Bundesverband
für fachgerechten
Natur-, Tier- und Artenschutz e.V.

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To
Oeko-Institut e.V.
Carl-Otto Gensch
P.O. Box 17 71
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Ihre Zeichen	Ihre Nachricht vom	Unsere Zeichen	Datum
			22.07.26

Stakeholder Response on RoHS exemptions under Directive 2011/65/EU - Annex III

- **Exemption 1(f)-I: Lamps designed to emit mainly light in the ultraviolet spectrum: 5 mg**
- **Exemption 2(b)(4)-II: Lamps emitting mainly light in the ultraviolet spectrum: 15 mg**
- **Exemption 4(f)-IV - Mercury in lamps emitting light in the ultraviolet spectrum**

Dear Mr. Gensch,

the signing organizations support extending the exemptions for the product categories listed above for the maximum permissible duration, based on animal welfare and ex situ species conservation.

Previously, EU regulations provided for exemptions for "*special purpose products*" (e.g., in the pet sector; EU 1194/2012, Art. 2, 4(a)(i)). However, in more recent regulations, such as Directive 2011/65/EU, these special categories are no longer explicitly listed. While exemptions for certain product groups remain in place, there is no explicit provision for applications in the field of animal/pet keeping or animal care and breeding. This not only has potentially significant implications for the husbandry and welfare of amphibians, reptiles, birds, and small mammals in human care, but also impedes measures for the conservation of biological diversity in zoological and private facilities (ex situ species conservation) within the European Union. Especially reptiles and amphibians rely on a combination of different wavelengths of light:

- UV-B radiation (280-315 nm) is vital for calcium metabolism of animals. In the uppermost epidermal layer of reptiles, Provitamin D3 is converted to Previtamin D3 which itself is metabolized to Vitamin D3 (cholecalciferol) which is stored in the liver and kidney to regulate plasma calcium level as well as bone growth (see Figure 1, ACIERNO ET AL., 2008; ACIERO ET AL., 2020; BOUILLON AND SUDA 2014; FERGUSON ET AL., 2005; FERGUSON ET AL., 2010; GOULD ET AL., 2018, HAXHIU ET AL., 2014; KARSTEN ET AL., 2009). For this metabolic process, not only UV-A and UV-B radiation are needed but also Infrared-A radiation. Calcium is not only required for growth of bones and turtle shells but also for egg production in females (Hoby et al., 2010; Oonincx et al., 2010). A deficiency of both Vitamin D and/or UV-B radiation can result in severe health damage like metabolic bone disease (Klaphake, 2010), fractures, softening of shells of turtles as well as the production of wax eggs. However, an overdose of vitamin D3 can be harmful to animals as well. Such effects are called hypervitaminosis. UV-A2 radiation reduces excess vitamin D3 and balances the titer of plasma calcium level. Thus, both UV-A as well as UV-B are required for both diurnal and crepuscular animals (Baines et al., 2019; Chang and Zheng, 2003; Diehl et al., 2018) and even nocturnal animals have been recorded to occasionally bask in sunlight.

- UV-A radiation (315-400 nm) is used by many animals - like anoles, chameleons, etc. – for intraspecific communication (Dollion et al., 2020; Martin et al., 2015; Porter, 1967). It is furthermore required for calcium-homeostasis in amphibians, reptiles, and birds (see above). Furthermore, many bird species seem to be tetrachromatic having receptors for UV-A radiation.
- Visible light (400-780 nm) is used to orient in space, to control the day-night rhythm, to recognize potential threats, to detect prey and to communicate with conspecifics (Abramjan et al., 2020; Bennett and Thiery, 2007; Bowmaker, 2009; Collin and Trezise, 2004; Fleishman, Loew and Leal, 1993; Fleishmann, Loew and Whting, 2011; Griffing, Gamble and Bauer, 2020; Leal and Fleishman, 2002; Pérez i de Lanuza and Font, 2014; Scholtyßek and Kelber, 2017; Steindal and Whitmore, 2020; Tattersall, Cadena and Skinner, 2006).
- Infrared-A (780-1.400 nm) is the most important heat source for thermoregulating animals like reptiles, as it is recognizable, and it penetrates all the way through the epidermis into the dermis and even somewhat into subcutaneous tissue. Infrared-A (IR-A), which makes up about 40% of the sun's infrared output, penetrates through the skin to the subcutaneous layers, stimulating critical biological processes such as vitamin D3 synthesis, cellular repair, circulation, and immune function. This form of radiant heat closely mimics the natural warmth reptiles would receive from sunlight in the wild. Therefore, Infrared-A radiation is used for thermoregulation by many species of different taxa (Barolet, Christiaens and Hamblin, 2016; Carrière at al., 2008; Diaz and Cabezas-Diaz, 2004; Fan, Stuart-Fox and Cadena, 2014; Millar, Graham and Blouin-Demers, 2012; Seebacher and Franklin, 2005; Tosini and Avery, 1996).

