Foresite Systems Limited
950 East Campbell Avenue
Campbell, CA 95008

Tel 408 377 7400
Fax 408 377 7401

EU RoHS Exemptions Revision

A Foresite White Paper Summarizing the Revisions to the EU RoHS Directive's Impact on Industry

By: Travis Miller,[i] Anne Barr,[ii] and Sylvia Hsueh[iii]

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INTRODUCTION

Environmental laws in the late 20th and early 21th century have evolved into a global requirement for market access. This new environmental movement has been marked by the emergence of regulations designed to force the producers and sellers of goods to identify the substances contained within their products. The driving force behind this proliferation of *Substance Control Directives* has been a growing governmental and public awareness concern over the impacts companies and the products they place on international markets have on human health and the environment. The concurrent globalization of the market has placed increased costs and responsibilities on producing/importing companies, as local legislatures have adopted diverse compliance standards.

One of the most onerous international environmental laws has been European Union Directive 2002/95/EC, Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment[1] (EU RoHS). Under EU RoHS, producers of electrical and electronic equipment must ensure that their products are in compliance with the legislative requirements that restrict the use of certain substances within the product (i.e. lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls, and polybrominated diphenyl ethers).

The core elements to compliance with EU RoHS are: (i) the ability to evaluate the precise concentrations, or document the absence, of the six RoHS restricted substances of concern within products and (ii) the ability to cite applicable exemptions for the required uses of these substances. This necessitates an understanding of the applicable exemptions included in the Annex to the Directive as well as business strategies and systems to secure the best commercial advantages from this knowledge.

THE EU ROHS LEGISLATION

A. Regulatory Background

EU RoHS requires Member States to ensure that new electrical and electronic equipment placed on the European Union Market from 1 July 2006, does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) above 0.1% (0.01% for cadmium) by weight in homogenous materials[2] (referred to in this document as RoHS thresholds), unless the application was exempted in the Annex to the Directive. The regulations implementing this legislation at Member State level requires producers to retain data demonstrating compliance with this requirement. Products not in compliance may not be placed on the European Union Market.

Article 5(1)(b) of EU RoHS allows materials and components to be exempted where alternatives pose a greater negative health or environmental impact or where it is technically impractical to substitute the substances. Pursuant to the regulation, the exemptions must be reviewed at least every four years and may be deleted from the Annex if suitable alternatives become available following public consultation.

Exemptions may be added to the Annex in instances where the requirements of Article 5(1)(b) applies. In practice, the European Commission receives requests for exemptions from producers which are then evaluated by independent consultants as part of a technical

[1] http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm
[2] EUR. COMM'N DEC. 2005/618/EC (established the maximum concentration values for these substances amending Directive 2002/95/EC).

assistance contract. This includes a public consultation and summary report. The report specifies the proposed wording for an exemption, if an exemption is deemed appropriate, and may also include a recommended expiry date. An expiry date ("sunset date") is the date when it is determined that suitable alternatives are available, which render the exemption for a given use unnecessary. Legally, the exemptions become effective on the date they are published in the *Official Journal of the European Union* and are ineffective as of the date of expiry or deletion from the Annex.

B. Adapting Exemptions to Scientific and Technical Progress

EU RoHS as published in the *Official Journal of the European Union* on 13 February 2003 listed nine exemptions.[3] The legislation was always intended to promote a progressive elimination of the identified RoHS restricted substances from the European market. However, the drafters of the legislation took into account the complexity of the requirements related to the absence of the technology required to adequately substitute the use of the identified substances in many cases. Accordingly, to adequately manage the change process without precluding valuable commodities from accessing the European Community, the drafters implemented a change process whereby exemptions would be amended based upon scientific and technical progress.

