



**Comments on the California Safer Consumer Products Program 3-year Work Plan
Submitted October 21, 2014
By the Breast Cancer Fund**

Thank you for the opportunity to comment on the Department of Toxic Substance Control's (DTSC) Safer Consumer Products DRAFT Priority Product Three Year Work Plan (Work Plan). The Breast Cancer Fund is a national organization that works to prevent breast cancer by eliminating our exposure to toxic chemicals and radiation linked to the disease. We translate the growing body of scientific evidence linking breast cancer and chemical exposures from the environment and consumer products into public education and advocacy campaigns that protect our health and reduce breast cancer risk.

The Breast Cancer Fund has been involved in creating the California Safer Consumer Products (SCP) Program throughout the process, from working on the enabling legislation to extensive engagement on the development of the implementing regulations. We are excited about the potential of the SCP Program to make consumer products in California safer, by identifying chemicals of concern and using the unique element of the program – the required alternatives analysis – to ensure both the removal of toxic chemicals and that the removal does not result in regrettable substitutions of equally or more toxic chemicals. We very much appreciate all the work the DTSC staff put into producing the Work Plan and bringing the SCP Program to this point in the process. We look forward to working with the staff to continue this progress toward full implementation of the SCP Program.

General Comments

The Breast Cancer Fund is pleased this next step is underway as the implementation of this important program has been significantly delayed. In general, we support the product categories offered in the plan and are particularly interested in the Beauty, Personal Care and Hygiene Products; Cleaning Products; and Household/Office Furniture and Furnishings categories. We also strongly encourage the SCP Program to include an additional category of Food Packaging, which is discussed in more detail later in these comments. The breadth of the identified categories will provide the necessary flexibility for the SCP Program to respond to emerging concerns about chemicals in specific consumer products. The Breast Cancer Fund also supports the goal of moving forward on 5-10 product/chemical pairings per year. This aggressive goal will move the SCP Program forward expeditiously to tackle the task of evaluating and acting on the vast number of consumer products that contain and expose consumers to hazardous or potentially hazardous chemicals.

As the SCP Program looks at “sensitive subpopulations,” it is important to include environmental justice communities and lower socioeconomic status (SES) communities that may not have access to or be able to afford safer products, particularly when those products are the exception, not the rule, and therefore sell at a premium.

The Work Plan mentions working with other state agencies and U.S. EPA to gather information on candidate chemicals and products. We strongly support doing so and encourage the SCP Program to broaden the scope of the agencies with which you collaborate, including other federal agencies, such as the FDA and the Consumer Product Safety Commission, which recently released a Chronic Hazard Advisory Panel in-depth report on the hazards of the use of numerous phthalates in children's toys. Working with other agencies would also facilitate consideration of the numerous routes of exposure to a particular chemical from various consumer product categories.

The Breast Cancer Fund strongly encourages the SCP Program to continue to deeply engage the consumer advocacy and environmental health and justice communities in the ongoing process. DTSC staff should seek out the NGO community expertise so that industry is not the only voice heard regarding selection of products and chemicals to analyze.

Food Packaging

A critically important consumer product category that is missing from the work plan is food packaging and the Breast Cancer Fund strongly urges the SCP Program to add this category to the final Work Plan.

Food packaging results in universal exposure to the population – everyone comes into contact with some form of food packaging – and meets all of the attributes used to set the prioritized product categories:

Clear pathway for exposure – Chemicals used in food packaging do not always stay in the packaging. Product testing of food has repeatedly demonstrated that some of the hazardous chemicals in food packaging leach into the food itself,^{1,2} particularly if the packaging is stressed in some way, such as by exposure to heat,³ resulting in direct ingestion.⁴ Disposal of food packaging also add to potential exposures, through mechanisms such as incineration or contamination of water ways by plastic bottles and bags.^{5,6}

