SAFER
CONSUMER
PRODUCTS

Three Year Priority Product Work Plan (2021-2023)

SAFER CONSUMER PRODUCTS PROGRAM

Department of Toxic Substances Control

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The Safer Consumer Products Program wishes to acknowledge the following staff for their work contributing to the preparation of this Work Plan: André Algazi, Senior Environmental Scientist (Supervisory), project sponsor; Rob Brushia, Ph.D., Research Scientist III, project lead; Simona A. Bălan, Ph.D., Senior Environmental Scientist; Armeen Etemad, M.S., Hazardous Substances Engineer; Christopher Leonetti, Ph.D., Environmental Scientist; Christine Papagni, M.S., Senior Environmental Scientist; Dicle Yardimci, Ph.D., Senior Hazardous Substances Engineer.

MESSAGE FROM THE DIRECTOR

Every three years, the Safer Consumer Products (SCP) Program issues its Priority Product Work Plan, which describes the categories of consumer products the program will investigate to identify Priority Products. The document you are reading now is the SCP Program's third Work Plan, covering 2021 through 2023.

Since the SCP Program's inception, public input and transparency have been integral parts of each decision point in our process, starting with the Work Plan. At each step of the regulatory process the SCP Program shares its findings, proposed decisions and their rationales, and research questions with the public and invites their input.

As we embark on a new Work Plan cycle, it seems like a good time to reflect on the SCP Program's development and accomplishments and how they will shape our future work. Since the SCP Program was formed in the spring of 2013, it has conducted scoping research on approximately 70 chemicals in half a dozen product categories. The program has finalized three Priority Product listings and is nearing completion on rulemaking to add a fourth product—carpets and rugs containing perfluoroalkyl and polyfluoroalkyl substances (PFASs)—to the Priority Product List. Four other products are currently in or about to start the rulemaking process, and the SCP Program has issued technical documents for several others, which we expect will enter rulemaking in the first year of the new Work Plan cycle.

Beyond this core work, the SCP Program has made a commitment to organizational excellence by optimizing our internal processes and building capacity. We will continue to ensure that the SCP Program produces technical documents of the highest caliber to support our regulatory work, even as the time to produce them has been significantly reduced. Importantly, the findings summarized in these documents have also had significant impacts on product safety outside our regulatory framework. For example, our efforts to evaluate the hazards and threats from PFASs using a "class approach" (rather than a chemical-by-chemical methodology) have supported actions by other researchers, product designers and regulators. Similarly, several consumer product manufacturers have told us that decisions to reformulate their products to remove problematic chemicals have been driven, at least in part, by the SCP Program's proposed actions.

This 2021-2023 Work Plan cycle we're doing something different to enhance transparency. In response to stakeholder input, we are launching a new public *S*CP Timeline that will allow the public to see a snapshot of our current activities and upcoming milestones in all aspects of the program—product research, rulemaking, Alternatives Analysis, and regulatory response. We will regularly update the information on the Timeline to ensure it remains up-to-date. In another effort to improve transparency, the SCP Program has begun publishing technical reports summarizing its research findings for products and chemicals it has researched but chosen not to pursue further.

The SCP framework regulations give the Department of Toxic Substances Control (DTSC) broad discretion about which products we designate as Priority Products; therefore, selecting a product-chemical combination to list as a Priority Product is, fundamentally, a policy decision. For this reason, each of our Work Plans has included a list of policy considerations that we apply to our decision-making process as we implement the plan.

Reliable information, rigorous research, and robust dialogue continue to be the cornerstones of the SCP Program's mission: to advance the design, development, and use of products that are chemically safer for people and the environment. The Priority Product Work Plan frames our work over a three-year period, so it's important that we consider the public's perspectives on the product categories we have selected and the policy consideration we have chosen to emphasize. To that end we sought input on the plan from our Green Ribbon Science Panel, and we hosted a virtual public workshop and public comment period. Thank you to all those who took the time to submit comments. We considered all your input in preparing this final Work Plan, and we will continue to engage stakeholders as we move forward implementing it.

The program has accomplished a great deal over the past seven years, and I am eager to embark on this next Work Plan and to continue to work towards a safer environment and products for all of us.

Sincerely,
Meredith Williams, Ph.D.
Director
Department of Toxic Substances Control

ABOUT THIS WORK PLAN

Early on in its implementation of the SCP framework regulations, the SCP Program evaluated several product categories concurrently. Project category evaluation schedules were synchronized so that public documents for different product categories under evaluation would be published more or less simultaneously, and subsequent project milestones would coincide. More recently, the project schedules have been decoupled from each other. Each is now developed independently, based on the project's scope and complexity; the Department's priorities and resources; and external considerations. Under this approach, projects' beginning and ending dates often straddle multiple Work Plan periods, and product categories may be carried over from one Work Plan to the next.

While this Work Plan includes some new or modified product categories, the SCP Program is not likely to initiate many new product research initiatives during the 2021-2023 Work Plan cycle unless additional resources are identified. The program has several product evaluation projects already underway that have not yet been completed; in fact, work on some will extend into the second and third years of this Work Plan. In addition, the SCP Program anticipates that four new products will be added to the Priority list in calendar year 2021, starting the clock on the Alternatives Analysis provisions of our framework regulations; receiving and reviewing Alternatives Analysis submittals will require significantly more of the SCP Program's resources than in prior years. Absent an augmentation of our resources, we will need to divert resources to Alternatives Analysis, Regulatory Response, compliance assessment, and enforcement from other SCP activities, including new product and chemical research initiatives.

INTRODUCTION

This Priority Product Work Plan (hereafter referred to as the Work Plan) describes the product categories that the SCP Program intends to evaluate between 2021 and 2023.

