would be in non-compliance with the new Directive; exemptions from the scope (including photovoltaics only in terms of renewable energy-generating equipment); clarification of definitions; the inclusion of cables and spare parts in the scope (but not the reuse of spare parts recovered from EEE put on the market before 1 July 2006 in equipment placed on the market before 1 July 2016); adaptation to the REACH Regulation; the duration of exemptions; taking into account as soon as possible scientific evidence on nanomaterials; the obligations placed on distributors; empowering the Commission to adopt delegated acts in respect of amendments to Annex II, detailed rules for complying with maximum concentration values, and the adaptation to technical and scientific progress of Annexes III and IV; a review of the Directive's scope no later than three years following its entry into force; and a general review no later than ten years following its entry into force.

Development of Directive 2002/05/EC

The need for a reduction in the hazardous content of waste was stressed in the 1996 Commission Communication on the review of the Community strategy for waste management. The development of the WEEE Directive 2002/96/EC later highlighted the need to reduce the risks to health and the environment presented by exposure to hazardous substances when EEE is disposed of. It was recognized that the best way to achieve this would be to substitute safer alternatives for such substances within the EEE itself.

Directive 2002/95/EC (the first ROHS Directive) was developed in conjunction with the WEEE Directive, although its passage was more straightforward than the latter. Originally, the two were contained in the same Commission proposal (though as separate measures), but they were later separated, mainly because they were to be adopted under different Treaty articles. This differs from the approach adopted within other similar measures such as the Batteries and Accumulators Directive 2006/66/EC, which sets out requirements for the management of waste batteries and their product design within a single measure based on

both the environment and internal market articles of the Treaty. It also explains why the scope and specifications contained within the ROHS Directive are so dependent upon and interlinked with the WEEE Directive – a source of some confusion during the implementation of both measures.

The Commission initially proposed to phase out of the use of a number of substances by 1 January 2008. In the European Parliament's first reading of 15 May 2001 an amendment was adopted to bring forward the phase out to 1 January 2006. The European Parliament also adopted a number of other significant amendments to *inter alia*: extend the list of substances in the future, based on scientific and technical progress, with particular attention to hydrofluorocarbons (HFCs), other halogenated flame retardants and PVC; for the Commission to present a proposal to substitute brominated flame retardants; for the Commission to publish an updated Annex to the Directive by 31 December 2004; introduced penalties for breaching the Directive, to be determined by Member States; and to bring forward the entry into force date to the day of publication in the *Official Journal*, as opposed to the proposed 20 days later.

Following the first reading the Commission released an amended proposal (COM(2001)316). This largely agreed with amendments put forward by the European Parliament, including the changed dates for entry into force and phase out, penalties and future adaptation of the list of substances. The Council's Common Position of 4 December 2001 accepted 15 of the 23 amendments, and put forward amendments of its own, including the phase out date of 1 January 2007 at the latest. This date was rejected by the Commission in its opinion on the Council's Common Position, as the phrase 'at the latest' could lead to differences in the internal market, with bans being brought forward by Member States at different dates.

By the time the proposal reached the European Parliament's second reading on 10 April 2002, the main area of disagreement was the phase out date. In its adopted opinion the Parliament reiterated the call for a 2006 phase out date, and, amongst other minor amendments, added that the ROHS Directive should not apply to the reuse of EEE or its components placed on the market before the entry into force of a ban on hazardous substances. As the Parliament and Council were unable to reach an agreement over the terms of both the ROHS and WEEE Directives, the measures both progressed to conciliation. During the conciliation talks, in November 2002, the European Parliament and Council reached a compromise agreeing upon the 1 July 2006 as the phase out date. It was also agreed that a number of exemptions from the general ban would apply, as laid out in the Annex to the Directive. The joint text was agreed by the European Parliament on 18 December 2002, and by the Council on 27 January 2003.