Found in biomonitoring studies – Chemicals used in food packaging are detected in people through biomonitoring studies, including the Centers for Disease Control and Prevention's National Health and Nutrition Evaluation Survey (NHANES) studies.⁷ In the case of bisphenol A, a chemical commonly used in the lining of metal food cans, the short half-life of the chemical in the human body and the ubiquitous exposure found by the NHANES data – 93% of Americans have BPA in their body – speaks to the constant exposure and re-exposure to the public.⁸ While biomonitoring cannot differentiate the various sources of exposure to a particular chemical, this information in combination with other research has identified food packaging as a major source of exposure. In fact, for some of the candidate chemicals, food packing is believed to be a primary source of exposure. A 2011 study conducted by the Breast Cancer Fund and the Silent Spring Institute found on average a 65 percent drop in BPA level in families fed food that had not come in contact with plastic packaging, showing that food packaging is a major source of exposure.⁹

Observed in indoor air quality studies – Phthalates are a class of plasticizers used in various products, including polyvinyl chloride, to make the plastic flexible. Phthalates provide a clear example of the chemicals in food packaging that have also been identified in indoor dust,^{10,11}

which can be both ingested and inhaled. While again, it is difficult to pinpoint the source of the phthalates in dust, migration from food packaging is certainly a plausible contribution.

Impacts on sensitive populations – Food packaging exposures can be particularly impactful on critical sensitive populations including pregnant women, children and communities with lower SES.^{12,13}

More and more scientific data is pointing to the extreme sensitivity of a developing fetus to chemicals exposures. Scientists are learning that the “when” of exposures may be as, or more, important than the “how much” exposure for certain chemicals. These “windows of susceptibility” begin with the very early development of the fetus. As a result, while measures to reduce the exposure of young children to harmful chemicals is very important, protecting pregnant women, and all women of childbearing age, may be even more important. Contrary to prior understanding, the placenta is no longer viewed as a complete barrier to chemicals. More and more evidence is documenting the transfer of chemicals from a pregnant woman’s body to her amniotic fluid and cord blood. These pre-natal exposures can result in life-long impacts including learning disabilities, attention deficit hyperactivity disorder (ADHD), reproductive disorders; as well as a higher risk for obesity, certain cancers, including breast cancer, and other serious medical conditions. Prenatal exposures to endocrine disrupting chemicals can be of particular concern given the critical role of hormones in the sensitive development of the fetus. BPA, styrene and numerous phthalates (including five that are banned from use in children’s toys and three more recommended to be banned by a blue-ribbon panel of scientists) are all examples of endocrine disruptors that are currently approved for use in food packaging.^{14, 15}

Children eat and drink more per pound of body weight than adults, increasing their exposures and therefore their body burden of these potentially harmful substances. Biomonitoring studies have frequently found the highest level of certain chemical exposures in children. Small children are more likely to spend time on the floor, increasing the likelihood of ingesting dust contaminated by these chemicals, as well as put objects, such as toys which can leach chemicals, into their mouth. Not only do children often have higher levels of exposure, but the fact that their bodies are still developing make them more sensitive than adults to comparable exposures.

Communities with lower socioeconomic status may also have disproportionate exposures to some food packaging chemicals. Access to high quality, less toxic food and food packaging may be limited in these communities due to both expense and/or availability. In food deserts where fresh produce is hard to come by, one would expect higher use of packaged foods, including canned foods, which are more likely to contain chemicals leached from that packaging. Indeed, a 2012 study found higher BPA levels among individuals with lower incomes, and found that food security, as a marker of socioeconomic position, predicted notably higher BPA levels.¹⁶ In addition, the disposal of food packaging may also release harmful chemicals through incineration or leaching from landfills that are often located near poorer neighborhoods.

Impact on Aquatic Resources/ Water Quality – One need look no further than plastic bags and bottles in our waterways and oceans to recognize the potential impact of the chemicals used in these food packaging products on water quality and aquatic life. Aquatic systems are susceptible to disruption by endocrine disrupting compounds, such as BPA and phthalates,¹⁷ both of which are used in food packaging.