The Work Plan identifies categories from which the SCP Program will identify and propose future Priority Products; it does not identify any product-chemical combinations as Priority Products. According to the SCP framework regulations, the SCP Program may only designate a product as a Priority Product if it falls within one of the categories described in the current Work Plan. The only exceptions to this are if we are instructed to take action through a legislative mandate or executive order, or if we grant a petition to add a product-chemical combination to the Priority Product list.[1]

This Work Plan provides continuity with the 2018-2020 Priority Product Work Plan by carrying over several product categories, including:

- Beauty, Personal Care, and Hygiene Products
- Cleaning Products
- Building Products and Materials Used in Construction and Renovation
- Food Packaging

The SCP Program started evaluating products in the Beauty, Personal Care, and Hygiene Products and Cleaning Products categories under the 2018-2020 Priority Product Work Plan. These product categories have been carried over because we are continuing the work we started under the previous Work Plan evaluating products in both categories.

The Building Products and Materials Used in Construction and Renovation category has also been carried over from the 2018-2020 Priority Product Work Plan; the category description has been revised to include outdoor products, including artificial turf. Artificial turf may be the only

[1] The petition process is set forth in CAL. CODE REGS. tit. 22, §§ 69504-69504.1.

new product in that category the SCP Program evaluates during the current Work Plan cycle, unless additional resources become available. The rationale for our revision of the category to include artificial turf is discussed later in this document.

Food Packaging is another category that has been carried over from the 2018-2020 Priority Product Work Plan. In evaluating this category under the prior Work Plan, we learned that some of the products it includes may have multiple uses, not all of which would clearly be considered food packaging as we had originally defined the term. For example, a single-use item such as a paper plate may be used to serve food in some cases, and in other cases may be used to package food for takeout. To clarify what products are included in this category we have revised the definition of Food Packaging in the 2021-2023 Work Plan.

This Work Plan includes an entirely new Children's Products category. We find this category especially compelling due to the fact that children under the age of 12 and, especially infants and toddlers, are especially susceptible to adverse impacts from exposures to hazardous chemicals. Childhood is a critical period for development during which disruptions from exposure to environmental contaminants can have adverse consequences later in life. Some children's products may contain Candidate Chemicals that are carcinogens, developmental toxicants, endocrine disruptors, immunotoxicants, or neurotoxicants.

This Work Plan also includes another new product category: Motor Vehicle Tires. Tire tread, which has a zinc content of approximately 1 percent by weight, is worn away by friction on roadways, releasing zinc into the environment. Zinc is an aquatic toxicant which, when released from tire wear particles, can migrate into surface water and harm aquatic organisms. Some California water bodies have been adversely impacted by zinc and the contamination has been attributed, in part, to tires. California stormwater agencies are concerned about the challenges of removing zinc from stormwater in order to remain in compliance with permit requirements. These concerns prompted the California Stormwater Quality Association to petition SCP to add motor vehicle tires that contain zinc to the Priority Products List. DTSC has decided to grant this petition and has therefore included motor vehicle tires in this Work Plan. In addition to zinc, recent studies have found that other chemicals in tires, such as *N*-(1,3-dimethylbutyl)-*N'*-phenyl-1,4-benzenediamine (6PPD), may pose a threat to salmon and other species. These findings are also of concern, and SCP intends to include additional Candidate Chemicals, including 6PPD, in its evaluation of tires.

Some of the product categories included in the 2018-2020 Priority Product Work Plan have not been carried over into the current this plan: Household, School, and Workplace Furnishings and Décor; and Consumable Office, School, and Business Supplies. We previously evaluated carpets and rugs containing perfluoroalkyl and polyfluoroalkyl substances (PFASs) and bisphenol A (BPA) in thermal receipts in these two categories, respectively. Based on our other work commitments and priorities, we do not anticipate having resources available to evaluate any additional products in these categories during the 2021-2023 Work Plan cycle. Our work in these two categories will be limited to adopting regulations to add previously evaluated products to the Priority Products list. The decision not to include these two categories in the

current Work Plan was based solely on the limitations of our resources and is not a determination that neither category contains products that can expose humans or other organisms to Candidate Chemicals and cause harm. The SCP Program may choose to revisit these categories in a future Work Plan.

Lastly, we have chosen not to carry over the Lead-Acid Batteries product category from the 2018-2020 Priority Product Work Plan. In the wake of concerns regarding lead contamination in the community surrounding the Exide battery recycling facility, we were asked by Governor Brown and the Legislature to evaluate lead-acid batteries as a potential Priority Product under the 2018-2020 Priority Product Work Plan. The SCP Program conducted extensive research on potential exposures and adverse impacts of lead during the life cycle of batteries. Based on the findings of our work, we concluded that listing lead-acid batteries as a Priority Product is not likely to further enhance protection to human health, given that billions of dollars are already being invested worldwide in researching new, safer battery technologies. Later in 2021, we plan to issue a technical document summarizing our evaluation of lead-acid batteries. The technical document will present all the information relied upon in evaluating lead-acid batteries and explain how we arrived at the decision to not list lead-acid batteries as a Priority Product. The SCP Program will announce a public workshop on lead-acid batteries to be held in summer 2021. In addition to presenting the findings of the SCP program's extensive evaluation of the issue, DTSC will provide short summaries of the ongoing work of the Lead-Acid Battery Recycling Facility Investigation and Cleanup (LABRIC) Program and the Lithium-Ion Car Battery Recycling Advisory Group as context for its decision.

