Attachment B

Bay Area Hazardous Waste Management Facility Allocation Committee

Administered by:
Association of Bay Area Governments

101 Eighth Street, Oakland, CA 94607-4756 P. O. Box 2050, Oakland, CA 94604-2050
http://www.abag.ca.gov/hazwaste 510/464-7961

November 23, 2009

To: Hazardous Waste Management Facility Allocation Committee
From: Ceil Scandone, Senior Regional Planner
Re: Green Chemistry Initiative and Related Activities

Summary

The Green Chemistry Initiative continues to move forward under the direction and management of the Department of Toxic Substances Control. DTSC has issued a draft Straw Proposal that lays out proposed processes intended to achieve the objectives of AB 1879, established a Green Ribbon panel, and held numerous workshops to take comments on the work to date.

We had hoped to have DTSC staff and Technical Advisory Committee member Matt McCarron at the meeting to provide a comprehensive update on the progress of the effort. However, Matt and other state agency staff are on mandatory furlough on December 4th.

In lieu of Matt's presentation, staff will present a brief update, and identify relevant ABAG/San Francisco Estuary Project activities. If the Committee wishes, a longer status report can be agendized for the next meeting when Matt can attend.

Background

The Green Chemistry Initiative was launched in 2007 by Linda Adams, Secretary for Environmental Protection. The goal of the Initiative was to develop policy recommendations to advance more environmentally-responsible product design so that the manufacturing, use, or disposal of products generates, uses and releases less hazardous and toxic substances.

DTSC was charged with managing the effort. An extensive process of consultation with scientists, and other experts from around the world, and broad public outreach culminated with the publication of the California Green Chemistry Initiative Final Report in December 2008. That report is available on the DTSC site at:
http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/upload/GREEN_Chem.pdf

During the 2008 session, two key pieces of legislation were signed by the Governor: AB 1879 and SB 509. The former directs DTSC to develop regulations that create analytical methods for safer chemical alternatives; and, identify and prioritize chemicals of concern. The latter requires the state to create an online Toxic Information Clearinghouse.

Status/Attachments

DTSC's efforts during 2009 have been directed towards the implementation of AB 1879. Following an outreach effort designed to solicit input from the public and stakeholders, a draft Straw Proposal was developed that lays out a series of processes intended to achieve the legislation's goal of accelerating the transition to safer, environmentally more benign consumer

products. The straw proposal, entitled ***Plain English Outline of "Safer Alternatives for Consumer Products" Rule*** is the first item included in Attachment B.

The draft straw proposal was posted on the DTSC website and circulated for review at several public workshops. A report entitled ***Questions and Concerns Raised in Public Workshops Regarding AB1879 Regulatory Package Development*** is posted on the website and also included in Attachment B.

In April, DTSC announced the selection of a Green Ribbon Science Panel for the Green Chemistry Program. Panel members are prominent scientists, senior public agency staff, legal experts, industry representatives and others who will assist DTSC as the regulations are developed. The panel includes several experts from the Bay Area who have worked with the Committee and/or ABAG/SFEP in various capacities. Two day-long meetings have been held to date. The news release issued by DTSC to announce the panel's formation is also included in Attachment B.

Association of Bay Area Governments/San Francisco Estuary Project Initiatives

ABAG and SFEP have initiated a number of efforts that support the objective of accelerating the transition to safer, environmentally more benign consumer products.

The Green Business Program (www.greenbiz.ca.gov) has for the last decade required businesses to seek less-toxic alternatives to products that are used in their operations and in the routine maintenance of their facilities.

EcoWise Certified (www.ecowisecertified.org) and the Urban Pesticide Pollution Prevention Project www.up3project.org/) are more recent programs launched with funding from the State Department of Water Resources. Both were established to help reduce the amount of toxic chemical pesticides used to control ants, rodents and other structural pests.

An Environmentally Preferable Purchasing workshop was held in March of this year to assist local agencies interested in establishing more environmentally responsible purchasing practices. Staff is consulting with local EPP experts on future EPP activities.

ABAG/SFEP have directed funds from various grants to local agencies and organizations that are working to reduce the use and/or promote the proper disposal of hazardous and toxic substances. For example, ABAG/SFEP has directed funds received from US EPA to Save the Bay for their Clean Bay Project, which is helping local governments interested in reducing serious threats, including those associated with Styrofoam and plastic bags . Save the Bay staff will make a presentation about their project later in the meeting.