Since the implementation of the legislation, there have been many changes to this list of exemptions. The latest Annex has exemption numbers up to 39. Many exemptions have also expired, in accordance with expiry dates set by the legislation; see for example exemptions 22[4] and 35[5] which expired on 31 December 2009 and 28[6] which expired on 1 July 2007. Additionally, exemptions may be annulled following legal rulings that the exemption was unnecessary or unjustified given the availability of substitutes; for example, exemption 9a. "decaBDE in polymeric applications" was annulled following legal challenge.[7]

The present RoHS Recast and exemption revision will continue this profound movement toward complete market preclusion for the identified hazardous substances covered by the RoHS directive. Once the RoHS Recast is implemented, the scope of RoHS will be expanded to include *all electrical and electronic equipment,*[8] and the introduction of medical devices[9] and monitoring and control equipment.[10]

C. An Effective Exemption Management System

Any business selling products or components for products falling within the scope of RoHS will want to have a system in place to monitor changes to RoHS exemptions and ensure that their existing product line and future product developments address compliance issues. This necessitates the combination of a regulatory intelligence function and data storage and reporting mechanisms together with successful compliance strategies and processes.

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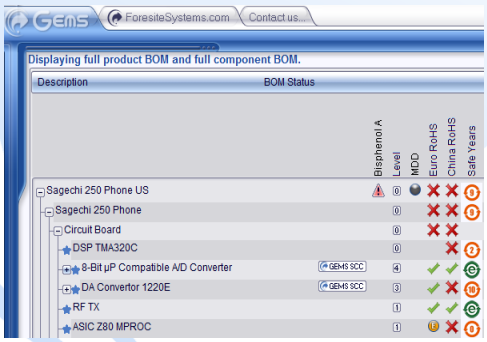
[3] Exemptions were numbered 1 – 9 although exemption 2 and 7 included multiple elements.
[4] Exemption 22. Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for fibre optic communication systems until 31 December 2009.
[5] Exemption 35. Cadmium in photoresistors for optocouplers applied in professional audio equipment until 31 December 2009.
[6] Exemption 28. Hexavalent chromium in corrosion preventive coatings of unpainted metal sheetings and fasteners used for corrosion protection and Electromagnetic Interference Shielding in equipment falling under category three of Directive 2002/96/EC (IT and telecommunications equipment). Exemption was granted until 1 July 2007.
[7] *EUR. PARL. Et.al. v. EUR. COMM'N*, 2008 E.C.J. C 116/2, *available at* (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:116:0002:0003:EN:PDF).
[8] Proposed Category 11 of RoHS.
[9] Category 8 of RoHS.
[10] Category 9 of RoHS.

An effective exemption management system will gather data on applicable components from several sources, provide a precise documented audit trail, and identify the existence of any exceeded RoHS thresholds. If thresholds are exceeded, then an exemption management system must be able to document which exemptions have been claimed and link the necessary documents, relied upon in making the determination of compliance, to the parts of concern. Appropriate reviews and audits must be made to ensure that the claimed exemptions are current. The practical implication of outsourced production; contract manufacturing; and the sheer number of products, components, and alternative suppliers (multi-sourced components) often require a web-based software application that can facilitate data collection and document storage.



A RoHS system of record must also be capable of alerting suppliers of changes to the legislation, requesting updated declarations of compliance and be capable of producing *ad hoc* reports that will identify data gaps or non-compliant components and suppliers. The business must also have a process in place to address these issues through additional data collection efforts, sourcing alternatives and/or applying for exemptions. Systems of this nature will, at a minimum, be capable of automating initial audits of the received documents and alert system administrators of errors as they arise using a structured data flow management process.

CORPORATE STRATEGIES FOR COMPLYING WITH ROHS

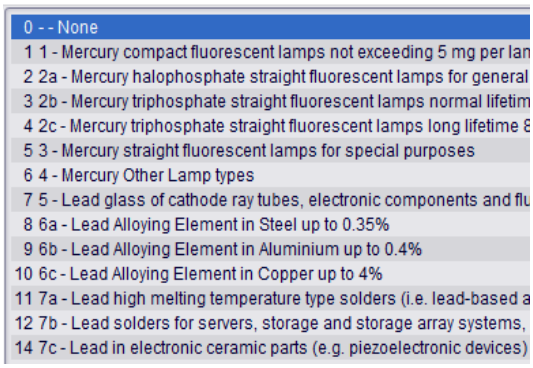
Corporate Strategies

A. Responding to Material Disclosure Requests

Companies selling internationally or to international companies will likely have encountered material declaration requests from customers. These forms come in variable formats and must be completed and returned within specified timeframes. As a result of the new obligations under the RoHS Recast, the number of these substance level declarations will inevitably increase.

