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COMMENTS FROM THE NATURAL RESOURCES DEFENSE COUNCIL  
ON THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL DRAFT PRIORITY PRODUCT WORK PLAN

We appreciate this opportunity to submit comments on behalf of the Natural Resources Defense Council (NRDC), a non-profit organization with over 1.3 million members and activists, 250,000 of whom are Californians. NRDC has no financial interest in any of the chemicals or products that may be the subject of these comments.

We commend the Department on the draft work plan, which is comprehensive, clear and will serve as a good basis for naming Priority Products which impact millions of Californians every day. The Safer Consumer Products Program has the potential to provide better health and a cleaner environment for all California families by reducing toxic chemicals used in products. Moving forward, the realization of this vision depends on the type and number of Priority Products identified, the integrity of the alternatives analysis process, and the concrete steps DTSC will take to protect the public.

We support the identification of all seven categories named in the draft work plan as well as the potential candidate chemicals of interest. Our comments are summarized here and discussed in more detail below:

- 1. Through a transparent and scientifically sound process, the Department has appropriately named broad chemical classes of interest across multiple product categories.** The Department used several complementary approaches, informed by Green Ribbon Science Panel experts, to identify product categories.
- 2. The product categories and candidate chemical classes identified in the work plan meet the key regulatory prioritization factors.** There is both potential for exposure and potential for these exposures to cause significant and widespread adverse impacts.
- 3. The Department has identified opportunities for green chemistry innovation** and research into core functionalities (such as plasticizers) which currently rely on problematic chemistries.
- 4. Focusing on the same class of chemicals across product categories** could make best use of the Department's limited resources, and also begin to address issues of aggregate and cumulative exposure.
- 5. The Department should expand the chemicals of interest for Household/Office Furniture and Furnishings** to include phthalates and antimicrobials.
- 6. Furniture: The Department should name household and office furniture containing flame retardant chemicals as a Priority Product.** Flame retardant use in furniture contributes to widespread exposures, sensitive sub-populations including young children are especially vulnerable, and there is a need for alternatives analysis to evaluate replacement flame retardants.
- 7. The Department should investigate specialty papers containing bisphenols** as a potential priority product.

## DETAILED COMMENTS

### **1. Through a transparent and scientifically sound process, the Department has appropriately named chemical classes of interest across multiple product categories.**

In order to identify product categories and potential candidate chemicals of interest, the Department considered information on hazard traits, route and evidence of exposure, and sensitive subpopulations using multiple complementary approaches informed by experts on the Green Ribbon Science Panel<sup>1</sup>.

The Plan names classes of chemicals of interest, grouped by chemical structure and/or by functional use. This scientifically sound approach helps to identify chemicals that may have similar hazard characteristics based on structure-activity relationships, and also chemicals that may present similar exposure concerns because of the patterns of use in products<sup>2</sup>. Looking forward, identifying functional use is one of the first steps in the process of alternatives analysis<sup>3</sup>.

Strong science forms the foundation of this work plan and the program generally, with green chemistry as one pillar. As such, a fundamental goal is hazard reduction, because this provides inherent protection to people and the environment<sup>4</sup>. In contrast, engineering and administrative controls such as exposure limits and protective equipment are based on a permissible level of harm and require training and employer transparency. Therefore, the Department's use of hazard as the basis for identifying potential priority products and candidate chemicals is scientifically sound, and moving forward hazard is also the appropriate metric for evaluating potential replacement chemicals, as the regulatory response selection principles prefer inherent protection (Section 69506(b)).

Though some chemicals or products identified in the plan may already be subject to some limits or regulations, all too often, the existing agency and regulatory programs narrowly address one small part of the life cycle while upstream and downstream harms go unaddressed. These life cycle impacts, including impacts on workers, and downstream/ end of life environmental impacts, were considered in order to name categories and chemicals of interest for the plan. For example, the U.S. Food and Drug Administration evaluates triclosan used in soap for human health impacts, but does not evaluate potential ecological impacts when triclosan is washed down the drain and may harm aquatic life. Far from being duplicative or conflicting, the identification of such products and chemicals in the plan indicates correctly that these life cycle impact gaps need to be addressed, especially for persistent, bioaccumulative and toxic (PBT) chemicals.

