

**Response to Comments Concerning the Notice of Intent to List  
*Aloe vera*, Whole Leaf Extract and Goldenseal Root Powder as Causing Cancer  
under Proposition 65**

**Office of Environmental Health Hazard Assessment  
California Environmental Protection Agency  
December 2015**

On April 24, 2015, the Office of Environmental Health Hazard Assessment (OEHHA) issued a Notice of Intent to List<sup>1</sup> “*Aloe vera*, whole leaf extract” and goldenseal root powder under Proposition 65<sup>2</sup> as chemicals known to the state to cause cancer. The April 24 notice initiated a 30-day public comment period that was scheduled to close on May 26, 2015. OEHHA extended the public comment period to June 9, 2015 after receiving a request for an extension from Coats AgriAloe, LLC. Effective October 1, 2015 the process by which OEHHA lists chemicals and substances via the Labor Code listing mechanism was adopted in regulation at Title 27, Cal. Code of Regs., section 25904. Section 25904 outlines OEHHA’s existing procedures for Labor Code listings and incorporates recent court decisions<sup>3</sup>. In accordance with OEHHA’s longstanding practice and now required by that regulation, OEHHA provided an opportunity for the public to comment on whether the chemicals identified in the Notice of Intent to List (NOIL) meet the requirements for listing as causing cancer pursuant to Health and Safety Code section 25249.8(a) and Labor Code section 6382(b)(1).

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<sup>1</sup> Notice of Intent to List chemicals by the Labor Code mechanism: *Aloe vera*, whole leaf extract and Goldenseal root powder. Available at [http://www.oehha.ca.gov/prop65/CRNR\\_notices/admin\\_listing/intent\\_to\\_list/NOIL042315AloeGoldenseal.html](http://www.oehha.ca.gov/prop65/CRNR_notices/admin_listing/intent_to_list/NOIL042315AloeGoldenseal.html)

<sup>2</sup> The Safe Drinking Water and Toxic Enforcement Act of 1986 (codified at Health and Safety Code section 25249.5 *et seq.*) hereinafter referred to as Proposition 65 or the Act.

<sup>3</sup> Specifically, Section 25904 excludes from listing any chemicals or substances classified by the International Agency for Research on Cancer (IARC) as Group 2B based on limited evidence of carcinogenicity in experimental animals as required by *Styrene Information and Research Center v. Office of Environmental Health Hazard Assessment*, (2012) 210 Cal. App. 4th 1082. Additionally, in the Second Interim Order of the *Sierra Club v. Schwarzenegger (Brown)* case (Case No. RG07356881), the court ordered OEHHA to list chemicals when IARC concludes there is sufficient evidence of carcinogenicity in humans or animals for that chemical or substance, regardless of whether the final IARC Monograph on the substance or chemical has been published. See also, *California Chamber of Commerce v. Schwarzenegger et al.*, (2011)196 Cal. App 4th, 233 clarifying that Labor Code listings are ministerial acts required by statute.

Using this statutory and regulatory framework as guidance, OEHHA has reviewed all of the submitted comments and accompanying materials. This document responds to comments on the NOIL.

After careful consideration of the public comments, OEHHA has determined that “*Aloe vera*, non-decolorized whole leaf extract” and goldenseal root powder meet the requirements for listing as known to the state to cause cancer. OEHHA added the term “non-decolorized” to the listing for “*Aloe vera*, non-decolorized whole leaf extract” after considering several comments summarized in Comments No. 1, 2, 16, 20 and 21 below.

Thirty-five sets of comments were submitted by the following individuals and organizations:

- Aloecorp, Inc., submitted by Kenneth Jones
- Aloe Laboratories, submitted by Michael Hernandez
- Aloe Life International, Inc., submitted by Karen Masterson Koch
- American Herbalists Guild (AHG), submitted by Michael Tierra
- American Herbal Products Association (AHPA), submitted by Michael McGuffin
- Botanical Liaisons, LLC, submitted by Trish Flaster
- California Baby, submitted by Jessica Iclisoy
- Coats AgriAloe, LLC, submitted by Deborah Chadbourne
- Concentrated Aloe Corp (CAC), submitted by Tim Meadows
- Consumer Healthcare Products Association (CHPA), submitted by Jay Sirois
- Council for Responsible Nutrition (CRN), submitted by Rend Al-Mondhiry
- Hain Celestial Group, Inc., submitted by Vic Mencarelli
- Herbalife, submitted by Vasilios H. Frankos
- Improvera, submitted by Peter Hafermann
- Independent Cosmetic Manufacturers and Distributors (ICMAD), submitted by M. Taylor Florence
- International Aloe Science Council (IASC), submitted by Jane M. Wilson
- Laboratorios 2000, S.A. de C.V., submitted by Evangelina Gonzalez
- Labs. Pejoseca, s.l., submitted by Carlos Marrero
- Lily of the Desert, submitted by E. Don Lovelace
- Natural Products Association (NPA), submitted by Daniel Fabricant
- NATURTECH, submitted by Don L. Smothers
- Personal Care Products Council (the Council), submitted by Linda J. Loretz
- Pharmos Natur, submitted (LATE) by Paul Greineder
- RBC Life Sciences, submitted by Steven E. Brown
- Rive Personal Products Company, submitted by Kelly M. Kaplan

- Sage & Sweetgrass All Natural Soaps & Apothecary (S&S All Natural), submitted by Terri Lyn Powell
- Scientific Support Services (SSS), submitted by David Wolfson
- Steinberg and Associates, submitted by David C. Steinberg
- Terry Laboratories, LLC, submitted by Laurie Chatman
- Maggie Hanus
- Lorrie Hargis
- Julie Holmgren
- Kathy J. Shattler
- Anya Wolfenden
- One anonymous comment

Several of these comments were directed at the underlying basis for the proposed listing, namely the scientific basis by which the International Agency for Research on Cancer (IARC) classified the chemicals in Group 2B (possibly carcinogenic to humans). Because listing under the Labor Code is a ministerial process, comments must be limited to whether IARC has identified the specific chemical or substance as a known or potential human or animal carcinogen. Under Section 25904(c), OEHHA cannot consider scientific arguments concerning the weight or quality of the evidence considered by IARC when it identified these chemicals, and OEHHA is not obligated to respond to such comments. Therefore, substantive responses to comments on the underlying scientific evidence relied on by IARC to identify the chemicals are not provided here. Relevant public comments from the individuals and groups listed above are grouped and numbered by topic, and responses follow below.

1. **Comment (Aloe Life, RBC, Aloecorp, Lab 2000, Improvera, Herbalife, CAC, Aloe Laboratories, California Baby, Revive Personal Products, the Council, CRN, NATURTECH, Terry Labs):** The IARC *Aloe vera* monograph clearly identifies four unique materials derived from *Aloe vera*, and how each material is different from the (non-decolorized) whole leaf extract that is the subject of the IARC classification. The aloe material used by the businesses represented by these commenters is not the kind IARC indicates as carcinogenic and a distinction should be made.

**Response:** OEHHA agrees with the comment. For purposes of clarity, the term “non-decolorized” will be added to the listing. OEHHA does not list particular products that may contain listed chemicals. Excluding particular products from the listing is beyond the scope of the listing process.

2. **Comment (Aloe Laboratories, Aloe Life, Aloecorp, AHPA, California Baby, CAC, the Council, CRN, CHPA, Herbalife, Improvera, IASC, Lab 2000, Labs. Pejoseca, Lily of the Desert, NATURTECH, NPA, Pharmos Natur, RBC, Revive Personal Products, Terry Labs):** To avoid confusion of what the proposed Proposition 65 listing covers and what it does not cover, the title of the proposed material should be modified to read “*Aloe vera*, non-decolorized whole leaf extract.”

**Response:** As noted above, OEHHA is clarifying the substance that is the subject of the IARC monograph and listing.

3. **Comment (AHG, Aloe Life, Anya Wolfenden, Maggie Hanus, Anonymous, Botanical Liaisons, Julie Holmgren, Kathy Shattler, Labs Pejoseca, Lorrie Hargis, S&S All Natural, SSS):** *Aloe vera* and goldenseal are beneficial/medicinal and not toxic.

**Response:** *Aloe vera*, [non-decolorized] whole leaf extract and goldenseal root powder were both classified in Group 2B by IARC as “possibly carcinogenic to humans” with sufficient evidence of carcinogenicity in experimental animals.