Attachments:

- Plain English Outline of "Safer Alternatives for Consumer Products" Rule
- Questions and Concerns Raised in Public Workshops Regarding AB1879 Regulatory Package Development
- News Release: DTSC Announces Members of New Green Ribbon Science Panel

DRAFT STRAW PROPOSAL

[Version 5.1 04-23-2009 15:00]

Plain English Outline of "Safer Alternatives for Consumer Products" Rule

SECTION 1. PURPOSE AND SCOPE

Goal: To accelerate the transition to *safer, environmentally more benign consumer products*

Purpose: The Safer Alternatives rule sets forth processes that will:

- Reduce the presence of hazardous chemicals in products sold or used in California
- Drive technological innovation and development of safer, healthier, and environmentally more benign products across their lifecycles
- Consider alternatives so actions do not lead to adverse consequences
- Move beyond limitations of existing risk assessment system (i.e., "focus on the better, not how bad is bad")
- Manage unknowns and take action (i.e., make decisions where data may be incomplete or unavailable)
- Apply market-based compliance measures
- Oversee and measure progress

Scope: The proposed regulations do not affect a duty or requirement imposed under federal or state law; do not alter or diminish any legal obligation required in common law or by statute or rule; and do not create or enlarge a defense in an action to enforce a legal obligation otherwise required in common law or by statute or rule.

Intergovernmental Coordination: The proposed rule will work in harmony with, and build upon to the extent practicable, the following related programs *(pursuant to Health and Safety Code section 25257.1)*:

- ARB Consumer Products
- ARB Fuels
- DPR Pesticides
- DPH Consumer Products, Cosmetics, etc.
- DIR Cal-OSHA
- Others _____

SECTION 2. DEFINITONS

The following words and phrases are defined as follows for purposes of this article.

(a) *"Alternatives analysis"*—means

(b) *"Candidate list"*—means

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(c) "*Chemical*"—means any naturally occurring or synthetic chemical, compound, by-product, substance, agent, or formulation that is found in a consumer product or can result from the use or disposal of a consumer product.

(d) "*Chemical of concern*"—means

(e) *"Consumer product"*—[repeated verbatim from statute] 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 any of the following:
(1) A dangerous drug or dangerous device as defined in Section 4022 of the Business of 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 of Professions Code.
(4) A food as defined in subdivision (a) of Section 109935.
(5) The packaging associated with any of the items specified in paragraph (1), (2), or (3).
(6) A pesticide as defined in Section 12753 of the Food and Agricultural Code or the Federal Insecticide, Fungicide and Rodenticide (7 United States Code Sections 136 and following).

(f) "*Department*"—means the Department of Toxic Substances Control, established pursuant to section 25111 of the Health and Safety Code, as amended by section 100 of the *Governor's Reorganization Plan Number 1 of 1991.*

(g) *"Lifecycle"*—means all of the steps or phases of a consumer product's existence—from raw material and energy inputs, design, production, manufacture, distribution, use, and disposal or reuse/recovery.

(h) *"Lifecycle assessment" (LCA)*—means a systematic method for compiling, evaluating, interpreting, and documenting the environmental aspects and potential impacts associated with a consumer product and its manufacture, distribution, use, and disposal or reuse/recovery.

(i) *"Manufacturer"*—means [placeholder: includes manufacturer, supplier, importer, distributor, or retailer of a consumer product intended for sale or use in California]

(j) *"New chemical"*—means

(k) "*Person*"—means an individual, trust, firm, joint stock company, business concern, partnership, limited liability company, association, or corporation, including, but not limited to, a government corporation. "Person" also includes any city, county, city and county, district, commission, the state or any department, agency or political subdivision thereof,

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any interstate body, and the federal government or any department or agency thereof to the extent permitted by law.

(l) *"Potential alternative"*—means

(m) *"Purpose"*—means the intended essential function and use of a specific consumer product.

(n) *"Sensitive sub-population"*—means members of subgroups that comprise a meaningful portion of the general population, including, but not limited to, infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subgroups that are identifiable as being at greater risk of adverse health effects than the general population.

(o) *"Toxics Information Clearinghouse"*—means the system established pursuant to Health and Safety Code section 25256.