Notes

1. The inclusion of a product category in this Work Plan means only that DTSC intends to evaluate products within that category. It does not subject products in the category to regulation and does not create any new legal obligations. The designation of a product category in this Work Plan is not meant to imply that we have made any determinations regarding the safety of products within that category, nor is it an indication that DTSC intends to prohibit or restrict the sale of any specific product. A specific product would be subjected to any new regulatory requirements only after the rigorous science-based evaluation of products in a given category, stakeholder engagement, and formal rulemaking. Any listing of a product as a Priority Product would begin a process in which manufacturers of the product would be asked to determine whether the product can be made safer by conducting an Alternatives Analysis. No outcome is predetermined when listing a Priority Product; any regulatory response that DTSC selects for a Priority Product will be based on the findings of the Alternatives Analyses prepared and submitted by each manufacturer.
2. Certain product-chemical combinations included in the categories described in this Work Plan may be subject to complex regulatory requirements of other federal, state, and local agencies. Where a product-chemical combination is already regulated by another authoritative body, we will carefully consider the scope of the existing regulatory requirements. We will only consider listing it as a Priority Product if we

determine that doing so would meaningfully enhance protection of public health or the environment with respect to the potential adverse impacts and exposure pathways that are the basis for our listing, as required pursuant to California Code of Regulations, section 69503.2, paragraph (b)(2).

3. Additional information regarding our ongoing Work Plan implementation efforts, and some of the products we have been working to evaluate, will be available on our SCP Timeline.

Priorities and Considerations for Implementation

DTSC considers a wide variety of factors when evaluating the potential of products and chemicals to cause adverse human health or environmental impacts. In evaluating Priority Products under this Work Plan, the SCP Program intends to give special consideration to the following:

- The potential for Candidate Chemicals contained in the product to adversely impact the health of children and workers.
- The potential for the product to release Candidate Chemicals to indoor air and dust and to adversely impact the indoor environment.
- The extent to which Candidate Chemicals in certain products may adversely and disproportionally impact environmental justice communities.
- The potential for the product to release microplastics to the environment during the use or end-of-life stages of the product's life cycle. The SCP Program is concerned with microplastics because they have the potential to contribute significantly to adverse water quality impacts and aquatic pollution.
- The extent to which listing a product as a Priority Product would leverage the work of other agencies within the California Environmental Protection Agency.

Changes to the Draft Priority Product Work Plan in response to Comments

The SCP Program presented a draft of this Work Plan to the Green Ribbon Science Panel (GRSP), which discussed the document at its March 12, 2021, meeting. The Program also hosted a public workshop on the Work Plan on March 17, 2021, and held a written public comment period from February 5, 2021, through March 19, 2021. Many of the comments from the GRSP and the public were supportive and did not require revisions to the document. However, we have made the following minor revisions in response to comments:

1. Some commenters suggested we add discussion to the Work Plan about our anticipated next steps, priorities, and anticipated informational needs. Others suggested we identify the specific product-chemical combinations under consideration. While we have not changed the Work Plan itself in response to these suggestions, we have developed the new SCP Timeline, which shows activities and milestones for major projects in all four steps of our regulatory framework. It will be updated quarterly. We also plan to develop and post on our website a general summary and timeline for our process, beginning with development of the Work Plan, through product selection, rulemaking, Alternatives Analysis, and regulatory response.
2. A member of the GRSP suggested the Work Plan should draw a clearer connection between the release of microplastics to the environment and adverse water quality

impacts. We have reworded the *Priorities and Considerations for Implementation* section to emphasize this connection.

3. One commenter suggested that the Work Plan better describe criteria for the SCP Program to deprioritize a product from further consideration. While we have not changed the Work Plan itself in response to this suggestion, the program has begun posting decision documents that describe its findings and rationale when it has evaluated a product-chemical combination and decided not to designate it as a Priority Product.
4. One commenter noted that the draft Work Plan did not explicitly include consideration of impacts of chemicals from consumer products on vulnerable populations environmental justice communities and suggested that we "pay special attention to these communities seeking environmental justice." We agree with this comment and, in response, have added environmental justice communities to the list of Priorities and Consideration on page 6.

Notes on Terminology

Safer Consumer Product regulations – Refers to Chapter 55 of Division 4.5 of Title 22 of the California Code of Regulations.

Consumer Product – According to Section 25251 of the California Health and Safety Code, "Consumer Product" means a product or part of the product that is used, brought, or leased for use by a person for any purposes. "Consumer Product" *does not include*:

(1) A dangerous drug or dangerous device as defined in Section 4022 of the Business and Professions Code.
(2) Dental restorative materials as defined in subdivision (b) of Section 1648.20 of the Business and Professions Code.
(3) A device as defined in Section 4023 of the Business and Professions Code (i.e., medical/veterinary devices).[2]
(4) A food as defined in subdivision (a) of Section 109935.
(5) The packaging associated with any of the items specified in items (1), (2), or (3) above.

[2] "Device" means any instrument, apparatus, machine, implant, in vitro reagent, or contrivance, including its components, parts, products, or the byproducts of a device, and accessories that are used or intended for either of the following:
(a) Use in the diagnosis, cure, mitigation, treatment, or prevention of disease in a human or any other animal.
(b) To affect the structure or any function of the body of a human or any other animal.
For purposes of this chapter, "device" does not include contact lenses, or any prosthetic or orthopedic device that does not require a prescription.

(6) A pesticide as defined in Section 12753 of the Food and Agricultural Code or the Federal Insecticide, Fungicide and Rodenticide Act (7 United States Code Sections 136 and following).

