



Personal Care Products Council
Committed to Safety,
Quality & Innovation

June 4, 2015

Ms. Esther Barajas-Ochoa
Office of Environmental Health Hazard Assessment
P.O. Box 4010, MS-19B
Sacramento, California 95812-4010
P65Public.Comments@oehha.ca.gov

RE: Notice of Intent to List Chemicals by the Labor Code Mechanism: *Aloe Vera*, Whole Leaf Extract

Dear Ms. Barajas-Ochoa:

The Personal Care Products Council¹ (the Council) appreciates the opportunity to provide comments on the above referenced topic. *Aloe vera*-derived ingredients are widely used within the cosmetic industry across a variety of product types; thus, the Notice of Intent to List is of significant interest to Council members. The ingredients used within the cosmetic/personal care product industry, however, are not the same as the material classified as a 2B carcinogen by the International Agency for Research on Cancer (IARC) which forms the basis of the proposed listing.²

We are concerned about the potential for confusion between the material proposed for listing and the ingredients used within the personal care product industry. The addition of a qualifier to better define the material will help minimize that potential. We request that if the listing goes forward, the qualifier 'nondecolorized' be added to the name of the listed material. 'Nondecolorized' is a relevant and accurate descriptor of the material evaluated by IARC. The IARC classification is based on the results of a National Toxicology Program (NTP) bioassay; the NTP technical report identifies the tested material as "Nondecolorized Whole Leaf Extract of *Aloe Barbadensis* Miller (*Aloe Vera*)"³.

¹ Founded in 1894, the Council is the national trade association representing the personal care products industry. Our membership includes approximately 300 active member companies that manufacture or distribute personal care products and approximately 300 additional associate members who provide goods and services to manufacturers and distributors of personal care products.

² International Agency for Research on Cancer (2014). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Some Drugs and Herbal Products. *Aloe Vera*. Volume 108. pp. 1-35.
<http://monographs.iarc.fr/ENG/Monographs/vol108/mono108-01.pdf>

³ National Toxicology Program. Toxicology and Carcinogenesis Studies of a Nondecolorized Whole Leaf Extract of *Aloe Barbadensis* Miller (*Aloe Vera*) in F344/N Rats and B6C3F1 Mice. August 2013. NTP TR 577.

Nondecolorized Whole Leaf Extract has a Toxicology Profile Distinct from Other *Aloe Vera* Extracts Due to the Presence of Anthraquinones

OEHHA is proposing to list '*Aloe Vera*, Whole Leaf Extract' using the Labor Code listing mechanism, based on an IARC Group 2B classification ('possibly carcinogenic to humans'). The IARC conclusion is based on the results of a National Toxicology Program bioassay of a specific material - "nondecolorized whole leaf extract of *Aloe Barbadosensis* Miller (*aloe vera*)" – that concluded there was 'clear evidence of carcinogenic activity' in F344/N rats. Analysis of the material by NTP demonstrated very high levels of anthraquinones (for example, aloin A content was reported to be 6500 ppm).

Anthraquinones are present in the latex portion of the *aloe* leaf, as described in the IARC monograph, and have been identified as the components responsible for tumor formation in the NTP bioassay. The IARC monograph states that the "...carcinogenicity of *aloe vera* appears to be dependent upon the presence of the anthraquinone fraction". Likewise, the NTP technical report postulates that tumors in the large intestine are due to the presence of the anthraquinones aloin A and aloin B ("...anthrone C-glycosides aloin A and aloin B, found in the latex, are converted to *aloe emodin-9-anthrone* by bacteria present in the gastrointestinal tract of rats and humans, and sequentially oxidized to *aloe-emodin*, which is genotoxic and could be responsible for the reported tumours."). The findings are not relevant to *Aloe vera* extracts from parts of the leaf separate from the latex portion or in which the anthraquinones have been removed. The decolorizing process removes the anthraquinones as described in the IARC monograph. The safety of *Aloe vera* extracts in which the anthraquinones have been removed has been demonstrated in *in vitro* and *in vivo* studies⁴.

OEHHA recognizes that the IARC classification applies only to the specific extract material tested by NTP. This is made clear in the Notice of Intent, which specifies that "whole leaf extract of *Aloe vera* is the liquid portion of the *Aloe vera* leaf (e.g., what remains after removal of fibrous material...)", and further points out that other *Aloe vera* extracts (for example, *Aloe vera* decolorized whole leaf extract and *Aloe vera* gel) are **NOT** covered by the proposed listing. Still, the Council remains concerned that ingredients used within our industry may be mistaken for the listed material.

The IARC monograph describes three types of *Aloe vera* extracts, only one of which – the nondecolorized whole leaf extract – is classified as a 2B carcinogen. The monograph identifies the other two *Aloe vera* extracts as *Aloe vera* gel - derived from the inner leaf pulp, and used as an emollient and moisturizer in cosmetics; and *Aloe vera* decolorized whole leaf extract, which undergoes treatment with activated carbon to remove the anthraquinone components present in

⁴ Sehgal I, Winters WD, Scott M, Kousoulas K. (2013). An *in vitro* and *in vivo* toxicologic evaluation of a stabilized *aloe vera* gel supplement drink in mice. *Food Chem Toxicol*, 55:363–70; Shao A, Broadmeadow A, Goddard G, Bejar E, Frankos V. (2013). Safety of purified decolorized (low anthraquinone) whole leaf *Aloe vera* (L) *Burm. f.* juice in a 3-month drinking water toxicity study in F344 rats. *Food Chem Toxicol*, 57:21–31.

the whole leaf. As the *Aloe vera* gel is derived from the part of the plant that does not contain the anthraquinone components, and the anthraquinones are removed from the decolorized whole leaf extract, these materials are distinctly different from the material proposed for listing.

The addition of "Nondecolorized" to Qualify the Listing of Whole Leaf Extract Will Accurately Describe the Material and Provide Clarity to the Listing

The material tested in the NTP bioassay which resulted in the IARC 2B carcinogen classification was nondecolorized whole leaf *Aloe vera* processed only to remove the fiber. The anthraquinones found in the latex part of the leaf were not removed. Decolorization to remove these components results in material recognized by IARC as distinct from the classified material. In its Notice of Intent to List, OEHHA states that decolorized whole leaf extract would not be covered by the listing. To improve the clarity of the listing, the Council respectfully requests that, if the listing goes forward, the listed material be identified as "nondecolorized".

Thank you for your attention to this request.

Sincerely,



Linda J. Loretz, Ph.D., DABT
Director, Safety & Regulatory Toxicology