A number of SCP Program candidate chemicals are approved for use in food packaging, including BPA; phthalates, including DEHP; and styrene, a reasonably anticipated human carcinogen used in packaging including coffee lids. The unique nature of the SCP Program, which requires an alternatives analysis, can provide an important service to manufacturers and consumers alike. BPA in food can linings is an excellent example of how the SCP Program can help move the market forward to safer products. Due to consumer demand, manufacturers are moving away from BPA use, but finding appropriate substitutes has proved challenging. In addition, manufacturers have not been transparent about BPA substitutes being used, which may have equally deleterious health effects. The alternatives assessment process is perfectly suited to avoid regrettable substitutions by assisting manufacturers in identifying substitutes and assuring consumers about the safety of those substitutes.

For the reasons stated above, we strongly urge the SCP Program to add food packaging as a consumer product category and consider bisphenol A, phthalates, styrene and other chemicals as potential candidate chemicals.

Beauty, Personal Care and Hygiene Products

The Breast Cancer Fund strongly supports inclusion of the Beauty, Personal Care and Hygiene Products category. We were a founding member and currently run the Campaign for Safe Cosmetics – a coalition of over 100 organizations working with the public, policymakers and businesses to remove hazardous chemicals, such as carcinogens, reproductive toxicants and mutagens, from personal care products. This category is of particular and growing concern to consumers, and the state also showed its interest/concern in the issue when the CA legislature created the CA Safe Cosmetics Program Product Database. The database has provided illuminating and deeply concerning information on the use of Prop 65 chemicals in personal care products. A number of those substances are listed in the Work Plan as potential candidate chemicals and we support all of those listings.

An important chemical functional category that is not included in the Work Plan is “fragrance.” Because labeling laws for personal care products do not require the listing of chemicals contained under the rubric of “fragrance,” the SCP Program can be particularly helpful in identifying and finding safer alternatives to hazardous chemicals in fragrance. Some of the chemicals of concern that would be captured under the category of fragrance include styrene, phthalates and musk xylene.

The Breast Cancer Fund also encourages the SCP Program to include “toothpaste and mouthwash” and “sunscreens” as subcategories under Beauty, Personal Care and Hygiene Products. The Work Plan has identified the endocrine disruptor triclosan as a chemical of concern in the Beauty, Personal Care and Hygiene category. The use of triclosan in toothpaste is particularly concerning given the potential for direct ingestion, and we encourage the Work Plan to call out that subcategory of products.

In addition to the threats to human health through direct use, triclosan has been found in freshwater systems, especially lakes and streams near wastewater treatment, at concentrations known to be harmful to wildlife.^{18, 19} Sunscreens are another product category that has raised serious concern among the public due to use of chemicals such as benzophenone and oxybenzone, which are potential endocrine disruptors.^{20,21,22,23,24,25} In addition, benzophenone has been identified as a carcinogen under California’s Prop 65.²⁶

When considering “hair care products” and “nail care products,” we urge the SCP Program to include special consideration of products marketed to women of color as well as occupational hazards from their use. Hair straighteners, skin lighteners, and other products marketed to women of color often include particularly toxic ingredients, so we encourage the Program to look closely at these products for possible action. Hair and nail salon workers use these products every day, all day, greatly increasing their exposure to potentially or known toxic substances. The use of hair straightening products, such as Brazilian Blowout, exposes workers to particularly high levels of formaldehyde, a known carcinogen.²⁷

The Breast Cancer Fund has several suggestions of other candidate chemicals to consider going forward, some of which are found as contaminants in personal care products. Given the potential hazards from these contaminants, we urge the SCP Program to consider chemical contaminants as well as intentionally added ingredients when deciding on product/chemical pairings. Here are the addition candidate chemical suggestions:

Formaldehyde – The Breast Cancer Fund is pleased to see formaldehyde listed as a potential candidate chemical, and would strongly urge the program to include the numerous formaldehyde releasing preservatives in the category, in addition to products that have directly added formaldehyde. These formaldehyde releasers include 5-bromo-5-nitro-1,3-dioxane (Bronidox C), Diazolidinyl Urea, DMDM Hydantoin, Imidazolidinyl Urea, Quaternium-15, Sodium hydroxymethylglycinate, and 2-bromo-2-nitropropane-1,3 diol.