Priority Product – The SCP regulations define a Priority Product as a product-chemical combination identified and listed as a Priority Product by the SCP Program under Section 69503.5 of Title 22 of the California Code of Regulations. A product-chemical combination does not formally become a Priority Product until DTSC adds it to the Priority Product list by adopting regulations. This document sometimes refers to a "proposed" or "potential" Priority Product. The word "proposed" should be interpreted broadly here to apply to a product-chemical combination that is under consideration by the SCP Program prior to adoption in regulation. A proposal could be an informal announcement made by releasing a draft document, a statement at a public workshop, or publication of a Notice of Proposed Rulemaking.

Candidate Chemical – The SCP regulations identify a set of 23 authoritative lists of chemicals. The chemicals on each list share specific hazards or have been prioritized for monitoring in environmental media or in people. Any chemical appearing on one or more of these authoritative lists is a Candidate Chemical. The SCP Program maintains a searchable, informational Candidate Chemical list that may be accessed via our CalSAFER website. In most cases, when one of the 23 authoritative lists is updated (for example, to add or remove a chemical based on new information), the updates are automatically incorporated into the Candidate Chemical list as soon as they take effect. However, such changes are not immediately reflected on the informational list, which DTSC updates only quarterly.

PRODUCT CATEGORIES

Beauty, Personal Care, and Hygiene Products

The Beauty, Personal Care, and Hygiene product category includes products that contact, or are intended to be rubbed on, poured on, sprinkled on, sprayed on, or otherwise applied to the human body for the purpose of maintaining hygiene, cleansing, beautifying, or altering appearance.[3] Examples include cosmetics, hair care products, personal care products, hygiene products, and skin care products such as soaps, lotions, and cleansers. Many of these products are commonly found in the health and beauty sections of drug and department stores or are used in spas and salons. This category was included in the SCP Program's first and second Work Plans which covered 2015-2017 and 2018-2020, respectively. Our initial research into the category culminated in a public workshop in March of 2017 on the potential health and safety impacts of chemicals in nail products. Our work continued into the subsequent Work Plan cycle. We developed a Product-Chemical Profile for Nail Products Containing Toluene and presented our findings at a public workshop in March of 2019. This was followed by another workshop on nail products containing methyl methacrylate in early 2020.

The SCP Program has carried this category over from the 2018-2020 Priority Product Work Plan because of its ongoing concern about the potential for prolonged and continuous exposures to the Candidate Chemicals these products contain. Californians use beauty, personal care, and hygiene products on a regular basis, and many contain Candidate Chemicals. According to data collected through the California Safe Cosmetics Program, between 2009 and 2015 over 57,000 cosmetic products sold in California contained one or more of 77 unique chemicals identified as a carcinogen or a reproductive or developmental toxicant. According to various surveys, the average person uses between six and 12 personal care products each day. A 2010 study of

[3] Part of this description was adapted from the definition of "Cosmetics" in Section 321, paragraph (i) of the federal Food, Drug and Cosmetics Act: Link to Title 21 of the federal Food, Drug and Cosmetics Act. Although the Beauty, Personal Care, and Hygiene Products category in this Work Plan may contain products that aren't normally considered "cosmetics," the federal definition provides a good working description of many types of products that may be included in this category.

California households found that personal care products are frequently used by all ages, sexes, and socioeconomic groups, suggesting a significant potential for exposure to chemicals that may be contained in these products (Wu et al. 2010). Many products included in that study were used daily, and many were used multiple times a day.

Products in this category may contain Candidate Chemicals that are reproductive or developmental toxicants. Such chemicals are of special concern for women of childbearing age. The health of workers may also be adversely impacted by exposure to Candidate Chemicals contained in beauty, personal care, and hygiene products they use professionally. Concurrent use of different products containing the same chemicals may contribute to aggregate chemical exposures. Products in this category may release volatile chemicals, vapors, or mists that increase the potential risk of inhalation exposures. Biomonitoring data clearly demonstrate human exposures to Candidate Chemicals that may be found in these products (Harley et al. 2016; US DHHS 2009). Hair salon workers, pregnant women (including their fetuses), and children are sensitive subpopulations and, as such, are particularly vulnerable to harm from toxic chemicals. Hair salon workers may have daily exposure to chemicals in these products and may have longer workdays and work weeks compared to employees in other sectors. Children of salon workers often accompany their parents to the workplace and may experience greater exposures to these chemicals than a typical consumer or patron. In addition, use of these products often begins at an early age. For example, girls of African descent use chemical relaxers and hair straighteners as early as 4 years old, increasing the likelihood of exposure to toxic chemicals during a critical development window (Rucker Wright et al. 2011).

The Candidate Chemicals in these products may also adversely impact the aquatic environment and drinking water. Some personal care products are designed to be rinsed off after they are applied; others may inadvertently be washed down the drain when people wash their hands or bathe. Candidate Chemicals from these products, such as 1,4-dioxane, may then be transported to surface waters, where they may adversely impact fish, other wildlife, or drinking water sources. The U.S. Geological Survey has detected chemicals from personal care products in effluents from wastewater treatment plants (Barber et al. 2013). Such plants are generally not designed to remove chemical contaminants from consumer products, so it is important to avoid discharging harmful chemicals down the drain in the first place. We held two public workshops on 1,4-dioxane in personal care products in the summer of 2019 to discuss these and other issues.