4. **Comment (AHPA, Anya Wolfenden, Hain Celestial, NPA):** OEHHA claims this is a ministerial listing. This listing under the Labor Code mechanism was exercised without any discretion or judgment.

**Response:** *Aloe vera*, [non-decolorized] whole leaf extract and goldenseal root powder were both classified in Group 2B by IARC as “possibly carcinogenic to humans” with sufficient evidence of carcinogenicity in experimental animals. As provided in Section 25904(b)(2), pursuant to Health and Safety Code section 25249.8(a), which incorporates Labor Code section 6382(b)(1), a chemical or substance must be included on the list if it is classified by IARC in the IARC Monographs series on the Evaluation of Carcinogenic Risks to Humans (most recent edition), or in the list of Agents Classified by the IARC Monographs, as possibly carcinogenic to humans (Group 2B) with sufficient evidence of carcinogenicity in experimental animals. By law, the scientific review of the evidence is conducted by IARC, not OEHHA for these listings. OEHHA has no discretion in this regard.

**5. Comment (Coats AgriAloe, Hain Celestial, IASC, the Council, NPA):**

OEHHA's listing of *Aloe vera*, whole leaf extract should be based on anthraquinone levels in the product.

**Response:** The basis for the listing of *Aloe vera*, non-decolorized whole leaf extract is the IARC classification of the chemical in Group 2B, not anthraquinone. Anthraquinone is already separately listed under Proposition 65.

**6. Comment (AHPA, AHG, Anonymous, Anya Wolfenden, Botanical Liaisons, Hain Celestial, Labs Pejoseca, Maggie Hanus, NPA, S & S All Natural, SSS, Steinberg & Associates):** Amounts used in the study are unnatural, unrealistic, and not comparable to the amounts an average person would likely be taking.

**Response:** Listings via the Labor Code are ministerial in nature. As provided in Section 25904(c), the lead agency shall not consider comments related to the underlying scientific basis for classification of a chemical by IARC as causing cancer. It should additionally be noted that the listing of a chemical under Proposition 65 is not dependent on anticipated human exposure levels, but rather on the intrinsic health hazard associated with the chemical. In this case, the identified health hazard is cancer. Consideration of the level of exposure from a given product is a later step in the process when a business decides whether or not a warning is required for a given exposure<sup>4</sup>.

**7. Comment (Coats AgriAloe):** The IARC Monograph inappropriately relied upon the Boudreau Study as establishing that *Aloe vera*, Whole Leaf Extract's carcinogenic component is aloe-emodin.

**Response:** This comment mischaracterizes the IARC Monograph in terms of the relevance of aloe-emodin to IARC's classification of *Aloe vera*, [non-decolorized] whole leaf extract in Group 2B. The basis for IARC's Group 2B classification is the IARC finding of "sufficient evidence in experimental animals for carcinogenicity of whole leaf extract of *Aloe vera*". This comment is related to the underlying scientific evidence relied on by IARC in evaluating the carcinogenicity of a chemical. Labor Code listings are ministerial in nature; therefore OEHHA does not review the scientific basis for IARC's evaluation and decision (Section 25904(c)).

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<sup>4</sup> Health and Safety Code section 25249.10, Title 27, Cal Code of Regs., section 25701 et seq.

- 8. Comment (AHPA, SSS):** OEHHA should consider the IARC monograph to be inadequate to support its own findings, and certainly inadequate to support listing of goldenseal root powder as “known to the state of California to cause cancer.

**Response:** This comment is related to the underlying scientific basis for the classification of a chemical by IARC as causing cancer. Labor Code listings are ministerial in nature therefore OEHHA does not review the scientific basis for IARC’s decision (Section 25904(c)).

- 9. Comment (CRN, CHPA, IASC):** IARC Monograph 108 provides recommendations for terminology used in the aloe industry. With regard to the term “whole leaf”, it states that “use of this terminology without adequate additional descriptors is not recommended.”