Per/polyfluorinated Compounds (PFCs) – PFCs are listed as potential candidate chemicals for 3 of the 7 product categories, however the personal care product category is not one of them. We have found perfluorinated or polyfluorinated compounds, specifically polytetrafluoroethylene (PTFE), in a number of personal care products, including anti-aging products. While polytetrafluoroethylene is not of high concern in and of itself, we are very concerned that the production of this chemical can result in contamination by the persistent and bioaccumulative endocrine disruptor perfluorooctanoic acid (PFOA). We encourage the SCP Program to include these chemicals for potential pairing in this category.

Acrylamide – The Breast Cancer Fund requests that acrylamide and any acrylamide derivatives listed in the candidate chemicals be included on the list for potential pairings. Under CA Proposition 65 acrylamide is known to the state of California to cause cancer. It is also listed by the International Agency for Research on Cancer (IARC) as a “probable” carcinogen, and by the U.S. National Toxicology Program (NTP) as a “reasonably anticipated” carcinogen. In addition, acrylamide has specifically been linked to mammary tumors in animals.²⁸ While it is sometimes added intentionally to products, more frequently acrylamide is found as a contaminant from other ingredients such as polyacrylamide and polyquaterium.

Nitrosamines – The Breast Cancer Fund requests that nitrosamines and any nitrosamine donors listed in the candidate chemicals be included on the list for potential pairings. Nitrosamines are contaminants that are formed if nitrosamine donors, such as diethanolamine (DEA) or cocamide DEA, chemically interact with other intentionally added ingredients. Nitrosamines are listed by IARC as “possible” carcinogens and under Proposition 65 as known to the state of California to cause cancer.

Cleaning Products

The Breast Cancer Fund strongly supports the inclusion of cleaning products as a product category under the Work Plan. The lack of ingredient disclosure in cleaning products makes the category all the more concerning because consumers have no way of knowing which hazardous chemicals are in which products. The concerns around fragrance raised in the Beauty, Personal Care and Hygiene Products category apply equally here, as well as concern about other harsh chemicals used in these products. In addition to the chemicals listed in the Work Plan, we encourage the SCP Program to include 2-butoxyethanol, p-dichlorobenzene and petroleum distillates, such as Stoddard solvent. We also urge the SCP Program to consider occupational exposures when evaluating this category for future action.

The Breast Cancer Fund urges the Program to include dry cleaning chemicals in this category, in particular, tetrachloroethylene, also known as perchloroethylene or PERC. Under CA Proposition 65 tetrachloroethylene is listed as known to cause cancer by the state of California. It is listed by IARC as a “probable” carcinogen, and by NTP as a “reasonably anticipated” carcinogen. It is also one of the chemicals that has been linked to an array of adverse health outcomes at U.S. Marine base Camp Lejeune.^{29,30,31} In addition to consumer exposure from dry cleaned clothes, it is a serious concern for water contamination, as was the case at Camp Lejeune, as well as an occupational hazard for dry cleaning workers.

The Breast Cancer Fund appreciates this opportunity to comment on the proposed Work Plan. We continue to be excited about the potential of this program and are looking forward to working with SCP Program staff to create safer consumer products and a healthier population of Californians.

¹ E. Benfenati, M. Natangelo, E. Davoli, R. Fanelli (1991). Migration of vinyl chloride into PVC-bottled drinking-water assessed by gas chromatography-mass spectrometry. *Food and Chemical Toxicology*, 29(2), 131–134.