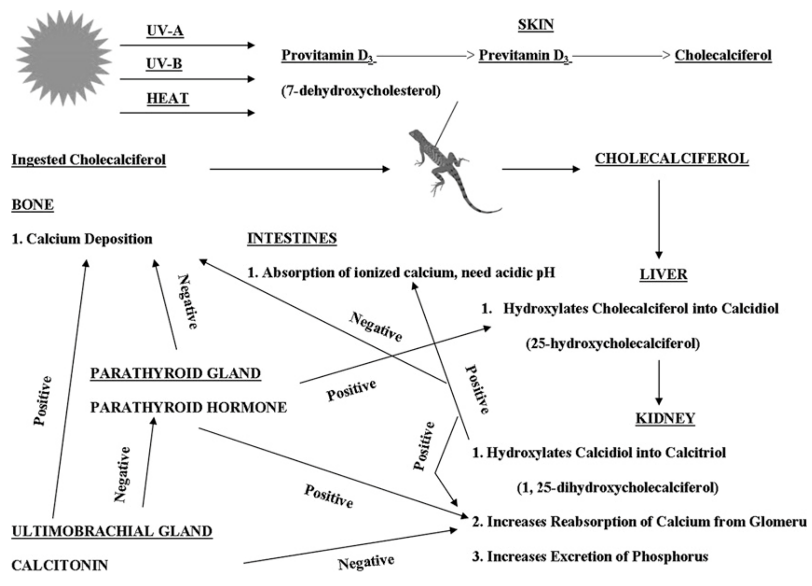

Figure 1: Calcium and cholecalciferol homeostasis and disease pathophysiology and their relation to different light spectra. Reference: Klaphake 2010.

To achieve a sun-like spectrum, generally a combination of different lighting products is used in animal keeping tailoring the illumination to the specific requirements of a species always consisting of UV-A, UV-B, visible light and Infrared-A:

- T5/T8 linear fluorescent bulb combined with an incandescent bulb
- LED fixture combined with an incandescent bulb and/or UV emitting products
- Metal Halide bulb combined with an incandescent bulb and/or T5/T8 linear bulbs or LED fixture
- Mercury Vapor bulb combined with an incandescent bulb and/or T5/T8 linear bulbs or LED fixture
- And even combinations of 3 different lighting/heating combinations for the more demanding species, always tailored specifically to each species, and always consisting of UVA, UVB, Visible Light and Infrared-A.

Comparing the habitat of a golden dart frog (*Phyllobates terribilis*) in the rainforests of Colombia with the Australian desert where the bearded dragon (*Pogona vitticeps*) can be found shows the complexity of light that has to be fulfilled to keep these species according to national animal welfare acts. But nowadays, it is possible to match the needs of almost every species due to the huge variety of lighting products available. Sometimes a single light source might be sufficient to ensure animal welfare, but mostly only the combination of different lighting systems allows a replication of lighting conditions as in the natural habitat. Furthermore, animals do not spend the entire day in the sun. Reptiles bask in the morning to increase their body temperature and to become active but at Noon they often spend in shady areas to prevent overheating. Therefore, each enclosure must allow the animals to choose their temperature of comfort by creating a thermal gradient within the enclosure (Figure 2).

Figure 2: Details of terraria of different sizes with various combinations of lighting systems that match the needs of the species kept inside. As can been seen, all terraria are equipped with a basic illumination and basking spots emitting UV-A/B radiation and thus containing mercury. The terrarium on the left-hand side also contains an incandescent basking bulb.

