Mark Itzkoff
1629 K St., NW
Suite 300
Washington, DC 20006

Re: GRAS Notice No. GRN 001058

Dear Mr. Itzkoff:

The Food and Drug Administration (FDA, we) completed our evaluation of GRN 001058. We received the notice that you submitted on behalf of NABACO LLC (NABACO) on March 10, 2022, and filed it on June 1, 2022. NABACO submitted amendments to the notice on November 15, 2022; February 3, 2023[1]; March 7, 2023; and April 19, 2023. These amendments include a discussion of the removal of the vinyl acetate monomer (VAM) and the polymerization initiator during manufacturing, as well as clarifications regarding the form of the subject of the notice, the batch analyses, analytical methods, the estimate of dietary exposure, and the literature search.

The subject of the notice is polyvinyl alcohol (PVOH) for use at a maximum level of 0.29 g PVOH/kg of food as a component of a coating for fruits and vegetables. The notice informs us of NABACO's view that this use of PVOH is GRAS through scientific procedures.

NABACO provides information on the identity and composition of PVOH (CAS Registry Number 9002-89-5). NABACO describes PVOH as an odorless, translucent, white, or cream-colored granular powder. The molecular formula is $(C_2H_3OR)_n$, where R=H or COCH3 randomly distributed, and the molecular weight ranges between 37,000 and 150,000 g/mol.

NABACO states that PVOH is manufactured by polymerization of VAM in the presence of a polymerization initiator and methanol and a subsequent controlled hydrolysis of the resulting polyvinyl acetate using sodium hydroxide. During the hydrolysis, the PVOH precipitates and the resulting gel is separated, cut into granules, washed, and dried.[2] NABACO states that PVOH is manufactured in accordance with good manufacturing practices.

[1] In the amendment dated November 15, 2022, there are materials designated as confidential; these are Appendices I, II, and IV. In response to our question whether these appendices are intended to be confidential, we received an amendment on February 3, 2023, that states these appendices are not confidential.

[2] In addition to discussing the removal of VAM, NABACO provides analytical data that reports no residual VAM is detected in PVOH. The limit of detection for PVOH is 2.5 mg/kg.

NABACO provides specifications for PVOH that include limits for lead (≤ 2 mg/kg), methanol (≤ 1%), methyl acetate (≤ 1%), residue on ignition (≤ 1%), and degree of hydrolysis (86.5–89%). NABACO notes these specifications comply with those in the Food Chemicals Codex (11th Edition, 2019) and provides the results from the analyses of three non-consecutive batches to demonstrate that PVOH can be manufactured to meet these specifications.

NABACO estimates the dietary exposure to PVOH using food consumption data from the 2017-2018 National Health and Nutrition Examination Survey (NHANES). NABACO estimates the mean and 90th percentile eaters-only dietary exposures to PVOH from the intended uses to be 34 mg/person (p)/d (0.58 mg/kg bodyweight (bw)/d) and 73 mg/p/d (1.39 mg/kg bw/d), respectively, for the U.S. population aged 2 years and older. Further, NABACO notes that PVOH will be applied to the external surfaces of fruits and vegetables that may be consumed with or without peels and that PVOH is not expected to migrate to the edible portions of these food, and therefore, the main source of dietary exposure to PVOH from the intended uses will be fruits and vegetables with edible peels. NABACO also considers the dietary exposures from the previous notices for PVOH.[3] NABACO estimates the mean and 90th percentile eaters-only dietary exposure to PVOH from the intended uses in GRN 001058 and the current uses described in GRN000767[4] to be 61 mg/p/d (0.94 mg/kg bw/d) and 142 mg/p/d (2.35 mg/kg bw/d), respectively, for the U.S. population aged 2 years and older. In addition, NABACO cites the dietary exposure reported in GRN 000141 for the use of PVOH in a coating on dietary supplements and pharmaceutical products.[5]

NABACO discusses the publicly available safety data and information for PVOH, and cites previous GRAS conclusions from GRNs 000141, 000767, and 000927.[3] NABACO performed updated literature searches through August 2022 and notes that no additional data were found that would contradict their current GRAS conclusion. Published studies on absorption, distribution, metabolism, and excretion in rodents are discussed by NABACO, who reports that PVOH is poorly absorbed, does not bioaccumulate, is not significantly degraded, and is primarily excreted in the feces. NABACO reports that PVOH is non-mutagenic and non-carcinogenic based on published *in vitro* and *in vivo* genetic toxicity tests. NABACO discusses a published 90-day repeat oral toxicity study, and a published two-generation developmental and reproductive toxicity study, both in rats, noting that no adverse effects were observed at

[3] PVOH is the subject of GRNs 000141 (for use in aqueous film coatings applied to dietary supplement products), 000767 (for use as a component of water-soluble, edible film that may be used to form pouches containing pre-portion aliquots of certain ingredients or approved color additives), and 000927 (for use as a component of water-soluble anus plugs for use in abattoirs during processing of sheep, lambs, and hogs). We evaluated these GRNs and responded in letters dated April 28, 2004, September 19, 2018, and February 26, 2021, respectively, stating that we had no questions at that time regarding the notifiers' GRAS conclusions.

[4] As indicated in the response letter to GRN 000927, that notifier concludes that there is no dietary exposure to PVOH from the intended use described in this notice.

[5] In GRN 000141, the notifier estimated dietary exposure to PVOH from the intended use in aqueous coatings applied to dietary supplements and also from coatings of pharmaceutical products to be 360 mg/p/d (6 mg/kg bw/d for a 60 kg person).

doses up to 5,000 mg/kg bw/d (the highest dose tested) in either study. NABACO further describes the safety conclusions of PVOH by the Joint FAO/WHO Expert Committee on Food Additives and the European Food Safety Authority.

NABACO concludes based on the totality of data and information that PVOH is GRAS under its intended conditions of use.

Section 301(ll) of the Federal Food, Drug, and Cosmetic Act (FD&C Act)

Section 301(ll) of the FD&C Act prohibits the introduction or delivery for introduction into interstate commerce of any food that contains a drug approved under section 505 of the FD&C Act, a biological product licensed under section 351 of the Public Health Service Act, or a drug or a biological product for which substantial clinical investigations have been instituted and their existence made public, unless one of the exemptions in section 301(ll)(1)-(4) applies. In our evaluation of NABACO's notice concluding that PVOH is GRAS under its intended conditions of use, we did not consider whether section 301(ll) or any of its exemptions apply to foods containing PVOH. Accordingly, our response should not be construed to be a statement that foods containing PVOH, if introduced or delivered for introduction into interstate commerce, would not violate section 301(ll).

Conclusions

Based on the information that NABACO provided, as well as other information available to FDA, we have no questions at this time regarding NABACO's conclusion that PVOH is GRAS under its intended conditions of use. This letter is not an affirmation that PVOH is GRAS under 21 CFR 170.35. Unless noted above, our review did not address other provisions of the FD&C Act. Food ingredient manufacturers and food producers are responsible for ensuring that marketed products are safe and compliant with all applicable legal and regulatory requirements.

In accordance with 21 CFR 170.275(b)(2), the text of this letter responding to GRN 001058 is accessible to the public at www.fda.gov/grasnoticeinventory.

Sincerely,

Susan J. Carlson -S

Digitally signed by Susan J. Carlson -S
Date: 2023.06.09 13:49:01 -04'00'

Susan J. Carlson, Ph.D.
Director
Division of Food Ingredients
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