



Brussels, 30.1.2015  
C(2015) 383 final

**COMMISSION DELEGATED DIRECTIVE ..../.../EU**

**of 30.1.2015**

**amending, for the purposes of adapting to technical progress, Annex III to Directive 2011/65/EU of the European Parliament and of the Council as regards an exemption for cadmium in illumination and display lighting applications**

(Text with EEA relevance)

## EXPLANATORY MEMORANDUM

### 1. CONTEXT OF THE DELEGATED ACT

Subject: Commission Delegated Directive amending, for the purposes of adapting to technical progress, Annex III of the Directive 2011/65/EU of the European Parliament and of the Council as regards an exemption for applications containing cadmium.

Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 (RoHS 2)<sup>1</sup> restricts the use of certain hazardous substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers) in electrical and electronic equipment. RoHS 2 (recast) entered into force on 21 July 2011.

The restricted substances are listed in Annex II of RoHS 2. Annexes III and IV list exemptions of materials and components from the substance restrictions under Article 4(1). Article 5 provides for the adaptation to scientific and technical progress (inclusion and deletion of exemptions) of Annexes III and IV. Pursuant to Article 5(1)a, exemptions shall be included in Annexes III and IV, provided that such inclusion does not weaken the environmental and health protection afforded by Regulation (EC) No 1907/2006 and where any of the following conditions is fulfilled: their elimination or substitution via design changes or materials and components which do not require any of the materials or substances listed in Annex II is scientifically or technically impracticable; the reliability of substitutes is not ensured; or the total negative environmental, health and consumer safety impacts caused by substitution are likely to outweigh the total environmental, health and consumer safety benefits thereof.

Article 5 of RoHS 2 establishes a procedure for the adaptation of the Annexes to scientific and technical progress. RoHS 2 Article 5(1) provides that the Commission shall include materials and components of EEE for specific applications in the lists in Annexes III and IV by means of individual delegated acts in accordance with Article 20.

### 2. CONSULTATIONS PRIOR TO THE ADOPTION OF THE ACT

In line with the provisions in Article 5(3) and Annex V for granting, renewing or revoking an exemption, which allow stakeholders to apply for an exemption of the restricted substance, the Commission has received almost 50 requests for new exemptions since the publication of RoHS 2. With a view to evaluate the requested exemptions, the Commission commissioned several studies and carried out the requisite technical and scientific assessment including an official stakeholder consultation<sup>2</sup> for each application.<sup>3</sup> The final report, written by consultants Oeko Institute and approved by DG Environment, for this application is available on the consultants' webpage<sup>4</sup>; stakeholders and Member States were notified. The project page is accessible via the DG Environment webpage<sup>5</sup>.

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<sup>1</sup> OJ L 174, 1.7.2011, p. 88.

<sup>2</sup> [http://ec.europa.eu/environment/consultations/rohs7\\_en.htm](http://ec.europa.eu/environment/consultations/rohs7_en.htm); consultation period 19 August to 11 November 2013.

<sup>3</sup> The consultation list is regularly updated and maintained by the consultants in cooperation with the Commission, and includes electronics related industry organisations, manufacturers and suppliers, recyclers, consumer associations, NGOs, academia, Member States' representatives, etc.

<sup>4</sup> Direct link to evaluation and recommendation:

[http://rohs.exemptions.oeko.info/fileadmin/user\\_upload/RoHS\\_IX/20140422\\_RoHS2\\_Evaluation\\_Ex\\_Requests\\_2013-1-5\\_final.pdf](http://rohs.exemptions.oeko.info/fileadmin/user_upload/RoHS_IX/20140422_RoHS2_Evaluation_Ex_Requests_2013-1-5_final.pdf), pages 40-91.

<sup>5</sup> [http://ec.europa.eu/environment/waste/rohs\\_eee/studies\\_rohs1\\_en.htm](http://ec.europa.eu/environment/waste/rohs_eee/studies_rohs1_en.htm).

Subsequently, the Commission consulted the official expert group for delegated acts under RoHS 2. A meeting with consultants and experts was held on 25 June 2014, a consolidated recommendation with all necessary background information was sent out on 1 July 2014 and experts were invited to comment on the proposal by 25 August 2014. The expert group unanimously supported the proposal. All necessary steps pursuant to Article 5(3) to (7) have been performed. Council and Parliament were notified of all activities.