B. Claiming Exemptions

A fundamental aspect of the revisions to the RoHS regulation is setting a timetable to sunset (phase out) exemptions. To comply with this regulatory objective, companies must be capable of cross referencing their respective databases of declarations and identifying exemptions that have previously been claimed. The complexity of this task expands as companies must then be capable of setting and monitoring expiration dates for the exemptions. Furthermore, a successful regulatory compliance program must ensure that products distributed to the European Union or to customers selling to the European Union do not claim an exemption that is no longer valid.



Pre-Revision RoHS Exemptions

C. Risk Management

There are three principal obligations that are emerging from the RoHS Exemption Revision. Those obligations include:

(1) A need to monitor and plan for exemption expiry (sunset) dates.
(2) The requirement to identify high risk suppliers for RoHS non-compliance and take appropriate action.
(3) The need to discontinue distribution of non-compliant products to the EU.

Revised RoHS Exemptions

Modern supply chains are complex, often involving systematic outsourcing and staged product manufacturing. In this context, environmental compliance can prove challenging, as lengthy, open supply chain communication channels must be leveraged and remain open to ensure compliance programs can be effectively implemented. Additionally, RoHS legislation may have jurisdictional variations that place the burden of compliance on different parties within the supply chain. Accordingly, adopting a structured, well defined process and audit trail, are essential elements underpinning regulatory compliance.

D. The Importance of a Flexible Information Management System

The centralization of auditable substance control compliance data in a flexible information management system provides the greatest opportunity to construct an easily accessible compliance and quality platform that can provide your organization with a cost-savings tool and a competitive advantage related to the onerous legal requirements of RoHS. The ability to track, monitor and plan for expiring exemptions will be vital to continued compliance and market access to the European market. If you would like to have access to a more detailed analysis of the individual exemptions, Foresite has prepared an analytical guide entitled: *THE EU ROHS EXEMPTION REVISION GUIDE* that itemizes each individual exemption, provides context related to the state of the exemptions, and predicts future impacts of pending revisions to RoHS. For more information, please contact Foresite's Manager of Environmental Compliance Services at travis.miller@foresitesystems.com.

ABOUT FORESITE

Foresite Systems, Ltd. has been designing systems to support global environmental management for nearly two decades. The resulting wealth of experience, innovative spirit, and international presence has provided Foresite with the ability to remain a best-in-class provider of environmental compliance engines for over 100 of the best and most recognizable blue chip companies in the world. The flexibility of the Global Environmental Management Systems (GEMS) and Foresite's pragmatic approach to compliance has made our RoHS module the premiere tool for our clients' implementation of effective and sustainable RoHS compliance strategies.

Foresite RoHS Exemption Revision Reference Table

The exemption list prior to September 2010 is denoted in gray, and the revised exemption list is denoted in light blue.

Exemption		Expiry Date
1	Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.	
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	
1(a)	For general lighting purposes < 30 W: 5 mg	Expires on 31 Dec 2011 After 31 Dec 2011: 3.5 mg may be used per burner After 31 Dec 2012: 2.5 mg may be used per burner
1(b)	For general lighting purposes ≥ 30 W and < 50 W: 5 mg	Expires on 31 Dec 2011 After 31 Dec 2011: 3.5 mg may be used per burner
1(c)	For general lighting purposes ≥ 50 W and < 150 W: 5 mg	
1(d)	For general lighting purposes ≥ 150 W: 15 mg	
1(e)	For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 7 mg may be used per burner
1(f)	For special purposes: 5 mg	
2	Mercury in straight fluorescent lamps for general purposes not exceeding:	
2(a)	Halophosphate: 10 mg	
2(b)	Triphosphate with normal lifetime: 5 mg	
2(c)	Triphosphate with long lifetime: 8 mg.	
2(a)	Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):	
2(a)(1)	Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 5 mg	Expires on 31 Dec 2011 After 31 Dec 2011: 4 mg may be used per lamp
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 5 mg	Expires on 31 Dec 2011 After 31 Dec 2011: 3 mg may be used per lamp
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 5 mg	Expires on 31 Dec 2011 After 31 Dec 2011: 3.5 mg may be used per lamp
2(a)(4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg	Expires on 31 Dec 2012 After 31 Dec 2012: 3.5 mg may be used per lamp

