



CPMA

COLOR PIGMENTS MANUFACTURERS ASSOCIATION, INC.

January 6, 2016

Lori D. White, Ph.D., PMP
Designated Federal Officer
National Toxicology Program
National Institute of Environmental Health Science
P.O. Box 12233, MD K2-03
Research Triangle Park, N.C. 27709

Re: Assessment of Cobalt and Certain Cobalt Compounds for Addition to the Report on Carcinogens of the National Toxicology Program

Dear Dr. White:

I am writing on behalf of the Color Pigments Manufacturers Association, Inc. ("CPMA") regarding the proposed National Toxicology Program ("NTP") Monograph for Cobalt and Certain Cobalt Compounds (the Monograph). The Monograph is under consideration for addition to the NTP Report on Carcinogens.

The Color Pigments Manufacturers Association is a Washington DC based industry trade association representing small, medium and large color pigments manufacturing companies in North America. In addition, the Association represents foreign color pigments manufacturers that sell products in North America and suppliers of intermediates and other chemical products that serve North American color pigments manufacturers. The Association provides United States and international advocacy programs in support of the color pigments industry on matters pertaining to the environment, health, safety issues and trade. Color pigments are widely used in product compositions of all kinds, including paints, inks, plastics, glass, synthetic fibers, ceramics, cement products, textiles, cosmetics and artist products.

The Monograph would classify all industrial and commercial Cobalt compounds in use under the category of "Certain Cobalt Compounds", which, according to the Monograph, are "reasonably anticipated to be human carcinogens". This overly broad category would include all complex inorganic color pigments containing Cobalt, without regard to the actual bioavailability of Cobalt from such pigments. Insoluble Cobalt compounds, such as complex inorganic color pigments containing Cobalt, which do not present a significant exposure to Cobalt in use, should not be assumed to be bioavailable substances and therefore excluded from the category of "Certain Cobalt Compounds" in this monograph.

In the process of reviewing the available studies related to common forms of Cobalt, it does not appear that the Monograph has adequately examined complex inorganic pigments containing Cobalt. For example, the study by D. Steinhoff and U. Mohr, entitled "On the Question of a Carcinogenic Action of Cobalt Containing Compounds", *Exp. Pathol.*, Vol. 41, 169-174, 1991, compared Cobalt Oxide and the pigment identified as Cobalt Aluminum Chrome Spinel in an intratracheal instillation study in rats. The Steinhoff study was cited in the Monograph for its conclusions on Cobalt Oxide, but not for its conclusions regarding Cobalt Aluminum Chrome Spinel.

The characteristics of complex inorganic color pigments containing Cobalt, were reviewed in an article by H. Endriss and D. Rade, entitled Metal Oxide Mixed Phase Pigments, Toxicological and Ecological Aspects®, *Kunststoffe German Plastics*, Vol. 79, 1989, pp. 617-620. A translation of this article from the original German is available. The Endriss and Rade article should be considered by the NTP in its assessment of complex inorganic color pigments containing Cobalt.

Endriss and Rade make an important point, namely that complex inorganic color pigments containing Cobalt are almost completely insoluble, and do not have the characteristics associated with potentially carcinogenic, slightly soluble, Cobalt compounds. Therefore, the concern with the carcinogenicity of bioavailable Cobalt compounds should not apply to complex inorganic color pigments containing Cobalt. Endriss and Rade report that the oral LD₅₀ for rats was found to be greater than 5,000 mg/kg for the pigments examined, which include complex inorganic color pigments containing Cobalt. Endriss and Rade also cite the Steinhoff and Mohr intratracheal instillation study discussed above to show that complex inorganic color pigments containing Cobalt do not produce a significant carcinogenic response in rats, when compared to controls and Cobalt Oxide.

The Monograph also cites a series of workplace studies involving plate painters. The relevant citations in the Monograph are Christensen and Poulsen 1994, Christensen 1995, Poulsen et al. 1995 and Tüchsen et al. 1996. These studies did not adequately compare specific exposures in the workplace involving complex inorganic color pigments containing Cobalt to unexposed control populations.

NTP should, at a minimum, recognize that extremely insoluble substances, such as complex inorganic color pigments containing Cobalt, are not significant sources of bioavailable Cobalt and that the toxicity of Cobalt compounds is a function of Cobalt bioavailability.

CPMA supports the comments dated July 8, 2015 from the Cobalt Development Institute ("CDI") regarding the Monograph. It is extremely important to separate the analysis of highly bioavailable, soluble Cobalt substances, such as Cobalt Sulfate Heptahydrate and Cobalt Metal, from insoluble nonbioavailable compounds, such as complex inorganic color pigments containing Cobalt. CDI comments also emphasize that Cobalt is not shown to be mutagenic or genotoxic. Additionally NTP should carefully consider recommendations from the CDI concerning the limited evidence for the carcinogenicity of certain bioavailable forms of Cobalt. Bioavailable forms of Cobalt are only shown to cause a carcinogenic response within the respiratory tract, where irritation generated by a foreign substance may develop into a carcinogenic response.

CPMA also supports the comments dated July 22, 2015 from the European IP Consortium, a trade group originally convened for the registration of inorganic pigments in Europe under the REACH regulation. IP Consortium comments address the unique attributes and safety of complex inorganic color pigments containing Cobalt and the readily available safety testing summaries available for the complex inorganic color pigments containing Cobalt in the REACH database.

Sincerely,
[Redacted]

David J Wawer
Executive Director