### **2. The product categories and candidate chemical classes identified in the work plan meet the key regulatory prioritization factors.**

As described to the Green Ribbon Science Panel, the key prioritization factors in the regulation are that products have the potential to expose people or the environment to one or more candidate chemicals, and these exposures have the potential to cause significant or widespread adverse impacts<sup>1</sup>.

#### *Candidate chemical classes*

Analysis of U.S. EPA's Chemical Data Reporting reveals that candidate chemicals identified in the work plan including toluene, lead, formaldehyde, chromium and bisphenol-A had production and importation volumes exceeding one billion pounds in the U.S. in 2011<sup>5</sup>. Formaldehyde is known to be a human carcinogen<sup>6</sup>, and has a variety of reported uses in wood and engineered wood products for building/ construction materials and in adhesives and sealants<sup>5</sup>. The large aggregate production volume combined

with reported use in a wide variety of products for the built environment suggests significant potential for exposure.

Five different phthalates and/ or their precursors are reported to have a large variety of uses in common materials, including plastic and rubber products, adhesives and sealants<sup>5</sup>. Other authoritative bodies have identified cumulative risks to children from phthalates in products<sup>7</sup>. Biomonitoring studies reveal metabolites of multiple phthalates in adults and children tested in the U.S., with higher levels of some phthalates found in children<sup>8</sup>. Under REACH in the European Union, three phthalates are scheduled for phase out in 2015, with other phthalates listed as Substances of Very High Concern.

#### *Product categories*

Analysis of U.S. EPA's Chemical Data Reporting finds that many of the consumer product categories named in the work plan are commonly reported to contain certain hazardous chemicals<sup>5</sup>, including candidate chemicals:

- Paints and coatings
- Adhesives and sealants
- Building/ construction materials
- Floor coverings
- Cleaning products
- Personal care products.

Similarly, many commercial product categories named in the work plan are commonly reported to contain certain hazardous chemicals<sup>5</sup>, including candidate chemicals:

- Paints and coatings
- Adhesives and sealants
- Building/ construction materials
- Fabric, textile and leather products
- Floor coverings
- Cleaning products.

Many of the consumer product categories named in the work plan have also been named as priorities by other international organizations, based on similar criteria<sup>9</sup>:

- Products releasing emissions to indoor air: construction/ building products, cleaning products, personal care products
- Clothing and other consumer textiles

Analysis of personal care products, cosmetics, and cleaning products reveals a wide variety of candidate chemicals, including alkylphenols, antimicrobials, and phthalates<sup>10</sup>. Analysis of clothing consistently reveals numerous candidate chemicals, including nonylphenol ethoxylates (NPE), phthalates, and perfluorinated chemicals<sup>11,12</sup>.

### **3. Opportunities for green chemistry innovation.**

The work plan has identified several hazardous chemistries used for critical functions, such as phthalates used as plasticizers and emulsifiers across five product categories. Where such functions are necessary, this is a prime opportunity to develop novel, innovative chemistries to achieve these required functions rather than continuing to rely on the same problematic families of chemicals. Better approaches to

achieving function and performance will be needed, which is an exciting space for green chemistry—research and development has already created new tools and frameworks for the design of safer chemicals<sup>13–16</sup>.

**4. Focusing on the same class of chemicals across product categories could make best use of the Department’s limited resources, and also begin to address issues of aggregate and cumulative exposure.**

The work plan names the same classes of chemicals of interest across multiple product categories. This provides an opportunity to address issues related to aggregate and cumulative exposure, as we are not just exposed to one chemical from one product, but rather the same chemical from many products, and also multiple chemicals from multiple products. The National Academy of Sciences recommended almost 7 years ago that cumulative and aggregate exposure issues be considered in chemical evaluations<sup>17</sup>, and it is appropriate for the program to be leading the way in implementing these best-practice recommendations.

Studies of indoor environmental quality indicate that California homes consistently have unsafe indoor air levels of aldehydes. Formaldehyde and acetaldehyde levels exceeded guidelines for cancer risks in nearly all California homes tested<sup>18</sup>. Formaldehyde levels exceeded guidelines for chronic irritation in almost all homes as well, and guidelines for acute irritation were exceeded in more than half the homes. This indicates that the regulations currently in place to limit formaldehyde emissions, for example those from the California Air Resources Board, are not adequate. As mentioned above, formaldehyde is a high production volume chemical that is widely used in products; the Department named formaldehyde/ aldehydes as potential chemicals of interest in four product categories. We encourage the Department to further research potential major sources of aldehydes within each product category.