2(a)(5)	Tri-band phosphor with long lifetime (≥ 25 000 h): 8 mg	Expires on 31 Dec 2011 After 31 Dec 2011: 5 mg may be used per lamp
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):	
2(b)(1)	Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10 mg	Expires on 13 April 2012
2(b)(2)	Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016
2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 15 mg may be used per lamp
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps)	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 15 mg may be used per lamp
3	Mercury in straight fluorescent lamps for special purposes.	
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):	
3(a)	Short length (≤ 500 mm)	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 3.5 mg may be used per lamp
3(b)	Medium length (> 500 mm and ≤ 1 500 mm)	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 5 mg may be used per lamp
3(c)	Long length (> 1 500 mm)	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 13 mg may be used per lamp
4	Mercury in other lamps not specifically mentioned in this Annex.	
4(a)	Mercury in other low pressure discharge lamps (per lamp)	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 15 mg may be used per lamp
4(b)	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60:	
4(b)-I	P ≤ 155 W	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 30 mg may be used per burner
4(b)-II	155 W < P ≤ 405 W	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 40 mg may be used per burner
4(b)-III	P > 405 W	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 40 mg may be used per burner
4(c)	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):	
4(c)-I	P ≤ 155 W	No limitation of use until 31 Dec 2011

		After 31 Dec 2011: 25 mg may be used per burner
4(c)-II	155 W < P ≤ 405 W	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 30 mg may be used per burner
4(c)-III	P > 405 W	No limitation of use until 31 Dec 2011 After 31 Dec 2011: 40 mg may be used per burner
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)	Expires on 13 April 2015
4(e)	Mercury in metal halide lamps (MH)	
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex	
5	Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.	
5(a)	Lead in glass of cathode ray tubes	
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	
6	Lead as an alloying element in steel containing up to 0,35 % lead by weight, aluminum containing up to 0,4 % lead by weight and as a copper alloy containing up to 4 % lead by weight.	
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	
6(b)	Lead as an alloying element in aluminum containing up to 0,4 % lead by weight	
6(c)	Copper alloy containing up to 4 % lead by weight	
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)	
7(b)	lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications	
7(c)	lead in electronic ceramic parts (e.g. piezoelectronic devices)	
7(a)	Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)	
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	

7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013, but may be used in spare parts for EEE placed on the market before 1 January 2013
8	Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EEC [1] amending Directive 76/769/EEC [2] relating to restrictions on the marketing and use of certain dangerous substances and preparations.	
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012, but may be used in spare parts for EEE placed on the market before 1 January 2012
8(b)	Cadmium and its compounds in electrical contacts	
9	Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators.	
9(a)	DecaBDE in polymeric applications	Expired 30 June 2008
9(b)	Lead in lead-bronze bearing shells and bushes.	
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	
11	Lead used in compliant pin connector systems.	
11(a)	Lead used in C-press compliant pin connector systems	Expired 24 September 2010, but may be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013, but may be used in spare parts for EEE placed on the market before 1 January 2013
12	Lead as a coating material for the thermal conduction module c-ring.	
12	Lead as a coating material for the thermal conduction module C-ring	Expired 24 September 2010, but may be used in spare parts for EEE placed on the market before 24 September 2010
13	Lead and cadmium in optical and filter glass.	
13(a)	Lead in white glasses used for optical applications	
13(b)	Cadmium and lead in filter glasses and glasses used for	