**Response:** The IARC Monograph suggests that the aloe industry specify on its products whether the aloe substance in the product is an extract and whether that aloe substance has been decolorized. This IARC recommendation, however, is not relevant to IARC’s classification of the substance in Group 2B, or to this listing proposed by OEHHA. As noted in response to comment 1 above, OEHHA is clarifying the substance that is the subject of the IARC monograph and listing as follows: *Aloe vera*, non-decolorized whole leaf extract.

- 10. Comment (AHG, Anonymous, Kathy Shattler, Julie Holmgren, Maggie Hanus, S&S All Natural, NPA):** More unbiased research needs to be done or reviewed before this type of conclusion can be drawn and acted upon.

**Response:** *Aloe vera*, [non-decolorized] whole leaf extract and goldenseal root powder were classified by IARC in Group 2B. Section 25904(a) provides that pursuant to Section 25249.8(a) of the Act, a chemical or substance a chemical or substance must be included on the list if it is classified by IARC in the IARC Monographs series on the Evaluation of Carcinogenic Risks to Humans (most recent edition), or in the list of Agents Classified by the IARC Monographs, as possibly carcinogenic to humans (Group 2B) with sufficient evidence of carcinogenicity in experimental animals. By law, the scientific review of the evidence is conducted by IARC, not OEHHA, for these listings. OEHHA has no discretion in this regard. This comment is related to the underlying scientific basis for the classification of a chemical by IARC as causing cancer. Labor Code listings are ministerial in nature, therefore OEHHA does not review the scientific basis for IARC’s decision (Section 25904(c)).

**11. Comment (S&S All Natural, AHG, Anonymous, Anya Wolfenden, Lorrie Hargis, Coats AgriAloe, SSS, NPA):** Please do not ban/add *Aloe Vera* Extract or Golden Seal powder

**Response:** *Aloe vera*, [non-decolorized] whole leaf extract and goldenseal root powder were both classified by IARC as carcinogens in Group 2B. Section 25904(a) provides that in accordance with Section 25249.8(a) of the Act, a chemical or substance must be included on the list of chemicals known to the state to cause cancer if it is a chemical or substance identified by reference in Labor Code Section 6382(b)(1) as causing cancer. Adding these chemicals to the Proposition 65 list does not result in a ban on their use. It simply requires that, in some circumstances, warnings be provided for significant exposures to the chemicals.

**12. Comment (AHPA, CRN, CHPA, ICMAD, IASC):** OEHHA needs to clarify in the listing that the only relevant route of exposure is the oral route.

**Response:** The IARC listing did not limit the classification by route of exposure, therefore the listing is not route-specific.

**13. Comment (CRN, NPA):** Request explanation from OEHHA on how the naturally occurring exemption would apply or not apply for *Aloe vera*, non-decolorized whole leaf extract in foods, dietary supplements, or other consumer products such as cosmetics.

**Response:** The NOIL specifies that *Aloe vera*, [decolorized] whole leaf extract consists of the liquid portion of the *Aloe vera* leaf and is a *natural constituent* of the *Aloe barbadensis* Miller plant. Title 27, Cal. Code of Regs., Section 25501, provides that exposure to a naturally occurring chemical in food is not considered an exposure for purposes of Proposition 65. Application of the naturally-occurring regulation to specific exposures or products is beyond the scope of this document. Businesses may request compliance assistance from OEHHA on making this determination<sup>5</sup>.

**14. Comment (ICMAD, NPA):** Request that topical uses be excluded from the listing of Aloe on Prop 65.

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<sup>5</sup> Title 27, Cal. Code of Regs., sections 25303 and 25304

**Response:** The proposed listing is based on the IARC classification of *Aloe vera*, [non-decolorized] whole leaf extract. As noted above, OEHHA is clarifying the substance that is the subject of the IARC monograph and listing as follows: *Aloe vera*, non-decolorized whole leaf extract. IARC did not limit the classification by route of exposure or by specific uses, and therefore the Proposition 65 listing is not route-specific and thus includes exposures resulting from topical uses. Further, OEHHA does not list particular products that may contain listed chemicals. Excluding particular products from the listing is beyond the scope of the listing process. This listing is occurring under the Labor Code mechanism and is limited to the IARC classification of the chemical, which was not limited by the route of exposure.

