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Re: Listing BPA under the DTSC Safer Products Program

This petition asks DTSC to identify bisphenol A (BPA)-based epoxy resins used as linings of food and beverage cans as a priority product/chemical combination.

Purpose

BPA resins are commonly used as linings in food cans. The most recent survey of BPA use, conducted by several non-profit organizations, found BPA resins in about 1/3 of the canned food products tested. Another 1/3 of the linings were made of BPA resins mixed with alternative resins. (1)

Background

The basis for this petition is that BPA exposure causes a wide variety of health problems; Californians are widely exposed to BPA; significant exposures come from eating canned food because BPA migrates into food during processing and storage; there is very little data in the published scientific literature about the health and safety of alternatives to BPA-based epoxy resins in food and beverage cans.

Numerous studies document the health hazards of BPA exposure. For example, a comprehensive 2014 review article in the prestigious journal Environmental Health Perspectives identified damage to the ovaries and uterus as well as prostate damage as significant health effects caused by BPA exposure. (2) In 2015, an expert committee recommended that California's Office of Environmental Health Hazard Assessment (OEHHA) identify BPA as a chemical known to cause reproductive toxicity, and OEHHA did so. (3)

Exposure to BPA in the U.S. Is ubiquitous. The Centers for Disease Control and Prevention states that agency scientists "found BPA in the urine of nearly all of the people tested, which indicates widespread exposure to BPA in the U.S. population." (4)

When BPA resins are used as can linings, significant amounts of BPA leach into the food during processing and storage. The US Food and Drug Administration found that BPA concentrations in commonly eaten canned food ranged from 3 to 730 parts per billion, and FDA suggested that canned food was the largest source of Americans' exposure to BPA. (5)

Americans (and therefore Californians) consume canned food regularly. A 2015 study from UC Davis found that about 80% of Americans eat at least one canned food item every two weeks. The average canned food users consume canned food once every three days. Use of canned food is related to income: use of canned food by people with incomes over $70,000 per year is less frequent that lower income Americans. Participants in the Supplemental Nutrition Assistance Program (SNAP) use canned food more frequently than others. (6) Over 30% of all fruit consumed in SNAP and Women, Infants, Children program (WIC) households is sourced from cans, as compared to 25% of other households. Almost 40% of vegetables in SNAP and Women, Infants, Children program (WIC) households are sourced from cans, as compared to 31% in other households. (7)

Scientific Research to Support this Petition

Other significant research supports the basis for this petition as outlined in the previous section.

First, although there has been considerable controversy about the toxicity of BPA, the emerging scientific consensus is that BPA toxicity is significant. In 2015, an expert panel of scientists unanimously recommended that California identify BPA as a chemical that causes reproductive harm. (8) In addition, recent reviews support and expand the conclusions of the 2014 review summarized in the previous section. The range of health effects associated with human exposure to BPA and documented in these reviews is startling and a call to action. A recent review (2013) listed the following associated health effects and diseases: IVF success, reduced embryo quality, miscarriage, premature delivery, reduced male sexual function, reduced sperm quality, polycystic

ovary syndrome, altered thyroid hormone concentrations, blunted immune function, type-2 diabetes, heart disease, hypertension, cholesterol levels, obesity, abnormal gestation time, reduced birth weight, abnormal male genitals, altered behavior in children, and childhood wheeze/asthma. (9) Two 2015 reviews provided detailed evidence supporting the association with diabetes, obesity, and hypertension (10) and identified mechanism by which BPA exposure increases risks of prostate and breast cancer (11).

