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Horgen, 8 January 2016

RoHS Exemptions Evaluation
Öko-Institut e.V.
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By email to rohs.exemptions@oeko.de

Dear Sirs,

We refer to the submission made on Friday 8th January 2016 by Nanoco Technologies Ltd, in response to the 'Stakeholder Consultation on exemption request evaluation under Directive 2011/65/EU' with respect to RoHS exemption requests 2013-2 and 2013-5.

As you know, Dow Electronic Materials is working together with Nanoco Technologies in the sale, marketing and manufacturing of cadmium-free quantum dots for display applications. We fully endorse the Nanoco Technologies Ltd submission of 8th January 2016, and would like to draw particular attention to the following points (page numbers refer to the Nanoco submission):

Question 1

The purpose of the RoHS Directive is to promote innovation in RoHS compliant substitutes and new technologies and not to promote the innovation and development of new products using cadmium or other restricted materials. Any decision to further extend Exemption 39 would be diametrically opposed to the entire purpose of RoHS (page 3).

Practicality (Q1)

The data presented clearly demonstrates that 1st generation cadmium-free QD displays can already deliver high colour performance to effectively meet current standards and compare favourably with 2nd generation cadmium QD displays (page 5).

In addition to cadmium-free QD technology from Nanoco and Samsung, other alternative cadmium free QD and non-QD technologies continue to be developed and are increasingly available commercially (page 5).

Performance in relation to substitution is a horizontal standard requirement and is not related to individual quality or performance standards of specific products. This is confirmed by the Institute's practice, including in the previous Öko Institut assessment of Exemption 39b (page 6).

This is also confirmed in other previous Öko Institute Opinions that never considered quality or energy efficiency as a stand-alone argument, indeed to the contrary (page 6).

Reliability (Q2)

The reliability of substitutes is demonstrated by the existence of commercial products. By definition, the [cadmium free] technology has already met the reliability standards required by the device manufacturers, and is now meeting the reliability expectations of consumers and retailers in the EU market. This is abundantly clear in the case of cadmium-free QDs for displays, where this technology has been applied by Samsung, the World No1 display company. Equally it is the case for CFQD® technology selected by well-established lighting companies (page 7).

The reliability case for cadmium QD products is less clear. The [cadmium based] Sony TV, Amazon tablet and the Nexus light, were all withdrawn from the market rather quickly after being launched and were not replaced. The reliability of cadmium QD lighting products cannot now be assessed at all since none exist (page 7).

Environmental, health and consumer safety impact (Q3)

As the purpose of RoHS is to phase out the use of hazardous substances, only when the total negative environmental/health/safety impacts of substitution are significantly higher than those of the use of cadmium, can the use of cadmium be continued (page 7).

Thus, the fact that an alternative technology has become widely used, speaks against granting an exemption even if there is no precisely equivalent outcome. This is applicable in this case, where cadmium-free QD displays are already far more widely available and sold in much higher numbers than cadmium QD displays, and no cadmium QD lighting products exist at all while two cadmium-free QD products have already been launched (page 8).

Finally, settled case law on RoHS (e.g. Joined Cases C 14/06 and C 295/06) provides that: *"as regards the objectives of Directive 2002/95 (*RoHS 1*), it is clear (...) that the intention of the legislature is to prohibit products referred to in the directive and to grant exemptions only in accordance with carefully defined conditions. Such an objective, in compliance with Article 152 EC, according to which a high level of human health protection is to be ensured in the definition and implementation of all Community policies and activities (...) and in compliance with Article 174(2) EC, according to which Community policy on the environment is to aim at a high level of protection and is based on the principles of precaution and preventive action (...) justifies the strict interpretation of the conditions for exemption." (page 9).*

It is clear from comparisons using manufacturers' published test data for products to European standards, that commercial cadmium QD displays **do not** offer the significant energy savings claimed by the applicants when compared to cadmium-free QD and conventional LED technology in LCD displays (page 12).

In conclusion, the assessment of the reduction of cadmium emissions from power generation provided by QD Vision is factually incorrect, and greatly exaggerates the potential reductions, even if any energy were to be saved compared to cadmium-free QD technology (page 14).

Availability (Q4)

For displays, the commercial availability of cadmium-free QD materials and components is now well established (page 14).

This stands in clear contrast to the information provided by the Applicants and contained in the Öko institute report of 22nd April 2014, that the replacement of cadmium in commercial applications would require a minimum of seven years i.e. by 2021.

Socio-Economic Impact (Q5)

The continuation of Exemption 39 would set a very discouraging example for other companies investing or considering investing in sustainable innovation in Europe, based on the assumption of consistent policy from the EU to promote this desirable activity. The long term economic impact of undermining confidence in the consistency of EU policy in this area could be very significant (page 16).

Impact on innovation (Q6)

It would appear that the Applicants are suggesting that by improving cadmium based technologies, they will indirectly improve future cadmium-free technologies developed by other companies. In our view, however, there is a clear risk that there will be an opposite effect, and that the providers of cadmium-based technology will seek to consolidate as a permanent product in the EU market. This is clearly against the spirit and purpose of RoHS and the time-limited character of RoHS exemptions (page 18).

Impact on SMEs (Q7)

There would clearly be a negative impact on European SMEs if the exemption for the use of cadmium in lighting and display products were to continue (page 19).

Question 2

Our conclusion is that the availability and sales volume of cadmium QD based display products in the EU market remains very small and has made very little impact on consumers. It is also noted that the data from the Applicants continues to be misleading concerning the real commercial availability of such products in the EU market (page 21).

On the basis of this submission, we are confident that the information that allowed for the conclusions and recommendations in the previous Öko Institut assessment of 22nd April 1914 with respect to Exemption 39b (sections 7.6.8 and 7.7), has now been adequately addressed by the facts submitted by Nanoco Technologies Ltd.

On this basis, we share with Nanoco Technologies Ltd the strong view that there is no justification to continue the exemption for cadmium-based QDs for displays or lighting products under RoHS.

Please do not hesitate to contact us directly if you require any further information.

Yours sincerely

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