² Carwile, J., Luu, H., Bassett, L., Driscoll, D., Yuan, C., Chang, J., ... Michels, K. (2009). Polycarbonate use and urinary bisphenol A concentrations. *Environmental Health Perspectives*, 117, 1368–1372.

³ Brotons JA, Olea-Serrano MF, Villalobos M, Pedraza V, Olea N (1995). Xenoestrogens released from lacquer coatings in food cans. *Environmental Health Perspectives*, 103:608-612.

⁴ Rudel, R. A., Gray, J. M., Engel, C. L., Rawsthorne, T. W., Dodson, R. E., Ackerman, J. M., ... Brody, J. G. (2011). Food packaging and bisphenol A and bis(2-ethylhexyl) phthalate exposure: findings from a dietary intervention. *Environmental Health Perspectives*, 119(7), 914–920.

⁵ Chun-Teh Li, Huan-Kai Zhuang, Lien-Te Hsieh, Wen-Jhy Lee, Meng-Chun Tsao (2001). PAH emission from the incineration of three plastic wastes. *Environment International*, 27(1), 61–67.

⁶ http://water.epa.gov/type/oceb/marinedebris/prevention_plastics.cfm (10/20/14)

⁷ Fourth National Report on Human Exposures to Environmental Chemicals (2014), Centers for Disease Control and Prevention http://www.cdc.gov/exposurereport/pdf/fourthreport_updatedtables_aug2014.pdf (10/20/14)

⁸ Calafat, A.M., Ye, X., Wong, L.-Y., Reidy, J.A., Needham, L.L., (2008). Exposure of the U.S. Population to Bisphenol A and 4-tertiary-Octylphenol: 2003–2004. *Environmental Health Perspectives*, 116, 39–44.

⁹ Rudel, R. A., Gray, J. M., Engel, C. L., Rawsthorne, T. W., Dodson, R. E., Ackerman, J. M., ... Brody, J. G. (2011). Food packaging and bisphenol A and bis(2-ethylhexyl) phthalate exposure: findings from a dietary intervention. *Environmental Health Perspectives*, 119(7), 914–920.