While the SCP Program accomplished a great deal in this category during the two prior Work Plan cycles, we still have much to do. In addition to adopting regulations to add nail products with toluene and methyl methacrylate to our Priority Products List, we continue to research the scientific literature and market data for a variety of other chemicals in nail products. DTSC's Environmental Chemistry Laboratory is also currently analyzing a variety of nail products in order to identify and quantify the Candidate Chemicals they may contain. The SCP Program has

also conducted an information call-in to the manufacturers of various nail products sold in California, under authority provided in the SCP regulations.[4]

In addition to nail products, which were a major focus during the 2018-2020 Work Plan cycle, the SCP Program is evaluating other products in this category. Specifically, we have begun to research various hair care products, with a focus on chemicals and endpoints related to children, women of childbearing age, communities of color, and aquatic impacts. We will give special consideration to workers who use or work with these products in an occupational setting and who may have an increased potential for exposure. We are especially interested in hair relaxer products, which have historically been marketed toward women of color who wish to change the texture of their hair (NY Times 2011). There is a large disparity in the numbers of women of African descent that use these products compared with women of European descent (Zota and Shamasunder 2017). As a result, women of African descent are more likely to experience adverse effects from the Candidate Chemicals contained in these products (Eberle et al. 2020).

Cleaning Products

The SCP Program carried this product category over from the 2018-2020 Priority Product Work Plan. It includes several subcategories, including carpet treatments, air care products, automotive products, general cleaning products, and polish or floor maintenance products used primarily for janitorial, domestic, or institutional cleaning purposes.[5] DTSC's proposed definition conforms to that of "Designated Products" in the California Cleaning Product Right to Know Act of 2017.[6] The Act's subcategories are further defined as follows:

- "Air care product" means a chemically formulated consumer product labeled to indicate that the purpose of the product is to enhance or condition the indoor environment by eliminating unpleasant odors or freshening the air. Air fresheners are an example.

[4] Cal Code Regs, tit. 22 § 69501.4, subd. (a)(1)(D).
[5] This product category does not include any products registered for use and regulated by the federal Food and Drug administration as a pesticide, rodenticide, or fungicide.
[6] Health and Safety Code, section 108952, subd. (a), (b), (f) & (n).

- "Automotive product" means a chemically formulated consumer product labeled to indicate that the purpose of the product is to maintain the appearance of a motor vehicle, as defined in Section 670 of the Vehicle Code, including products for washing, waxing, polishing, cleaning, or treating the exterior or interior surfaces of motor vehicles. "Automotive product" does not include automotive paint or paint repair products.
- "General cleaning product" means a soap, detergent, or other chemically formulated consumer product labeled to indicate that the purpose of the product is to clean, disinfect, or otherwise care for fabric, dishes, or other wares; surfaces include but are not limited to floors, furniture, countertops, showers, and baths or other hard surfaces such as stovetops, microwaves, and other appliances.
- "Polish or floor maintenance product" means a chemically formulated consumer product, such as polish, wax, or a restorer, labeled to indicate that the purpose of the product is to polish, protect, buff, condition, temporarily seal, or maintain furniture, floors, metal, leather, or other surfaces.

The SCP Program is interested in this category because cleaning products are widely used in nearly every household, building, and school on a regular basis, and for a wide variety of applications. Many cleaning products contain one or more Candidate Chemicals. People may be exposed to chemicals in these products both during and after use. People may get cleaning products directly on their skin or in their eyes, or they may inhale vapors from volatile Candidate Chemicals emitted by cleaning products. Inhalation exposures may be especially problematic when cleaning products are used indoors, where ventilation may not be adequate. A 2004 study estimated that Californians' inhalation exposure to chemicals in cleaning products is significant (Nazaroff and Weschler 2004).

Significant numbers of people work in custodial service occupations or are employed as maids in hotels or in healthcare facilities. Studies suggest that chemicals in cleaning products may adversely impact worker health (Rosenman et al. 2003). Cleaning workers may be at higher risk for exposure to Candidate Chemicals in cleaning products because of the amount of time they spend using them on the job. The California Department of Public Health has published information regarding the potential impact of cleaning products on indoor air. Epidemiological studies of cleaning workers and janitors have found that respiratory and dermatological diseases are the most common work-related health maladies affecting these workers, and the occurrence of some of these adverse impacts has been associated with the use of cleaning agents (Charles et al. 2009). Concerns over the possible adverse impact of cleaning products on children and custodial workers prompted the California Department of Public Health to publish guidance for selecting cleaning products for asthma-safer schools and other information related to work-related asthma.

DTSC is especially concerned about the increased potential for exposure of workers and consumers to Candidate Chemicals in cleaning products during the COVID-19 pandemic. The Centers for Disease Control and Prevention (CDC) and other authoritative organizations have recommended enhanced cleaning and disinfection protocols in order to minimize transmission

of the virus that causes COVID-19—for example, that "high-touch" surfaces, such as tables, chairs, countertops, telephones, doorknobs, etc., be cleaned and disinfected on a daily basis.[7] While these actions are important, the increased frequency of cleaning product use during the pandemic increases the potential for chemical exposure under some circumstances. The SCP Program would like to better understand the magnitude of such increases, which chemicals are involved, and who the exposed populations are—including any sensitive subpopulations. Despite our continued interest in chemical exposures from cleaning products, we strongly encourage the public to continue following the guidelines of CDC and other authoritative bodies for increased cleaning during the pandemic, while carefully following safe-handling instructions for these products.

The SCP Program is especially concerned that exposure to Candidate Chemicals from cleaning products may disproportionately harm lower-income workers who live or work in environmental justice communities. Many of the cleaning professions are dominated by people of color who may live in such communities. Over 5 million people are employed in building and grounds cleaning and maintenance operations. Hispanic, African American, and Asian people comprise 38.2 percent, 14.9 percent, and 2.9 percent of workers in this job designation, respectively, and collectively women make up 42 percent of these workers.[8] Many women in these occupations are likely to be of childbearing age and may become pregnant, raising concerns about *in utero* chemical exposures to their fetuses.