SECTION 3. PROCESS TO IDENTIFY CHEMICALS OF CONCERN

The process to identify chemicals or chemical ingredients of concern in consumer products will use a broad list of scientific criteria for placing chemicals on a "candidate" list. Criteria would be clearly laid out in regulation, but the list itself will not be in regulation, and will be dynamic. A set of prioritization criteria will then be used (as described in section 4 of this document) to prioritize chemicals on the candidate list, and develop a list of "prioritized chemicals of concern." This approach is based on a defined set of criteria, will capture a large universe of chemicals, and will allow rapid identification and listing (or delisting) of chemicals or chemical ingredients.

Any chemical meeting any *one or more* the following criteria may be placed on the candidate list:

- Any new or existing chemical for which a minimum data set is <u>not</u> available that provides a thorough understanding of the potential risks associated with the chemical, including adverse health or environmental effects and exposure potential. The required minimum data set is the six hazard endpoints (acute toxicity, chronic toxicity, teratogenicity or developmental and reproductive toxicity, mutagenicity, ecotoxicity, and environmental fate) comprising the "Screening Information Data Set" (SIDS) test battery established by the Organization for Economic Cooperation and Development (OECD, 1998a)"
- Any chemical which appears on any "list" published by any government authoritative body, or nongovernmental organization, and that are deemed by DTSC to be potential chemicals of concern with respect to Health and Safety Code section 25252 based on available scientific information. (DTSC would have sole discretion to make this determination. This would provide DTSC with the flexibility to adopt chemicals

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appearing on new, relevant "lists" (e.g., the SIN List[1]), as they are published, without the need to conduct additional rulemaking;

- Any chemical for which there is scientific evidence of any potential adverse effects to human health or the environment;
- Any chemical to which humans have been shown to be exposed through the California Environmental Contaminant Biomonitoring program[2], or other relevant biomonitoring studies, such as the Center for Disease Control NHANES surveys[3]; or biomonitoring studies conducted by non-governmental organizations.
- Any chemical already regulated in consumer products and/or packaging sold in California based on hazardous characteristics, such as toxicity (e.g., cadmium, mercury, lead, and hexavalent chromium);
- Any chemical known to the State of California to cause cancer or reproductive harm as specified under Proposition 65[4];
- Any chemical with any of the hazard traits or environmental and toxicological end-points specified by OEHHA pursuant to 25256.1;
- Any chemical identified by IARC as carcinogenic to humans (i.e., group 1 substances)[5];
- Any persistent, bioaccumulative and toxic chemical on the USEPA's "PBT List[6,7]";
- Any chemical designated as "higher hazard substances" by TURA[8];
- Any chemical on the Washington State PBT List[9];
- Any chemical classified as potentially very persistent and very bioaccumulative (vPvBs) in accordance with the criteria set out in Annex XIII of the EU REACH (Registration, Evaluation, and Authorization of Chemicals) Regulation[10] (Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals),;
- Any chemical with evidence of potential endocrine disrupting effects (i.e., identified as category 1 in the priority list of substances established under the EU's Community Strategy for Endocrine Disruptors") [11];
- Any chemical classified as carcinogenic category 1A, 1B or 2 in accordance with the European Regulation on the Classification, Labeling and Packaging of Substances and

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[1] http://www.sinlist.org/
[2] http://ww2.cdph.ca.gov/programs/Biomonitoring/Pages/default.aspx
[3] http://www.cdc.gov/nchs/nhanes.htm
[4] http://www.oehha.org/prop65.html
[5] http://monographs.iarc.fr/ENG/Classification/index.php
[6] http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&docid=99-28888-filed.pdf
[7] http://www.epa.gov/tri/trichemicals/pbt%20chemicals/pbt_chem_list.htm
[8] http://www.mass.gov/legis/laws/mgl/21i-9.htm
[9] http://www.ecy.wa.gov/programs/swfa/pbt/list.html
[10] http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm
[11] http://ec.europa.eu/environment/endocrine/strategy/short_en.htm

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Mixtures which took effect on 20 January 2009 (REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008) [12],[13],[14],[15];

