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Independent expert investigator for low voltage sign installations and high voltage sign and lighting installations,

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Duisburg, Sept. 3rd, 2012

Exemption request 5 "Decorative ceramic lamp bases or other ceramic components of luminaires containing lead and/or cadmium in the glaze/colouring"

- contribution of the Climate and Pollution Agency in Norway, submitted on Sept 3rd, 2012

Dear ladies and gentlemen,

regarding the exemption request No. 5, I can only strongly support said exemption request, as the applicant correctly states that especially the coloring agents as Chromium and Cadmium are not replaceable and lead can be reduced only within small amounts.

This contradicts the -not proven- statement of the Norwegian Climate and Pollution agency of today.

Ceramic glazes are glasses with a melting point lower than the glassy component in the base ceramic.

The spectral absorption characteristic makes the glass color unique, always dependent on the light source spectrum.

Chromium and especially Cadmium-Selenium colored glasses exhibit a special spectral absorption curve which can not be achieved using other ingredients. Lead is often part of the glass batch composition not only to reduce the melting point as the applicant states, but merely to provide a necessary electron band structure at the local atomic positions of the Cadmium and Chromium atoms within short-range order of the tetrahedral silica glass structure.

These facts are well known since mid of the last century, and up to today, no replacement of these ingredients in colored glasses could be found.

For this reason, especially where colored glasses act as filter for light, also in other electrical lamp applications (for example: lamp shades, lamp bulbs, or neon/fluorescent tubes - HLDT), these ingredients can not be replaced and thus the exemption has to be granted.

Lit:

- Woldemar A. Weyl: "Colored glasses", Society of glass technology, Sheffield, 1999, ISBN 0-900682-06-X
- Arun K. Varshneya: "Fundamentals of inorganic glasses", 2.ed., Society of glass technology, Sheffield, 2006, ISBN 0 900682 51 5

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