According to the final report, the following technical information as discussed in public consultation was collected (for further information see footnote 4):

Existing Annex III exemption 39 permits the use of cadmium in colour converting II-VI LEDs for solid state illumination and displays. The colour converting component in LEDs consists of cadmium containing quantum dots. Quantum dots are state of the art technology with significant advantages regarding energy efficiency and colour performance. Exemption 39 expired on 1 July 2014. The Commission received an application for renewal of exemption 39 in December 2012 and a related application specifically for Cd quantum dots in displays in 2013. In consultation with the Commission, the consultant decided to address in their evaluation both applications as one case.

The evaluation showed that the use of quantum dots in displays has indeed a positive overall impact due to their low energy consumption. Quantum dots are a new technology that will replace older colour converting designs in many applications in the near future. The elimination of quantum dots via design changes is technically impracticable, as they are a new and superior technology. Although it would be desirable to substitute cadmium in quantum dots, Cd-free quantum dots (using e.g. indium phosphide) are still in the scientific research stage and years away from production.

While quantum dot (Cd and Cd-free) LEDs for illumination (lamps) are not available yet, display applications (TVs, phones) are already available. Therefore the positive environmental impact could only be convincingly demonstrated for display applications. Nevertheless, the original exemption wording which covers illumination and displays should be extended for a short period of time to allow lighting industry to apply for a specific exemption, as Cd quantum dot based lighting applications are already in the pre-production phase and it is likely that the overall picture will be similar to the display sector.

In light of Article 5(1)(a) criteria one and three, and in order to distinguish between the use in illumination and the use in display lighting, the current exemption has to be split into two exemptions. A new display specific exemption is justified and should be granted until mid-2018. In parallel, the original exemption 39 should be extended until mid-2017, in order to ensure legal certainty and allow lamp manufacturers to continue their research in quantum dot technology. These are relatively short transition periods which are unlikely to have adverse impacts on innovation and the development of cadmium free alternatives.

The specific exemption does not weaken the environmental and health protection afforded by Regulation (EC) No 1907/2006 (REACH) in accordance with Article 5 of Directive 2011/65/EU.

### **3. LEGAL ELEMENTS OF THE DELEGATED ACT**

The proposed act grants an exemption from the substance restrictions in Annex II of Directive 2011/65/EU (RoHS 2), to be listed in Annex III, for the use of cadmium in specific applications.

The proposed instrument is a delegated directive.

The draft delegated directive implements Directive 2011/65/EU, and in particular Article 5(1)(a) thereof.

The objective of the proposed act is to ensure legal certainty and sustainable market conditions for electronic manufacturers, by allowing specific applications of otherwise banned substances in line with the provisions of RoHS 2 and the therein established procedure for the adaptation of the Annexes to scientific and technical progress.

In accordance with the principle of proportionality, the measure does not go beyond what is necessary to achieve its objective.

The proposal has no implications for the EU budget.

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THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment<sup>6</sup>, and in particular Article 5(1)(a) thereof,

Whereas:

- (1) Directive 2011/65/EU prohibits the use of cadmium in electrical and electronic equipment placed on the market.
- (2) Point 39 in Annex III exempted the use of cadmium in colour converting LEDs for illumination and display applications until 1 July 2014. The Commission received an application for renewal of this exemption before 1 January 2013 in accordance with Article 5(5), and a more specific application for the use of Cadmium in quantum dots for display lighting applications.
- (3) Colour converting LEDs using quantum dots have significant advantages regarding energy efficiency and colour performance. Quantum dots are already used in displays and are likely to be introduced in illumination applications in the coming years. The use of quantum dots in displays has a positive overall impact due to their low energy consumption. The elimination of quantum dots via design changes is technically impracticable. Cadmium free quantum dots are not yet technically available.
- (4) In order to distinguish between the use in illumination and the use in display lighting, the current exemption has to be split into two exemptions. The use of cadmium in downshifting cadmium based semiconductor nanocrystal quantum dots for use in display lighting applications should therefore be exempted from the prohibition until 30 June 2018. In addition, the validity period of point 39 in Annex III should be extended until 30 June 2017, in order to ensure legal certainty and allow the illumination sector to continue their research in quantum dot technology. These are short transitions periods which are unlikely to have adverse impacts on innovation and the development of cadmium free alternatives.
- (5) Directive 2011/65/EU should therefore be amended accordingly,

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<sup>6</sup> OJ L 174, 1.7.2011, p. 88.

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

Annex III to Directive 2011/65/EU is amended as set out in the Annex to this Directive.

*Article 2*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by the last day of the ninth month after entry into force at the latest. They shall forthwith communicate to the Commission the text of those provisions.

When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

*Article 3*

This Directive shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

*Article 4*

This Directive is addressed to the Member States.

Done at Brussels, 30.1.2015

*For the Commission*  
*The President*  
*Jean-Claude JUNCKER*