- Any chemical classified as mutagenic category 1A, 1B or 2 in accordance with the European Regulation on the Classification, Labeling and Packaging of Substances and Mixtures which took effect on 20 January 2009 (REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008)
- Any chemical classified as toxic for reproduction category 1A, 1B or 2 in accordance with the European Regulation on the Classification, Labeling and Packaging of Substances and Mixtures which took effect on 20 January 2009 (REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008);
- Any chemical classified as category 1 respiratory sensitizers in accordance with the European Regulation on the Classification, Labeling and Packaging of Substances and Mixtures which took effect on 20 January 2009 (REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008);
- Any chemical that is known or anticipated to be potentially released during normal use of that product, or when the product is disposed of at end-of-life (e.g., in a landfill).
- Any chemical that is a known air pollutants, or potentially may give rise to air pollutants, including ozone forming compounds, particulate matter, toxic air contaminants, and greenhouse gases;
- Any chemical with any potential adverse human health or environmental impacts, that have the potential to contaminate surface water, groundwater, and soil;
- Any chemical which, during manufacturing, give rise to hazardous byproducts and waste materials that require treatment and/or disposal;
- Any chemical shown to potentially adversely impact worker safety and or public health;
- Any chemical with any potential or anticipated negative or adverse impacts to human health and safety or the environment;
- Any chemical that would be, or would be presumed to be, a hazardous waste when discarded; or
- Any chemical meeting certain of the specified hazard criteria (to be specified in detail in regulations) as described in the Globally Harmonized System of Chemicals Classification and Labeling created by the United Nations.

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[12] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:353:0001:1355:EN:PDF
[13] http://ec.europa.eu/environment/chemicals/ghs/index_en.htm
[14] http://www.bath.ac.uk/internal/bio-sci/bbsafe/cmt.htm
[15] http://ecb.jrc.ec.europa.eu/documents/Classification-Labelling/Table_3-2.doc

The proposed regulations will address "new" chemicals, as follows:

- Based on the above criteria, any new chemical lacking adequate hazard characterization data would be placed on the high priority chemical of concern list described in section 4 below. In addition, any [manufacturer] who wishes to use a new (to that manufacturer) chemical, or any existing chemical in a new use application, in a consumer product, would be required to submit information regarding the identity and proposed or anticipated use of that chemical to the Toxics Information Clearinghouse. Moreover, manufacturers would have to submit the new data to the Toxics Information Clearinghouse prior to initiating a planned or foreseeable change in the use of a chemical.

SECTION 4. PROCESS TO PRIORITIZE CHEMICALS OF CONCERN

Once a candidate list for prioritization has been established pursuant to Section 3 above, chemicals in that list will be evaluated and prioritized.

The first level of prioritization will require that those chemicals or chemical ingredients that actually end up in consumer products sold or offered for sale in California be identified. Any chemicals or chemical ingredients that do not actually end up in consumer products would be excluded from further evaluation. Thus, this initial screening evaluation will require use data. Accordingly, manufacturers who sale or offer for sale consumer products in California that may contain any chemical or chemical ingredient identified on the candidate list will be required to submit use data to DTSC via the Toxics Information Clearinghouse portal. The information required will include identification of all products containing a chemical from the candidate list, and the estimated volume of that chemical per individual product, and the total volume estimated in all products made by that manufacturer that are sold or offered for sale in California. The manufacturer will also be required to report on whether or not the candidate chemical or chemical of concern is known or expected to be released (in the broadest sense) during normal use of the product, or at end of life when the product is disposed (e.g., to a landfill). And finally, the manufacturer will be required to report any time there is a planned or foreseeable change in the use patterns for a given chemical.

DTSC will restrict further evaluation and prioritization only to those chemicals that actually end up in consumer products that are sold or offered for sale in California, and will prioritize chemicals based on the following criteria:

- volume; (what should be the lower threshold for "high" priority?)
- potential for exposure; (is there expected, known, or anticipated release during use or at end of life?)
- exposure of California's citizens based on biomonitoring data;
- potential effects on sensitive subpopulations, including infants and children;

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- lack of minimum data sets required to fully evaluate the hazard characteristics of the chemical. The required minimum data set is the six hazard endpoints (acute toxicity, chronic toxicity, teratogenicity or developmental and reproductive toxicity, mutagenicity, ecotoxicity, and environmental fate) comprising the "Screening Information Data Set" (SIDS) test battery established by the Organization for Economic Cooperation and Development (OECD, 1998a)"
- human experience suggesting that the chemical or chemical ingredient poses a substantial risk to human health or safety, or the environment;
- evidence of any actual adverse environmental impact of the chemical or chemical ingredient;
- evidence of accumulation/persistence in the environment; [and/or]
- any evidence that otherwise suggests that there are "reasonable grounds for concern" regarding the potential adverse impacts of the chemical.