	reflectance standards	
14	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 % and less than 85 % by weight.	
14	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 % and less than 85 % by weight	Expired on 1 January 2011, but may be used in spare parts for EEE placed on the market before 1 January 2011
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.	
16	Lead in linear incandescent lamps with silicate coated tubes.	
16	Lead in linear incandescent lamps with silicate coated tubes	Expires on 1 September 2013
17	Lead halide as radiant agent in High Intensity Discharge (HID) lamps used for professional reprography applications.	
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	
18	Lead as activator in the fluorescent powder (1 % 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 specialty lamps for diazo-printing reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba)2MgSi2O7:Pb)	
18(a)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as specialty lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba) 2 MgSi 2 O 7 :Pb)	Expired on 1 January 2011
18(b)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi 2 O 5 :Pb)	
19	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).	
19	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)	Expires on 1 June 2011
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal	

	Displays (LCD).	
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	Expires on 1 June 2011
21	Lead and cadmium in printing inks for the application of enamels on borosilicate glass.	
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	
22	Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for fibre optic communication systems until 31 December 2009	Expired 31 December 2009
23	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.	
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less	Expired 24 September2010, but may be used in spare parts for EEE placed on the market before 24 September 2010
24	Lead in solders for the soldering to machine through hole discoidal and planar array ceramic multilayer capacitors.	
24	Lead in solders for the soldering to machine through hole discoidal and planar array ceramic multilayer capacitors	
25	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.	
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	
26	Lead oxide in the glass envelope of Black Light Blue (BLB) lamps.	
26	Lead oxide in the glass envelope of black light blue lamps	Expires on 1 June 2011
27	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.	
27	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	Expired on 24 September 2010
28	Hexavalent chromium in corrosion preventive coatings of unpainted metal sheetings and fasteners used for corrosion protection and Electromagnetic Interference Shielding in equipment falling under category three of Directive 2002/96/EC	Expired 1 July 2007

	(IT and telecommunications equipment).	
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (*).	
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (1)	
30	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.	
30	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	
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting).	
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)	
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes.	
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers.	
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	
34	Lead in cermet-based trimmer potentiometer elements.	
34	Lead in cermet-based trimmer potentiometer elements	
35	Cadmium in photoresistors for optocouplers applied in professional audio equipment until 31 December 2009.	Expired 31 December 2009
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display until 1 July 2010.	
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display	Expired on 1 July 2010
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body.	
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	

38	Cadmium and cadmium oxide in thick film pastes used on aluminum bonded beryllium oxide.	
38	Cadmium and cadmium oxide in thick film pastes used on aluminum bonded beryllium oxide	
39	Cadmium in colour-converting II-VI LEDs (< 10 µg Cd per mm 2 of light-emitting area) for use in solid state illumination or display systems until 1 July 2014.	
39	Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm 2 of light-emitting area) for use in solid state illumination or display systems	Expires on 1 July 2014

About the Authors

[i] Travis Miller is an attorney and environmental scientist with experience in industrial/manufacturing process auditing for environmental risks, financial consulting, and environmental law interpretation. Travis serves as the Managing Consultant for Foresite Systems, Ltd., where he leads Foresite's team of consultants that advise clients on international environmental legislation compliance issues, which impact trade and product marketability, and supports Foresite's Global Environmental Management System (GEMS) integration. His particular areas of expertise are legislative risk/liability management, business strategy implementation, and regulatory compliance planning for legislation such as RoHS and REACH.

[ii] Anne Barr is a sustainability manager with experience in the design and implementation of global environmental management systems. Anne works as a Consultant for Foresite Systems, Ltd., specializing in European legislation and compliance liaison. Anne leads on Foresite's environmental research. Anne's particular areas of expertise are regulatory analysis, design of environmental accounting methodologies and sustainability.

[iii] Sylvia Hsueh is an environmental compliance specialist with a background in environmental policy with a particular focus on legislative analysis and regulatory compliance requirements. Sylvia works as a Compliance Administrator with Foresite Systems, Ltd., where she manages data collection processes and the integration of business processes related to environmental compliance initiatives.