- ¹⁰ Rudel, R., Camann, D., Spengler, J., Korn, L., & Brody, J. (2003). Phthalates, alkylphenols, pesticides, polybrominated diphenyl ethers, and other endocrine-disrupting compounds in indoor air and dust. *Environ Sci Technol*, 37, 4543–4553.
- ¹¹ Rudel, R., & Perovich, L. (2009). Endocrine disrupting chemicals in indoor and outdoor air. *Atmospheric Environ*, 43, 170–181.
- ¹² Disrupted Development, The Dangers of Prenatal PBA Exposure (2013), Report by the Breast Cancer Fund. <http://www.breastcancerfund.org/assets/pdfs/publications/disrupted-development-the-dangers-of-prenatal-bpa-exposure.pdf>.
- ¹³ Chronic Hazard Advisory Panel on Phthalate and Phthalate Alternatives (July, 2014), Report to the Consumer Product Safety Commission. (<http://www.cpsc.gov/PageFiles/169902/CHAP-REPORT-With-Appendices.pdf>) (10/20/14)
- ¹⁴ FDA List of Approved Indirect Food Additives. <http://www.fda.gov/Food/IngredientsPackagingLabeling/PackagingFCS/IndirectAdditives/default.htm> (10/20/14).
- ¹⁵ Chronic Hazard Advisory Panel on Phthalate and Phthalate Alternatives (July, 2014), Report to the Consumer Product Safety Commission. (<http://www.cpsc.gov/PageFiles/169902/CHAP-REPORT-With-Appendices.pdf>) (10/20/14).
- ¹⁶ Nelson, J. W., Scammell, M. K., Hatch, E. E., & Webster, T. F. (2012). Social disparities in exposures to bisphenol A and polyfluoroalkyl chemicals: a cross-sectional study within NHANES 2003–2006. *Environ Health*, 11(10).
- ¹⁷ Rudolf S. S. Wu ,Bing Sheng Zhou ,David J. Randall ,Norman Y. S. Woo , and Paul K. S. Lam (2003). Aquatic Hypoxia Is an Endocrine Disruptor and Impairs Fish Reproduction. *Environ. Sci. Technol.*, 37 (6), 1137–1141.
- ¹⁸ Brausch, J. M., & Rand, G. M. (2011). A review of personal care products in the aquatic environment: Environmental concentrations and toxicity. *Chemosphere*, 82(11), 1518–1532.
- ¹⁹ Venkatesan, A. K., Pycke, B. F. G., Barber, L. B., Lee, K. E., & Halden, R. U. (2012). Occurrence of triclosan, triclocarban, and its lesser chlorinated congeners in Minnesota freshwater sediments collected near wastewater treatment plants. *J Hazard Mater*, 229-230, 29–35.
- ²⁰ Kerdivel G., et al. (2013). Estrogenic potency of benzophenone UV filters in breast cancer cells: proliferative and transcriptional activity substantiated by docking analysis. *PLoS One*, vol. 8, no. 4, pp e60567.
- ²¹ Nakagawa Y. & Tayama K. (2001). Estrogenic potency of benzophenone and its metabolites in juvenile female rats. *Molecular Toxicology*, vol. 75, pp 74-79.
- ²² Schlecht C., et al. (2004). Effects of estradiol, benzophenone-2 and benzophenone-3 on the expression pattern of the estrogen receptors (ER) alpha and beta. The estrogen receptor-related receptor 1 (ERR1) and the aryl hydrocarbon receptor (AhR) in adult ovariectomized rats. *Toxicology*, vol 205, pp 123-130.
- ²³ Kim S. & Choi K. (2014). Occurrences, toxicities, and ecological risks of benzophenone-3, a common component of organic sunscreen products: A mini-review. *Environment International*, vol. 70, pp 143-57.
- ²⁴ Nakagawa Y. & Suzuki T. (2002). Metabolism of 2-hydroxy-4-methoxybenzophenone in isolated rat hepatocytes and xenoestrogenic effects of its metabolites in MCF-7 human breast cancer cells. *Chemico-Biological Interactions*, vol. 139, no. 2, pp 115-128.
- ²⁵ Kerdivel G., et al. (2013). Estrogenic potency of benzophenone UV filters in breast cancer cells: proliferative and transcriptional activity substantiated by docking analysis. *PLoS One*, vol. 8, no. 4, pp e60567.
- ²⁶ Chemicals Known to the State to Cause Cancer or Reproductive Toxicity. Available online: http://oehha.ca.gov/prop65/prop65_list/files/P65single01032014.pdf. July 1, 2014.
- ²⁷ <https://www.osha.gov/SLTC/formaldehyde/background.html> (10/20/14)
- ²⁸ http://sciencereview.silentspring.org/mamm_studies.cfm?cid=79-06-1
- ²⁹ Maslia, M. L., Aral, M. M., Faye, R. E., Suárez-Soto, R. J., Sautner, J. B., Wang, J., ... & Ruckart, P. Z. (2009). Reconstructing historical exposures to volatile organic compound-contaminated drinking water at a US military base. *Water Quality, Exposure and Health*, 1(1), 49-68.

³⁰ Bove, F. J., Ruckart, P. Z., Maslia, M., & Larson, T. C. (2014). Evaluation of mortality among marines and navy personnel exposed to contaminated drinking water at USMC base Camp Lejeune: a retrospective cohort study. *Environmental Health*, 13(1), 10.

³¹ Bove, F. J., Ruckart, P. Z., Maslia, M., & Larson, T. C. (2014). Mortality study of civilian employees exposed to contaminated drinking water at USMC Base Camp Lejeune: a retrospective cohort study. *Environmental Health*, 13(1), 68.