In addition to their potential adverse impacts on human health, DTSC is concerned about the potential adverse impacts to aquatic ecosystems from cleaning products that are washed down the drain during or after use. The U.S. Geological Survey has found environmentally persistent detergent degradation products in 69 percent of streams tested across the United States and detected disinfectant products in 66 percent of tested streams.

This Cleaning Products category was a significant focus of the SCP Program's efforts under the 2018-2020 Priority Product Work Plan. We hosted a public workshop on nonylphenol and nonylphenol ethoxylates (NPEs) in laundry detergents in June of 2018, and we are currently preparing a formal regulatory proposal to list laundry detergents containing NPEs as a Priority Product later in 2020. In 2019, we held two public workshops on 1,4-dioxane in cleaning products, and we are continuing to research consumer products containing this chemical to identify our next steps. The SCP Program has also focused on treatments containing PFASs for use on converted textiles or leathers. We published a Product-Chemical Profile for this product-chemical combination and are currently preparing to formally propose regulations to list PFAS-containing treatments as a Priority Product.[9] These include any product containing PFASs that may be marketed or sold in California for the purpose of:

[7] Link to CDC Cleaning Recommendations During COVID-19.
[8] Link to the U.S. Bureau of Labor Statistics 2019 Population Survey.
[9] The term "converted" indicates textiles and leather that manufacturers and craftspeople have turned into consumer products such as carpets, upholstery, furnishings, clothing, shoes, etc.

- Eliminating dirt or stains from carpets, rugs, clothing, shoes, upholstery, or other converted fabrics; or
- Repelling stains, dirt, oil, or water from carpets, rugs, clothing, shoes, upholstery, or other converted fabrics.

In addition to adopting regulations to add laundry detergents containing NPEs and treatments containing PFASs for use on converted textiles or leathers to our Priority Products List, we continue to research the scientific literature and market data for a variety of other chemicals and products in this category.

Building Products and Materials Used in Construction and Renovation

In our 2018-2020 Priority Product Work Plan, this product category was described as "products or materials used to construct, renovate, or repair any building designed or intended as a commercial, office, industrial, or child-occupied space where people work or learn, or that is designed for human habitation, or that contains a habitable space." Building products were further described as "permanent or semipermanent materials or components that are typically affixed to, or comprise an integral part of, a building. Examples include products such as cabinets, countertops, wall-to-wall carpets, laminates, and wood that are permanently or semi-permanently fixed in place by adhesives, tack strips, or by other means, or that are designed to remain in place once installed. This category does not include appliances such as ranges, refrigerators, dishwashers, clothes washers and dryers, air conditioners, humidifiers, and dehumidifiers."

In the current Work Plan, we have expanded this category to include products or materials used in outdoor settings such as recreational fields, community centers, parks, playgrounds, stadiums, day care centers, and schools. The expanded category includes artificial turf, which the SCP Program plans to evaluate during the period covered by this Work Plan. Based on our other priorities and resource constraints, artificial turf may be the only new product SCP evaluates from the Building Products and Materials Used in Construction and Renovation category unless additional resources become available.

Artificial turf can also be referred to as synthetic turf, SynTurf, AstroTurf, artificial/synthetic grass, or plastic grass. It is composed of a backing layer foundation, blades resembling grass, and a filling that serves as shock absorbing material. The backing and fiber layers are made of similar materials as carpets and rugs, such as polyvinyl chloride, polypropylene, nylon, and polyurethane. According to the Synthetic Turf Council, there are currently between 12,000 and 13,000 synthetic turf sports fields in the U.S., with 1,200 to 1,500 new installations each year (STC 2020). It is estimated that by the end of 2020, 750 fields will be replaced each year, with the average field containing approximately 40,000 pounds of plastic carpet and 400,000 pounds of infill, accounting for over 300 million pounds of waste annually (STC 2017).

The use of artificial turf at outdoor facilities is of concern since they are frequently used by sensitive subpopulations, including young children. While air circulation is generally better in an outdoor application, there is also an increased potential for exposure to Candidate Chemicals in turf due to faster material degradation by outdoor elements, such as ultraviolet light, and high-friction athletic use; in addition to increasing the release of chemicals from artificial turf during use, these factors also affect the product's life and make it necessary to replace it every eight to 10 years (STC 2017).

The SCP Program is interested in this product due to multiple public comments received on our proposed regulations to list carpets and rugs containing PFASs as a Priority Product. While there are numerous reports regarding the presence of many Candidate Chemicals in artificial turf, recent data has emerged regarding the presence of PFASs (Lerner 2019; Abel 2019; Ecology Center 2019; RTI Laboratories 2019a; PEER 2019; RTI Laboratories 2019b). The SCP Program has previously evaluated PFASs in carpets and rugs, as well as other consumer products. As with carpets and rugs, PFASs may be used in the manufacture of artificial turf as an aid in molding and extrusion of the plastic blades, or may be applied to the finished product to enhance surface properties (Kulikov 2005; Lambert 2007). The PFASs present in artificial turf have a similar potential to contribute to or cause adverse impacts to sensitive subpopulations. Therefore, the program plans to leverage its prior work on PFASs in carpets and rugs and other products to begin with an evaluation of PFASs in artificial turf. We will also explore the presence of other Candidate Chemicals in artificial turf as future priorities and resources allow.

Over the past several years, products in this category have been a significant focus of the SCP Program. We previously adopted regulations to list spray polyurethane foam with unreacted methylene diphenyl diisocyanate (MDI) and paint or varnish strippers containing methylene chloride as Priority Products; both are now in the Alternatives Analysis stage of the SCP regulations' four-step process. And, as noted in the previous section, we are in the process of adopting regulations to list carpets and rugs containing PFASs as a Priority Product; this proposed Priority Product includes items from this category such as wall-to-wall carpets. We are also currently preparing a formal regulatory proposal to list paint and varnish strippers and graffiti removers containing N-methylpyrrolidone as a Priority Product.