Analogous to the USEPA CHAMP program, chemicals will be designated "high" or "low" priority based on these criteria. (There will not be a "medium priority" category as there is under CHAMP, because under CHAMP the medium priority chemicals are those lacking adequate data to prioritize. In California, chemicals lacking such data will automatically be classified as "high priority" until such time as manufacturers make such data available and the chemicals can be reevaluated.) Any chemical designated as "high" priority based on above criteria would be placed on a "high priority chemicals of concern list", and would be subject to the alternatives analysis described in Section 5.

SECTION 5. PROCESS TO EVALUATE ALTERNATIVES

Alternatives Analysis

An alternatives analysis shall be required for consumer products that contain one or more high priority chemicals of concern. The alternatives analysis shall be conducted by manufacturers, importers, suppliers, retailers and any other entity responsible for placing the consumer product in commerce in California. Importers, suppliers and retailers may conduct the alternatives analysis or may request or require the manufacturer to provide the findings of an alternatives analysis to downstream users. These findings can be provided to each individual downstream user, or posted in a location accessible to downstream users. It will be the responsibility of the manufacturer, importer, suppliers, retailer and any other entity responsible for placing the product in commerce in California to determine if a consumer product contains one or more chemical of concern. DTSC will confirm these findings through its enforcement authority, research, collaboration with other authoritative bodies and by requesting information regarding these chemicals through the authority granted pursuant to Health and Safety Code section 57019.

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The alternative analyses required pursuant to these regulations shall be implemented according to a schedule established in the regulations. This schedule will allow the requirement to perform alternatives analyses to be phased in and provide an initial phase wherein necessary changes to the analysis requirements may become evident and can be implemented. The first phase shall require completed alternatives analyses on or before six months from the effective date of the regulation, for consumer products containing prioritized chemicals of concern that are intended for use by pregnant women or children under the age of six. In addition consumer products containing high priority chemicals of concern that have been identified by ECHA, pursuant to the requirements of the EU REACH, as chemicals that require authorization shall have completed analyses on or before 6 months from the date such chemicals are listed as requiring authorization. All other alternatives analyses for consumer products containing high priority chemicals of concern shall be completed on or before 18 months from the effective date of the regulation.

The completed alternatives analysis shall be submitted to DTSC electronically through the Toxics Information Clearinghouse portal. In addition, specified findings of the alternatives analysis shall be submitted to a publicly accessible portion of the Clearinghouse to ensure transparency and enhance public input. [Manufacturers] who submit alternatives analyses shall consider all comments, assess the comments' relevance to the alternatives analysis and revise the analysis in response to comments that change the findings of the analysis. The comment period for an alternatives analysis shall remain open for 3 months and the revised alternatives analysis shall be re-submitted to DTSC and the Clearinghouse on or before 3 months from the close of the comment period. In addition, at any time DTSC may evaluate an alternatives analysis and require revision or additional analysis. All respondents whose consumer products continue to contain one or more high priority chemicals of concern shall revise the alternatives analysis using updated information, including, but not limited to, consideration of newly identified alternatives and changes in manufacturing processes. Revised alternatives analyses shall be submitted on or before 24 months from the date the previous version of the analysis was submitted. Such revisions to the alternatives analysis shall continue until the high priority chemical of concern is restricted or prohibited from this use. If an independent third party entity is used to complete or evaluate the alternatives analyses, the regulations will include a certification process.

The alternatives analysis shall identify consumer products that contain one or more high priority chemicals of concern and identify the availability of potential alternatives. These alternatives should be broadly considered to include alternatives to the chemicals of concern in the consumer product (chemical substitution) as well as other alternatives that may include, but are not limited to, alternative manufacturing or handling processes that result in reduced high priority chemicals of concern in a product, or alternative forms of products that do not contain chemicals of concern. If no alternatives can be identified for a subject consumer product or chemical of concern the analysis shall be placed in a category within the Toxics Information Clearinghouse that specifies no available alternatives and shall be subject to

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ongoing public comment. If a comment is submitted regarding a potential alternative, the respondent shall complete an alternatives analysis on or before 12 months from the date of the comment.