Second, there is detailed information about the extent of Americans' exposure to BPA. The Centers for Disease Control and Prevention published an analysis of BPA body burdens in 2008 based on a carefully designed national survey. The study found that almost 93% of Americans carry BPA in their bodies. Concentrations are highest in children, followed by adolescents, while adult body burdens are lower. Body burdens in wealthier Americans are lower than in low-income Americans, and higher in white and black Americans than in Hispanics. (12)

Finally, results of the FDA survey of canned food described in the previous section are supported by a 2015 EPA study that measured BPA concentrations in a variety of commonly eaten canned foods. The researchers found that 73% of the samples tested contained BPA and that concentrations were as high as 149 parts per billion (ppb). (13)

Other researchers have demonstrated the importance of bisphenol A exposure through a dietary intervention study. When the study participants were provided with a diet that minimized canned foods, bisphenol A urine levels declined by 66%. (14) Recently, an analysis of Centers for Disease Control and Prevention data showed that consumption of just one canned food item is associated with increased BPA urine levels. (15) There are 123 billion cans produced annually in the US, so exposure is widespread. (16)

BPA in the Supply Chain

Understanding and working with the entire canned food industry supply chain is critical to preventing toxic substitutions for BPA in food can linings. For example, the internal lining companies are an important part of the canned food supply chain because they not only develop the can linings, but they also conduct the safety testing of these materials and the migration studies.

There are four major suppliers of the linings used to coat food cans, the biggest of which are Valspar, which provides linings to 70% of the canned food industry and 50% of the beverage industry, and PPG Industries:

1. The Valspar Corporation with corporate headquarters in Minneapolis, MN (http://valsparglobal.com/http://valsparglobal.com/) is a major manufacturer of beverage

container coatings and food can coatings (17) including BPA and alternative linings - acrylic, polyester, vinyl, oleoresin and its new "Valpure" V70 series (18)

2. PPG Industries, Inc. with corporate headquarters in Pittsburgh PA (www.ppg.com/en/Pages/home.aspx)

3. Akzo Nobel Packaging Coatings with corporate headquarters inStrongville, OH (www.akzonobel.com/us/)

4. Grace Davison Materials and Packaging Technologies with corporate headquarters in Cambridge MA (www.grace.com)

Nine companies manufacture 98 percent of the cans in the United States: Ardagh Metal Packaging USA (PA), Ball Corporation (CO), BWAY Corporation (IL), Crown Holdings, Inc (PA), Metal Container Corporation (MI), Rexam (IL), Silgan Containers Corporation (CA), and the Van Can Company (CA). (16)

Four additional companies also manufacture components of food and beverage cans:

1. Alcoa Inc, Alcoo, TN http://www.alcoa.com/global/en/home.asp
2. Novelis Inc, Cleveland, OH http://www.novelis.com/en-us/Pages/home.aspx
3. Tri-Arrows Aluminum Inc, Louisville KY www.riaa.com
4. Wise Alloys LLC, Muscle Shoals, AL http://www.wisemetals.com/

The can-makers and in some cases the food manufacturers conduct shelf testing to ensure the can lining material is stable and does not leach into the food can contents.

Major manufacturers of canned food with BPA linings include Campbell's, Del Monte, General Mills, H.J. Heinz Company, and Nestle. (1)

Market Transition Away from BPA

Some of these manufacturers have announced plans to phase out BPA in canned products. Campbell's announced they are eliminating BPA in North American cans by the end of 2017. Nestle started to remove BPA in 2009 and expects to move fully to BPA alternatives by the end of 2016. (1)

Alternatives to BPA epoxies in canned food include acrylic resins, polyester resins (14), polyvinylchloride copolymers, and oleoresins (1). However, "identifying the safety of BPA alternatives is challenging given the limited FDA review and approval of packaging additives and highly protected trade secrets in this product sector," according to experts at the Breast Cancer Fund. (1)

Despite limited data in the published scientific literature regarding the health effects of BPA epoxy replacements, there are serious concerns that some of them may be toxic substitutes. (1) For example, PVC is a polymer made from vinyl chloride one of the first chemicals designated by the International Agency for Research on Cancer (IARC) to be a human carcinogen (19). Styrene acrylic combinations are also used as can linings, but polystyrene is a plastic made from styrene, which is "reasonably anticipated to be a human carcinogen based on the limited evidence of carcinogenicity from studies in humans, according to the US National Toxicology Program. (20)

Sincerely,

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