Food Packaging

Food packaging was one of seven product categories in the 2018-2020 Priority Product Work Plan. We spent considerable time investigating Candidate Chemicals in food packaging, including PFASs, BPA, polystyrene, and ortho-phthalates. In 2019 and 2020 we hosted a series of public workshops to discuss our preliminary findings. We also held a series of public comment periods on our CalSAFER website for various product-chemical combinations in this category. Because the SCP Program is continuing to evaluate several food packaging products identified during the 2018-2020 Work Plan cycle, we are carrying this category over into this Work Plan.

As noted earlier, we have revised our prior definition of the Food Packaging category to clarify which products are included. Certain products that can be used as food packaging may have multiple uses, not all of which are captured by the definition in our 2018-2020 Priority Product Work Plan. For example, a single-use paper plate may be used to serve food for dine-in service in some instances, and to package food for takeout in others. The first instance may not meet the definition of "food packaging" in our 2018-2020 Work Plan, whereas the second example clearly would. This ambiguity could cause confusion about the scope of some potential Priority Products in the category. Therefore, we have revised the definition for this category as follows:

> Food packaging is any food contact article that is used to package or serve hot, cold, frozen, or room-temperature food or beverage items and that is available for wholesale to restaurants and grocery stores or for retail sale to consumers. This includes any items that may be used in the food service industry and/or used to package food (e.g., for takeout service). Food packaging may serve a variety of purposes including but not limited to food preservation, transport, and delivery to points of retail sale, for takeout service at restaurants and cafeterias, to make a food product more attractive to consumers, to provide tampering resistance, or to provide a convenient means of transport by the consumer (e.g., cups for liquids or wrappers for fast-food items).

A key facet of this revised definition is that it captures any food contact article designed to facilitate food transport by the consumer. Food packaging may be made from a variety of materials including paper, ceramic, plastic, glass, and metals.

We want to acknowledge that some stakeholders have asked us to expand this product category, and to evaluate other products such as food processing equipment. As noted previously in this Work Plan, our program is small and, consequently, our ability to evaluate new products is limited. As such, we have decided not to expand this category for the current Work Plan cycle and do not intend to evaluate food processing equipment. However, we might consider expanding this category in future Work Plans to capture food processing equipment.

The SCP Program is interested in these products due their demonstrated potential to expose consumers to Candidate Chemicals via food consumption and possibly during environmental releases (e.g., landfilling and composting). Numerous studies have demonstrated that chemicals can migrate from food contact articles into foods, becoming "indirect food additives." Migration studies have demonstrated clear pathways for human dietary exposure to Candidate Chemicals from food packaging, and numerous other studies have documented that people are exposed to the chemical ingredients used in these types of products (Maria de Fatima Pocas and Hogg 2007). A number of studies have also demonstrated a correlation between the ingestion of certain foods and exposure to certain Candidate Chemicals (Zota et al. 2016; Hartle et al. 2016; Quiros-Alcala et al. 2013; Kubwabo et al. 2013). Some chemicals found in food packaging products are on California's list of chemicals known to cause cancer or reproductive toxicity (the Prop. 65 list). These chemicals may be especially harmful to children due to their potential for endocrine disruption, neurotoxicity, and reproductive and developmental toxicity.

It should be noted that we have decided not to pursue food packaging containing ortho-phthalates as a Priority Product. We previously evaluated this product category and engaged stakeholders. A document describing the findings of our evaluation of orthro-phthalates and the rationale for our decision is available on our website.

Children's Products

We propose adding this new product category to the Work Plan and aligning it with the state of Washington's definition of "Children's Product,"[10] which includes any of the following products primarily intended for, made for, or marketed for children under the age of 12:

- Toys,
- Children's cosmetics,
- Children's jewelry,
- Any product designed or intended by the manufacturer to help a child with sucking or teething, to facilitate sleep, relaxation, or the feeding of a child, and
- Child safety seats designed to attach to an automobile seat.

Some products in this category may also be captured by other categories in this Work Plan. The only difference between our definition and that used by the state of Washington is that we propose excluding children's clothing from this product category. We previously evaluated clothing under our 2015-2017 Work Plan, and we do not intend to reevaluate any new clothing products at this time. Products excluded or exempted from the state of Washington's definition of Children's Product are also excluded or exempted from this product category.

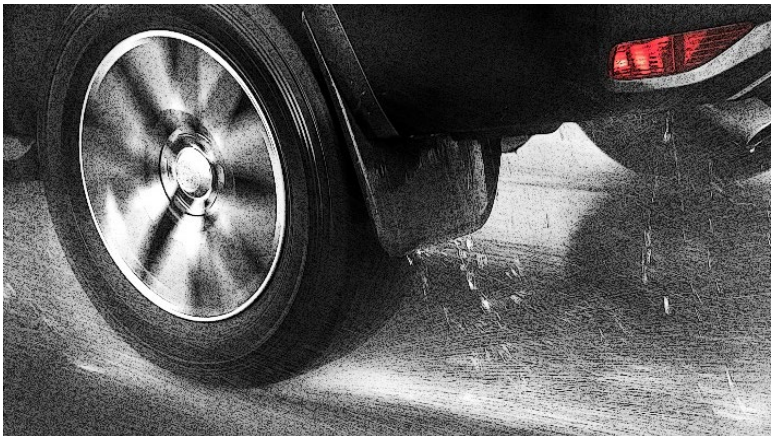
The SCP Program is not incorporating Washington's 100 parts per million *de minimis* exemption for contaminants into its definition of the Children's Products category. Unlike the SCP Program's regulatory framework, Washington's law is focused on ingredient reporting. It exempts Chemicals of High Concern to Children present as contaminants at a concentration below 100 parts per million from the reporting requirement. A *de minimis* exemption from reporting is not relevant under the SCP regulatory framework, which is fundamentally different from Washington's. Under the SCP framework, when a Chemical of Concern is present as a contaminant in a Priority Product, the program may establish an Alternatives Analysis threshold (AAT) at or above the practical quantitation limit for the chemical in the product. Manufacturers of a Priority Product that contains the chemical at a concentration below the

[10] Link to state of Washington's children's product definition and list of exclusions to the definition.