The alternatives analysis shall identify and evaluate the level of hazard and critical exposure pathways associated with consumer products that contain one or more prioritized chemicals of concern as well as for the identified alternatives. The alternatives analysis shall consider health impacts, ecological impacts and lifecycle impacts of prioritized chemicals of concern in consumer products and identified alternatives.

The health and ecological impacts of the current product and its alternatives will be evaluated in the alternatives analysis using attributes that include, but are not limited to, acute and chronic toxicity, carcinogenicity, reproductive hazard, mutagenicity, teratogenicity, endocrine disruption, aquatic toxicity, persistence, bioaccumulation, mobility and potential for exposure.

The methodology for conducting the lifecycle assessment will include all stages of the lifecycle and will be based on the mass flow of materials and energy in and out, emissions, and associated impacts of the different unit processes included within the lifecycle. The defining feature of lifecycle methodology is that it captures multi-media environmental impacts associated with all upstream and downstream stages of a system built on existing methods established through ISO 14040 and ISO 14044 and as described in *Life Cycle Assessment: Principles and Practice* (EPA/600/R-06/060, May 2006).

Assessment of the impacts arising from the life cycle of products shall be carried out in a manner that allows the impacts to be reported per functional unit for the product.
The system boundary shall be clearly defined for each product and its underlying processes.
The assessment should include impacts arising from processes, inputs and outputs in the life cycle of a product, including but not limited to:

a. raw material acquisition and processing;
b. manufacturing and operations;
c. transportation;
d. product use and maintenance;
e. energy use (including energy sources, such as electricity, that were themselves created using processes that have impacts associated with them); and
f. waste and end-of-life management.

The lifecycle impact guidelines address both the economic and environmental impacts arising from the provision of products, such as materials consumption, water consumption, energy efficiency, greenhouse gas and other air emissions, acidification, eutrophication, human health toxicity, and eco-toxicity that may be associated with the life cycle of products. The purpose of the economic or cost benefit analysis is to provide a range of direct and indirect costs for the

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alternatives under study in comparison to the product containing the prioritized chemical of concern. The economic analysis will use the same boundaries and specific alternatives as the lifecycle assessment. The results from both the economic and environmental analyses will then be used to inform the alternatives analysis.

The alternatives analysis shall be conducted using a multi-stage approach to conduct comparisons among alternatives. In the first stage the consumer product that contains one or more high priority chemicals of concern and its alternative(s) are compared according to the attribute(s) that cause the chemical of concern to be identified as a high priority. Only those alternatives that represent an improvement over the high priority chemical of concern with regard to this attribute will proceed to the next stage of the assessment.

In the second stage of the assessment the subject product and its alternatives are compared according to the remaining health and ecological impact attributes and those lifecycle attributes that address health and environmental impacts. Only those alternatives that represent an improvement over the product with the high priority chemical of concern with regard to attributes that assess health and ecological impacts will proceed to the next stage of the assessment.

In the third stage of the assessment the remaining lifecycle attributes and of the alternatives are evaluated and the subject product and its alternatives are ranked by assigning a high, medium or low impact assessment in each of the following impact categories:

- Health and ecological impact criteria
- Lifecycle impact criteria
- The twelve principles of Green Chemistry

The alternatives analysis shall identify any alternatives with a more favorable impact than the subject product or chemical of concern. When the [manufacturer] submits the completed alternatives analysis to the Toxics Information Clearinghouse, it shall also provide a plan and schedule for implementing the most favorable alternative or a detailed justification for not selecting a more favorable alternative. The outcome of the alternatives analysis will be categorized and assigned to the appropriate regulatory response(s).

SECTION 6. REGULATORY RESPONSES

Upon the completion of the alternatives analysis as defined in Section 5 above, the [manufacturer] must comply with all of the following:

1) **No further action**. (a) The [manufacturer] provides DTSC electronic notification pursuant to subsection ( ) that an alternatives analysis has been performed pursuant to section 5(X) and the assessment is:

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(1)made available to DTSC upon request within 30 days,
(2) verifiable by a third party,
(3) risk of exposure is mitigated through compliance with subsections (2) thru (9).

(b) in complying with section 6(1)(a) a manufacturer, supplier, distributor or retailer of a consumer product may arrange for the information to be provided by a manufacturer, supplier, and/or distributor.

(c) If the manufacturer, supplier, and/or distributor does not or can not provide the necessary information and the retailer elects to place the consumer product on its retail shelves the retailer must obtain the information and make the information available as specified in section ( ) in the Toxics Clearinghouse.