In 2005 Decision 2005/618/EC amending the Directive was adopted. This applied limits for the inclusion of hazardous substances in EEE, shifting requirements away from simply prohibition of these substances to the setting of limit values for each of the substances. This was in response to concerns that it was not possible to completely eliminate hazardous substances from the production chain. The Decision caused controversy not only as it is seen as a weakening of Directive 2002/95/EC, but also due to the process by which it was adopted. The proposal for the measure was originally for a Council Decision. However, Member States failed to reach a conclusion on the measure. As a result of this indecision the Commission adopted the measure. MEPs raised objections as to the mechanism by which the Decision was adopted by the Commission feeling they were not fully consulted.

Implementation of the Directives

National transpositions for Directive 2002/95/EC can be found in the Member States' national <u>execution measures</u>.

Many Member States have faced significant challenges in implementing the ROHS and WEEE Directives. In order to help clarify the context, meaning and coverage of these Directives and aid Member State implementation in 2005 the Commission issued a Frequently Asked Questions document¹.

One of the initial implementation challenges associated with ROHS, that is demonstrating that none of the banned substances are present within a product even at trace levels, was overcome with the amendments adopted under Decision 2005/618/EC. This permitted traces of the hazardous substances to appear within EEE, offering manufacturers more flexibility given that ensuring a total ban throughout the products supply chain proved difficult and costly (especially when at the same time the EU was trying to increase the use of recycled materials).

ROHS essentially sets EU wide product standards for EEE, but it does not set up an EU wide mechanism for approving product for entry into the EU. Determining whether a product complies with EU law is left up to the Member State across whose boarders a product is imported into Europe. As a consequence there are concerns that different standards of compliance are adopted in practice across the EU Member States and that manufacturers must meet different criteria to access the EU market place dependent upon where a product is imported into Europe.

As Directive 2011/65/EU only entered into force in July 2011, no information is available as yet on its implementation.

Enforcement and court cases

Under Cases <u>C-14/06 and C-295/06</u> of the European Court of Justice the European Parliament (supported by a number of Member States including Denmark, Portugal, Sweden and Norway) successfully overturned part of the Commission Decision 2005/717/EC, which permitted a limited exemption from the prohibition placed on Decabromodiphenyl ether (DecaBDE) under ROHS. This case is significant not only as now compliance with ROHS requirements on DecaBDE is required, but also as this represented a challenge by the European Parliament over the Commission's implementing powers. Under the Directive exemptions to the scope are determined via comitology committees. These are chaired by the European Commission and made up of representatives from Member States. They are notoriously controversial given that the European Parliament's powers and engagement in decision-making is limited.

Whilst the new ROHS Directive has now entered into force, revision of the WEEE Directive is ongoing.

Related legislation

There are a number of other EU Directives that have a strong interaction with the ROHS Directive. These include:

- WEEE Directive (<u>2002/96/EC</u>) this is the most closely linked measure, with ROHS providing for the greening of the EEE supply chain in order to facilitate the management of waste EEE.
- Energy Using Products Directive (<u>2005/32/EC</u>) this interacts closely with WEEE and the ROHS Directive setting up a framework for setting out environmental standards for energy using products, which are often also considered EEE.
- Batteries and accumulators and waste batteries and accumulators Directive (2006/66/EC) this Directive sets out restrictions on hazardous substances in batteries and accumulators (akin to ROHS requirements) and provisions for the management of waste batteries and accumulators (akin to the WEEE Directive).
- Packaging and packaging waste Directive (<u>94/62/EC</u>) this Directive sets out limit values for the hazardous substances in packaging and requirements for the management of packaging waste.
- End of life vehicles Directive (2000/53/EC) this Directive sets out restrictions on the use of certain hazardous substances in vehicles and provisions for the management of end-of-life or waste vehicles.
- Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation (<u>1907/2006/EC</u>).

Reference

1 The European Commission, DG Environment (2006) Frequently Asked Questions on Directive 2002/95/EC on the Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) and Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), Adopted in May 2005 and updated in August, 2006, http://ec.europa.eu/environment/waste/weee/pdf/faq_weee.pdf