Phthalates are found in cosmetics, personal care products, cleaning products, clothing, and building products<sup>10,12,19,20</sup>. Phthalates are not bound to products to which they are added and are widely found in indoor air and dust. A study which estimated children’s exposure to single phthalates in early childhood education facilities found that over 80% of children may have exposures which exceed guidelines for reproductive toxicity<sup>21</sup>. Phthalates are named as potential chemicals of interest across five product categories, and are of particular concern for causing cumulative toxicity because many phthalates have similar endocrine-disrupting properties<sup>7,22</sup>. Moving forward, we strongly encourage the Department to identify multiple phthalates together as chemicals of concern, rather than a single phthalate, for any Priority Product named from the work plan.

**5. The Department should expand the chemicals of interest for Household/Office Furniture and Furnishings to include phthalates and antimicrobials.**

Vinyl fabrics used in bedding, furnishings, and household/ office seating often contain phthalates and may be a significant source of exposure to phthalates, either by direct dermal contact or via emissions to the indoor environment. Phthalates are also used in plastisol printing onto fabrics that may be used in bedding, furnishings, and household/ office seating.

Bedding such as pillow cases is often advertised to have antimicrobial treatments. Because people spend long periods of time in contact with bedding, there is a high potential for exposure.

**6. Furniture: The Department should name household and office furniture containing flame retardant chemicals as a Priority Product.**

The seven flame retardants below are candidate chemicals that have been found in furniture<sup>23,24</sup>.

Candidate chemical	CAS RN
TDCPP	13674-87-8
TBPH (Firemaster 550 ingredient)	26040-51-7
TBB (Firemaster 550 ingredient)	183658-27-7
Triphenyl phosphate (Firemaster 550 ingredient and ingredient in non-halogenated organophosphate flame retardant mixture)	115-86-6
Isopropylated triphenyl phosphate isomers (Firemaster 550 ingredient and ingredient in non-halogenated organophosphate flame retardant mixture)	
TCEP	115-96-8
Butylated triphenyl phosphate isomers (ingredient in non-halogenated organophosphate flame retardant mixture)	

Flame retardants migrate out of products, collect in dust and end up in people<sup>25-27</sup>. Contact with contaminated dust is a major way the chemicals enter people's bodies. Young children have three to five times higher levels of flame retardants in their bodies compared to their mothers because they crawl, play on the floor, and put their hands in their mouths<sup>28,29</sup>. Children are also more vulnerable to the toxic effects of flame retardants because their brains and bodies are still developing.

Low income households and children of color are disproportionately impacted by flame retardants and have higher levels of flame retardants compared to the general population<sup>26,30-34</sup>.

A number of flame retardants impact similar pathways and health outcomes (thyroid hormone signaling; neurodevelopment) and raise concerns for cumulative effects. In animal studies, prenatal exposure to flame retardant mixtures at levels found in indoor dust causes developmental abnormalities<sup>35</sup>.

Organophosphate flame retardants are environmentally persistent and are emerging chemicals of concern in water resources<sup>36</sup>. Flame retardants enter the aquatic environment via dust on clothes which is discharged in laundry wastewater<sup>37</sup>.

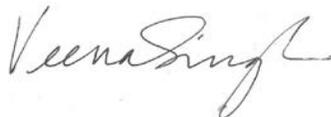
Again, we strongly encourage the Department to identify multiple flame retardants together as chemicals of concern, rather than a single flame retardant, for any Priority Product named from the work plan.

**7. The Department should investigate specialty papers containing bisphenols as a potential priority product.**

Bisphenols (BPA and BPS) are widely found in many types of paper products, at the highest levels in thermal receipts<sup>38,39</sup>. Contact with these types of paper products may have important contributions to human exposure, especially for workers who constantly handle receipts for long periods during their work shifts.

Thank you for your consideration of these comments and we hope the Department will find them useful. Please feel free to contact me with any questions.

Respectfully,



Veena Singla, Ph.D.  
Staff Scientist, NRDC

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