Limitations of LEDs in animal keeping/husbandry

- **LEDS do not provide IR-A heat:** LEDs transmit visible light and probably will also emit UVA and UVB radiation in sufficient quality and spectrum in future (Wunderlich, Baines and Griffiths, 2023), but the IR-A power density component is lacking in those devices. Combining infrared bulbs and spots with LED devices will not be suitable for most of the species since the proportion of visible and IR radiation does not match. Combining conductive Infrared-C heat-emitting devices like heat pads, heat cables or carbon heaters with LEDs is also of little to no use for animals, since the visible light is reaching the animal from above, whereas IR-radiation from the heat pad is coming from below or the side in the enclosure and thus will create contradictory gradients of visible and IR-C rays. Moreover, these heating systems only produce Infrared-B and -C radiation which do not optimally contribute to thermoregulation, homeostasis and well-being of animals. Conductive Infrared-C heat-emitting systems can only be used to increase the ambient temperature and thus need to be applied in combination with sufficient lighting systems.

- **Limited Spectra in LEDs:** LED chips cover only a small range of light wavelengths (approx. 5 nm); therefore, multiple chips with correspondingly different wavelengths in the UVA/B range are required to replicate the sun's UV spectrum. However, this entails an enormous amount of effort in the lamp's design to achieve as homogeneous a spectrum as possible. For example, it is not sufficient to distribute the corresponding UVA/B chips at equal intervals across the lamp, as this can lead to uneven absorption of the different wavelengths by the animals, which can result in adverse health effects. The products used to date and for which the exemptions are requested, on the other hand, exhibit homogeneous light emission due to their technical design, which is beneficial for animal welfare and health and has been proven effective for years.

- **Detection of failures in UVA/B-emitting LEDs in lamps:** Today's LED lamps are mostly designed to continue functioning even if one LED fails. However, for LEDs in the UVA/B range, these failures cannot be detected without appropriate measuring equipment, and there is therefore a risk that LED lamps will continue to be operated even when not all spectra are present. For the lamps used to date, manufacturers and distributors provide recommendations regarding the timeframe within which these light sources should be replaced to avoid unintended health risks for animals. This should then apply analogously to UVA/B-emitting LED lamps.

Given the physiological characteristics described above, particularly those of reptiles, the undersigned organizations believe that lamps in categories 1(f)-I, 2(b)(4)-II, 4(f)-IV, as well as the currently unaddressed category 4(e), are indispensable for the care of amphibians, reptiles, and birds—both now and certainly in the near future. This is due not only to the homogeneous light emission of these light sources but also to the emission of heat in the form of infrared-A radiation. Following an EU-wide ban on traditional incandescent bulbs and heat lamps, the products listed here from the aforementioned categories are indispensable for the care and breeding of animals, not only in zoological facilities but also in private animal husbandry. We therefore expressly support a further exemption for the products for the longest possible duration.

If you may have any questions, please contact

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Signing Organizations

AEDPAC - Asociación Española de la Industria y el Comercio del Sector del Animal de Compañía, Spain
https://www.aedpac.com/

AGARK DGHT – Arbeitsgemeinschaft Amphibien- und Reptilienkrankheiten der DGHT e.V., Germany
https://ag-ark-1.jimdosite.com/

Arbeitsgruppe Weichfresser e.V., Germany
https://weichfresser.de/

Auffangstation für Reptilien München e.V., Germany
https://www.reptilienauffangstation.de/

AZ - Vereinigung für Artenschutz, Vogelhaltung und Vogelzucht e.V., Germany
https://www.azvogelzucht.de/

BAG - Bundesarbeitsgruppe Kleinsäuger e.V., Germany
https://www.bag-kleinsaeuger.de/

BNA - Bundesverband für fachgerechten Natur-, Tier- und Artenschutz e.V., Germany
https://bna-ev.de/

CASC - Companion Animal Sector Council, United Kingdom and Northern Ireland https://casc.org.uk

CC - Citizen Conservation Foundation gGmbH, Germany
https://citizen-conservation.org/