AAT must notify DTSC but are otherwise exempt from the alternatives analysis requirements of article 5 of chapter 55 of title 22 of the California Code of Regulations.

The SCP Program is concerned about the potential presence of Candidate Chemicals that are carcinogens, developmental toxicants, endocrine disruptors, immunotoxicants, and neurotoxicants in children's products, as reported (for example) by children's product manufacturers to the states of Oregon and Washington (IC2 2020). Some of these Candidate Chemicals are intentionally added ingredients (e.g., phthalates, PFASs, flame retardants, antimony), while others are contaminants (e.g., 4-NP, 4-tert-octylphenol, acetaldehyde, acrylonitrile, aniline).

Children below the age of 12, and especially infants and toddlers, may be more susceptible to adverse impacts from exposures to hazardous chemicals than adults. Childhood is a critical period for development, during which disruptions from exposure to environmental contaminants can have adverse consequences later in life (Landrigan and Goldman 2011). Furthermore, the unique hand-to mouth behavior of very young children, their significant amount of time spent crawling and in close proximity to indoor dust sources, and their high surface-area-to-volume ratios, can increase their potential exposures to chemicals in consumer products (Negev et al. 2018).



Motor Vehicle Tires

As noted in the introduction, the SCP Program received a petition from the California Stormwater Quality Association to add motor vehicle tires with tire tread containing zinc to the Priority Products List. DTSC has decided to grant this petition and, therefore, we have included motor vehicle tires in this Work Plan. The primary concern raised in the petition is tire tread, which is abraded on roadways, releasing zinc into the environment. Tire tread rubber has a zinc content of approximately 1 percent by weight. Tires for heavier commercial vehicles may have higher concentrations of zinc. Zinc is an aquatic toxicant which, when released from tires, can migrate into surface water and cause adverse impacts to aquatic organisms. Additionally, the concentration of zinc in some California water bodies exceeds regulatory thresholds, indicating the potential for adverse impacts. California stormwater agencies responsible for the

stormwater released to these water bodies are concerned about the high costs associated with removing zinc from stormwater in order to remain in compliance with permit requirements. On March 15, 2021, the SCP Program released a rationale document that, with the petition itself, will be the basis for a proposal to list tires with zinc as a Priority Product. A public comment period on the document will close on July 15, 2021, and we plan a public workshop in the summer of 2021.

Recent studies have highlighted a number of tire-derived contaminants other than zinc that may also be of concern for aquatic organisms. While this is especially true for the antidegradant N-1,3-dimethylbutyl-N'-phenyl-p-phenylenediamine (6PPD) and its reaction product 6PPD-quinone, which has been tied to mass die-offs of coho salmon (Tian et al. 2021), researchers have attributed the presence of other chemicals in the aquatic environment to tires. These include some Candidate Chemicals (e.g., octylphenol ethoxylates), as well as other chemicals that are not currently on the Candidate Chemicals List (e.g., 1,3-diphenylguanidine, hexa(methoxymethyl)melamine, and 1,3-dicyclohexylurea) (Peter et al. 2018; Peter et al. 2020; Overdahl et al. 2021). The SCP Program plans to include 6PPD and these other chemicals in its evaluation of the motor vehicle tires product category.

IMPLEMENTATION OF THE WORK PLAN

This Work Plan highlights the continuity between our prior and current work evaluating chemicals in consumer products and summarizes the work we plan to do over the next three years. Initially identifying a product category in a Work Plan is the first of many steps that may ultimately lead to a regulatory response. Each of these steps—screening, public engagement, developing a Product-Chemical Profile, rulemaking, Alternatives Analysis, and regulatory response—requires significant resources. We anticipate that much of our product evaluation during the 2021-2023 Work Plan cycle will be a continuation of work that is already underway. Products we began researching during the 2015-2017 Work Plan cycle are now in the rulemaking process. Scoping work begun during the subsequent (2018-2020) cycle led to informal proposals and public consultation for additional possible future Priority Products. The SCP Program is a small program with fewer than 30 technical staff. As we work our way through the many steps that lead to a regulatory response, we will be required to divert some of our resources from evaluating and identifying potential new Priority Products to other required activities, such as reviewing Alternative Analysis reports and developing regulatory responses. However, to the extent our resources permit, we will continue our efforts to identify and list new Priority Products via research and stakeholder engagement.

Future Priority Products will be identified from the product categories listed in this Work Plan only after robust scientific review and consultation with the Green Ribbon Science Panel and a wide range of stakeholders including industry experts, government agencies, academic researchers, and nongovernmental organizations. Multiple iterations of research and stakeholder engagement may be necessary to properly identify and define products in advance of rulemaking. DTSC will continue to seek and welcome input from a wide variety of sources. Engagement with all stakeholders has been, and will continue to be, critical for us to successfully implement our Work Plans.

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