**15. Comment (Aloe Life):** *Aloe vera* is a natural laxative, and unprocessed *Aloe vera* can cause diarrhea. California already requires labeling on *Aloe vera* products to reduce the amount a person consumes if it causes diarrhea.

**Response:** Labeling requirements under the Act are separate and distinct from other California food labeling requirements. Compliance with these other labeling laws does not indicate compliance with Proposition 65.

**16. Comment (Coats AgriAloe):** The IARC's *Aloe vera* Monograph failed to accurately identify the chemical alleged to cause cancer and thus failed to meet Labor Code section 6382(b)(1).

**Response:** IARC identified *Aloe vera*, [non-decolorized] whole leaf extract as the chemical/substance classified as a carcinogen in Group 2B. Section 25904(a) provides that in accordance with Section 25249.8(a) of the Act, a chemical or substance must be included on the list of chemicals known to the state to cause cancer if it is a chemical or substance identified by reference in Labor Code Section 6382(b)(1) as causing cancer. As noted in response to comment 1 above, OEHHA is clarifying the substance that is the subject of the IARC monograph and listing as follows: *Aloe vera*, non-decolorized whole leaf extract.

**17. Comment (Aloe Life):** A Japanese study [Yokohira et al.] modeled after the US Food and Drug Administration/National Toxicology Program study on mice ingesting non-decolorized *Aloe vera* did not conclude that *Aloe vera* is carcinogenic and felt that the colorectal tumors observed in the treated animals were due to irritation of the intestinal tract.



**Response:** The commenter included a copy of the Yokohira et al. publication as an attachment. These studies in male and female rats were considered by IARC. *Aloe vera*, [non-decolorized] whole leaf extract and goldenseal root powder were classified by IARC in Group 2B. Section 25904(a) provides that pursuant to Section 25249.8(a) of the Act, a chemical or substance shall be included on the list of chemicals known to the state to cause cancer if it is a chemical or substance identified by reference in Labor Code Section 6382(b)(1) as causing cancer. This comment is related to the underlying scientific basis for the classification of a chemical by IARC as causing cancer. Labor Code listings are ministerial in nature, therefore OEHHA does not review the scientific basis for IARC's decision (Section 25904(c)).

**18. Comment (AHPA, SSS):** IARC failed to consider all relevant research. OEHHA should consider the IARC monograph to be inadequate to support its own findings and inadequate to support listing of goldenseal root powder as “known to the state of California to cause cancer.”

**Response:** This comment is related to the underlying scientific basis for the classification of a chemical by IARC as causing cancer. Labor Code listings are ministerial in nature; therefore OEHHA does not review the scientific basis for IARC's decision (Section 25904(c)).

**19. Comment (Julie Holmgren, Aloe Life, Kathy Shattler):** No one has ever been harmed.

**Response:** *Aloe vera*, [non-decolorized] whole leaf extract and goldenseal root powder were both classified by IARC in Group 2B as “possibly carcinogenic to humans” with sufficient evidence of carcinogenicity in experimental animals. Pursuant to Section 25904(b)(2), a chemical or substance must be included on the Proposition 65 list if it has been classified by IARC in Group 2B. Proof of harm from studies in humans is not a statutory or regulatory prerequisite to listing.

**20. Comment (Steinberg & Associates, NPA):** The type of *Aloe vera* tested in the National Toxicology Program study is not the type of *Aloe vera* proposed for listing. The listing should be limited in scope to the extremely limited study parameters.

**Response:** For purposes of clarity, the term “non-decolorized” will be added to the listing, as follows: *Aloe vera*, non-decolorized whole leaf extract, since this is the substance tested and identified by IARC as causing cancer.

**21. Comment (CRN, Herbalife, CHPA, IASC, ICMAD, AHPA):** The listing should specifically provide exclusions for *Aloe vera* decolorized whole leaf extract, *Aloe vera* gel, *Aloe vera* gel extract and *Aloe vera* latex.

**Response:** The proposed listing is based on the IARC classification of *Aloe vera*, [non-decolorized] whole leaf extract. As noted above, OEHHA is clarifying the substance that is the subject of the IARC monograph and listing as follows: *Aloe vera*, non-decolorized whole leaf extract. OEHHA does not list particular products that may contain listed chemicals. Excluding particular products from the listing is beyond the scope of the listing process.