DGHT - Deutsche Gesellschaft für Herpetologie und Terrarienkunde e.V., Germany
https://dght.de/startseite

Dibevo, The Netherlands
https://dibevo.nl/

DTG - Deutsche Tierpark Gesellschaft e.V., Germany
http://www.deutsche-tierparkgesellschaft.de/

DVG - Deutsche Veterinärmedizinische Gesellschaft e.V., Fachgruppe Zier-, Zoo- und Wildvögel, Reptilien, Amphibien und Fische, Germany
https://www.dvg.de/

DVTH - Dachverband der Tierhalter e.V., Germany
http://dv-th.de/

DWV - Deutscher Wildgehege-Verband e.V., Germany
https://www.wildgehege-verband.de/

EAZA - European Association of Zoos and Aquaria, The Netherlands
https://www.eaza.net/

EAZWV - European Association of Zoo and Wildlife Veterinarians, Belgium
https://www.eazwv.org/

EPO - European Pet Organization, The Netherlands
https://www.europets.org/

FBH - Federation of British Herpetologists, United Kingdom and Northern Ireland
https://www.thefbh.org/

FedernHilfe e.V., Germany
https://www.federnhilfe.de/

Foreningn Eksotiske Pattedyr, Denmark
https://www.eksotiskepattedyr.dk/

Frogs and Friends e.V., Germany
https://www.frogs-friends.org/de/

GAV - Gesellschaft für Arterhaltende Vogelzucht e.V., Germany
http://www.gav-deutschland.de/

IGP - Interessengruppe Phelsuma, Germany
https://www.ig-phelsuma.de/

Interessengemeinschaft Schildkrötenschutz & Nachzucht e.V., Germany
https://www.schildkroeten-schutz.de/

IHS - International Herpetological Society, United Kingdom
https://www.ihs-web.org.uk/

Italian Gekko Association, Italy
https://italiangekko.net/ig/index.php

NHF - Nordisk Herpetologisk Forening, Danmark
https://www.nhf.dk/

NZB - Norges Zoohandleres Bransjeforening, Norway
https://www.nzb.no/

OATA - Ornamental Aquatic Trade Association Ltd., United Kingdom
https://ornamentalfish.org/

OFI – Ornamental Fish International, The Netherlands
https://ofish.org/

OZO - Österreichische Zoo Organisation, Austria
https://ozo.at/

PRODAF – Syndicat des professionnels de l'animal familier, France
https://www.prodaf.org

REPTA - Reptile & Exotic Pet Trade Association, United Kingdom and Northern Ireland
https://repta.org/

RRK - Responsible Reptile Keeping, United Kingdom and Northern Ireland
https://responsiblereptilekeeping.org/

SUN - Sustainable Users Network, United Kingdom and Northern Ireland

Stiftung Artenschutz, Germany
https://www.stiftung-artenschutz.de/

TVT - Tierärztliche Vereinigung für Tierschutz e.V., Germany
https://tierschutz-tvt.de/

VDA - Verband Deutscher Vereine für Aquarien- und Terrarienkunde e.V. gegr. 1911, Germany
https://vda-online.de/

VDW - Verband Deutscher Waldvogelpfleger und Vogelschützer e.V., Germany
https://www.waldvogelverband.de/

VdZ - Verband der Zoologischen Gärten e.V., Germany
https://www.vdz-zoos.org/

Wildparks & Zoos der Schweiz, Switzerland
https://www.wzs.ch/

ViVe - Vivaristische Vereinigung e.V., Germany
https://viveweb.de/

WKO - Wirtschaftskammer Österreich – der österreichische Zoofachhandel, Austria
https://www.zoofachhandel.at

WPA - World Pheasant Association, Sektion Deutschland e.V., Germany
https://wpa-deutschland.de/die-wpa/

ZGAP - Zoologische Gesellschaft für Arten- und Populationsschutz e.V., Germany
https://www.zgap.de/

ZOORF – Zoobranschen Riksförbund, Sweden
https://www.zoorf.org

Zoo Schweiz, Switzerland
https://zoos.ch/

ZZF - German Pet Trade & Industry Association e.V., Germany
https://www.zzf.de/

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