



BEYOND PESTICIDES

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April 3, 2015

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Ave. SW.,
Room 2648-S, Mail Stop 0268
Washington, DC 20250-0268

Re. HS Workplan: BPA in packaging

These comments to the National Organic Standards Board (NOSB) on its Spring 2015 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that reduce or eliminate a reliance on pesticides. Our membership and network span the 50 states and groups around the world.

The workplan for the Handling Subcommittee contains an item, "Packaging substances used in organic food handling - including BPA." Since Beyond Pesticides has a long history of concern about endocrine-disrupting chemicals, and bisphenol A (BPA) is a well-known endocrine disruptor,¹ we offer some resources connected to that workplan item.

See The Endocrine Disruption Exchange (TEDX) projects on Bisphenol A (<http://endocrinedisruption.org/endocrine-disruption/bisphenol-a/overview>).

For information on some substitutes that are also endocrine disruptors, see:

¹ Ho SM, Tang WY, De Frausto JB, Prins GS. 2006. Developmental exposure to estradiol and bisphenol A increases susceptibility to prostate carcinogenesis and epigenetically regulates phosphodiesterase type 4 variant 4. *Cancer Res* 66(11):5624-5632.

Kubo K, Arai O, Omura M, Watanabe R, Ogata R, Aou S. 2003. Low dose effects of bisphenol A on sexual differentiation of the brain and behavior in rats. *Neurosci Res* 45(3):345-356.

Murray TJ, Maffini MV, Ucci AA, Sonnenschein C, Soto AM. 2007. Induction of mammary gland ductal hyperplasias and carcinoma in situ following fetal bisphenol A exposure. *Reprod Toxicol* 23(3):383-390.

Timms BG, Howdeshell KL, Barton L, Bradley S, Richter CA, vom Saal FS. 2005. Estrogenic chemicals in plastic and oral contraceptives disrupt development of the fetal mouse prostate and urethra. *Proceedings of the National Academy of Sciences USA* 102(19):7014-7019.

Wadia PR, Vandenberg LN, Schaeberle CM, Rubin BS, Sonnenschein C, Soto AM. 2007. Perinatal bisphenol A exposure increases estrogen sensitivity of the mammary gland in diverse mouse strains. *Environ Health Perspect* 115(4):592-598.

Rochester JR, Bolden AL. Bisphenol S and F: A Systematic Review and Comparison of the Hormonal Activity of Bisphenol A Substitutes. *Environ Health Perspect*; <http://dx.doi.org/10.1289/ehp.1408989>.

This review was carried out to evaluate the physiological effects and endocrine activities of the BPA substitutes BPS and BPF. It compared the hormonal potency of BPS and BPF to BPA. Based on 32 studies to date (25 *in vitro* only, and seven *in vivo*), the majority of studies found the potency of BPS and BPF to be in the same order of magnitude and of similar action to BPA (estrogenic, anti-estrogenic, androgenic, and anti-androgenic) *in vitro* and *in vivo*. BPS also has potencies similar to estradiol in membrane-mediated pathways, which are important for cellular actions like proliferation, differentiation, and death. BPS and BPF also showed other effects *in vitro* and *in vivo*, such as altered organ weights, reproductive endpoints, and enzyme expression. The authors concluded that BPS and BPF are as hormonally active as BPA, and have endocrine disrupting effects.

As the above-cited article indicates, not all alternatives to BPA are free from endocrine-disrupting effects. The HS should search the TEDX database (<http://endocrinedisruption.org/endocrine-disruption/tedx-list-of-potential-endocrine-disruptors/chemicalsearch?>) for literature concerning the endocrine-disrupting properties of chemicals.

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Shistar".

Terry Shistar, Ph.D.
Board of Directors