

EMAIL COMMUNICATION

TO ENV-RoHS@cec.eu.int

(Formal address: European Commission, DG Environment, Unit G4 - Consultations Directive 2002/95/EC, B-1049)

FROM The Optical Design Community in the United Kingdom
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Date 29 June 2004

Dear Sirs,

**Subject: Stakeholder Consultation on Adaptation to Scientific and
Technical Progress under Article 4(1) of the Directive 2002/95/EC**

**Re: A Possible Amendment to the Annex relating to the Exemption of
Certain Hazardous Substances from Article 4(1) of the above Directive**

We are writing to you in accordance with the opportunity for stakeholders to comment before 5th July 2004 on the possible amendment of an annex relating to the exemption of certain hazardous substances in electrical and electronic equipment from Article 4(1) of Directive 2002/95/EC.

In particular we are writing to you to strongly support the exemption from the current restriction that state that Lead above the 100ppm (0.1% by weight) level and Cadmium at the 10ppm (0.01% by weight) level are included in the list of chemicals forbidden in optical glass (Item 7 in the Stakeholder Consultation document).

In accordance with Article 5(2) of the above referenced directive, we understand that the EU Commission is required to consult the relevant stakeholders before amending the annex to the directive that details the proposed exemptions. Furthermore, that the EU Commission shall evaluate 'as a matter of priority in order to establish as soon as possible whether these items are to be amended accordingly'.

"We" are a group of individual professional engineers who design optical equipment, and who constitute the majority of the informal membership of the United Kingdom Optical Designers Meeting (UKODM). UKODM is a group of industrially based optical design engineers that holds academic meetings to discuss techniques in Optical Design once or twice a year.

The preparation of this submission and the communication with its co-signatories has had to be completed in a relatively short period of time. This has been because the optical design community has only been aware of the 5th July 2004 deadline for the submission of comments from stakeholders for the last three weeks. This short time-scale has precluded the formal involvement of weightier professional bodies, such as the Institute of Physics, who's optical group we would normally turn to for the representation of the type of concerns that we are expressing in this letter. Officers of the Optical Group of Institute of Physics have expressed support for this letter in principle, subject to the consideration of its content by their standing committees.

The simple fact is that the elimination of Lead and Cadmium to the proposed levels significantly reduces the range of useful optical glasses that are/will be available to the optical engineering community. In particular, the cases itemised below in this letter illustrate how the design and manufacture of certain optical instruments will be rendered impossible or much more expensive.

The Stakeholder Consultation Document (which is to be found via the EU website's WEEE Directive page http://europa.eu.int/comm/environment/waste/weee_index.htm) requests, in the case of optical glass, that stakeholder responses should be in terms of:

- (1) Do feasible substitutes currently exist in an industrial and /or commercial scale?
- (2) Do any restrictions apply to such substitutes?
- (3) What are the costs and benefits and advantages and disadvantages of such substitutes?

An important background to our comments below is that we are not clear why Lead and Cadmium compounds fused as constituents in optical glass in electrical and electronic equipment represent any significant hazard to the environment at all. This is in strong contrast to the case of, for example, lead-based solders used in such equipment, which are clearly directly hazardous to the environment.

However, laying this underlying doubt aside, and addressing our specific points in the format requested, these are as follows:

(1) FEASIBLE SUBSTITUTES: The international optical glass manufacturing community have for some time been introducing low-Lead substitutes for some of their products. So for some optical instrument applications some feasible substitutes do currently exist. Some of these substitute glasses are successful and do not restrict the application of the optical glasses so modified. Other substitutions are (and we believe have to be) less successful. The optical glass manufacturers are continuing with the manufacture of the un-modified glass types, in parallel with the manufacture of the substitute glass types, to meet the continuing needs of the optical manufacturing community, which will not change.

(2) RESTRICTION ON SUBSTITUTES:

- (a) Several of the substituted glasses, particularly those which provide some of the high refractive index and high chromatic dispersion properties required in many optical instruments, have reduced transmission at the blue end of the visible spectrum. They also have practically no useful transmission in the near Ultra-Violet part of the electromagnetic spectrum.
- (b) Some of the substitute glasses for the range of high refractive index/high chromatic dispersion glasses not only have reduced spectral transmission, but also have modified partial chromatic dispersion properties, which make them unsuitable for the higher quality of chromatic aberration correction known as apochromatic or semi-apochromatic.
- (c) None of the substitute glasses are suitable for the opto-mechanical requirements of thermal coefficient of expansion matching in achromatic combinations where high chromatic dispersion optical glasses are required to match glasses of low chromatic dispersion.
- (d) Similarly, none of the substitute optical glasses intended to replace the special Lead glasses whose chemical formulae are tuned for zero stress birefringence, or specific values of low birefringence, are suitable for that intended purpose.

(3) THE COSTS, BENEFITS, ADVANTAGES AND DISADVANTAGES OF THE SUBSTITUTES:
Put simply, the development of the substitute glasses, where that has taken place, has involved extra development costs, no benefits and no advantages. On the contrary, they have only presented the disadvantages that we now list below, and above in section 2.

Additionally, the redesign of existing products containing Lead and Cadmium above the proposed levels will involve the optical instrument manufacturing industries in additional costs, and in some cases that redesign work will not be technically possible.

2(a) to 2(d) above indicate specific restrictions that the optical instrument manufacturing industries face if substitute optical glasses are adopted and the higher Lead content glass types are discontinued.

In addition, the following prohibitive situations arise if the lower levels of Lead and Cadmium in optical glasses that are proposed are adopted.

(a) Several Red and Orange coloured filter glasses cannot be made without the inclusion of relatively high levels of Cadmium compounds. These glasses are essential for achieving particular chromatic properties in a range of optical systems. There is some potential for the substitution of thin film vacuum coated coloured filters for these applications, but those devices are sensitive to the necessary variations in the angle of incidence of the light beams that they are used with, which then precludes their use.

(b) A whole category of so called "short flint" optical glasses required for the particularly high level of chromatic aberration correction known as apochromatic or semi-apochromatic correction (mentioned at 2(b) above), are under threat from the proposed ban on Lead above the 100ppm level. These are a separate category of optical glass types from those mentioned in 2(b) above.

(c) Several military sighting systems (eg laser designators) depend for their performance on specific variation of refractive index with temperature, which can only be achieved with high Lead content glasses.

The signatories to this letter are appended in the attached list.

Yours faithfully,

Jonathan Maxwell

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