2) **Additional information**. Any [manufacturer] who intends to use a prioritized chemical of concern for which there is insufficient data to meet the requirements of this part shall:

   a) File an electronic notification with the following information: name, physical location of entity, name of contact person, names and types of chemicals, volume(s) of chemical being used, types of products being manufactured or sold, and
   b) Comply with subsections (7) and within 18 months days of filing notification comply with subsection (1) by filing notification of compliance.

3) **Labeling**. Any [manufacturer] shall:
   a) On an after January 1, 2012, label all consumer products meeting one of the following criteria:
      i) a prioritized chemical of concern is present in the consumer product that exceeds state and federal standards that are protective of human health and the environment (such as a federal standards, FDA, Proposition 65 ,MADL, safe harbor number, etc.),
      ii) reclamation of the consumer product at the end of life is necessary to mitigate long-term human health and or ecological risks,
      iii) reclamation of product at end of life is necessary to eliminate need for continued extraction of virgin materials.

   b) Ensure that the label conveys, with an appropriate symbol and or in the appropriate language, the following:
      i) Warning to use product only as intended,
      ii) End of life management requirements in accordance with subsection (7),
      iii) Carbon foot print metrics in accordance _____,
      iv) Permanently labeled with a logo or statement that product exceeds state and or federal levels for the prioritized chemical of concern.

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c) In complying with the requirements of subsection (3)(a), the [manufacturer] shall obtain the information prior to introducing the product into the state.

4) **Restrictions.** Prioritized chemicals of concern are restricted for use if the presence of the prioritized chemical of concern in people or the environment has been documented through biomonitoring, ecological, and epidemiological data and the data indicates a risk to a sensitive subpopulation, ecological receptor, or environmental damage.

a) In complying with this subsection, a [manufacturer] shall make available detailed chemical information on a representative sample of the consumer product on its website site, and the Toxics Information Clearinghouse.

b) A [manufacturer] shall limit the use of the prioritized chemical of concern to the applications as listed on Appendix A, which shall be amended periodically by the department as new information becomes available and exposure to the priority chemical of concern through the use of the consumer product can be reasonably mitigated by complying with subsections (3), (6) and (7).

c) A feasible alternative exists but requires further research and development and the manufacturer or retailer can demonstrate participation in collaborative research on the prioritized chemical of concern.

5) **Prohibitions.** On and after January 01, 2014, products containing prioritized chemicals of concern are prohibited from sale, and/or distribution where the risk can not be reasonably mitigated by complying with subsections (3), (6), and (7) a feasible alternative exists and the following apply:

a) Data on the priority chemical of concern demonstrates an adverse health effect to a sensitive subpopulation and/or ecological receptor,
b) The consumer product is intended for a sensitive sub population and the subpopulation will be exposed to the priority chemical through foreseeable use of the product,
c) A sensitive subpopulation can be reasonably exposed to the priority chemical in a consumer product through foreseeable use of product in the household, workplace and/or place of care (i.e., childcare, schools, hospitals),

6) **Engineered Safety Measures.** Where substitution of a prioritized chemical of concern is not feasible because the performance of the product would be unreasonably compromised and is essential for the intended purpose and use, the [manufacturer] shall design the consumer product with the necessary engineering controls to enclose the hazard and prevent exposure under normal operations. Where complete enclosure is not feasible, clear instructions on the use of the product should be provided to reduce exposure to the hazard in normal operations.

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a) Specific applications
b) Chemical of concern is integrally contained within the structure, formulation, mixture, or composition of the product (e.g., lead in vinyl versus toys with lead solder)
c) Product is used as intended

7) **End-of-Life Management.** In order to manage consumer products that have reached the end of their useful life, [manufacturers] shall offer a variety of take back programs that ensure that the consumer product is managed in an environmentally sound manner. End-of-life management programs shall be easy to understand and readily accessible to consumers.

a) [Manufacturers] shall, when placing products on the market, provide a financial guarantee for the management of the products they produce as specified in subsection (8) to fund research and development of the products manufactured or other products necessitating an immediate response.
b) [Manufacturers], in collaboration with retailers, shall implement a public education program, for consumer products that contain chemicals of concern for which the provisions of subsection (3) and (6) have been used to mitigate hazard and or exposure.
c) [Manufacturers] shall assist retailers in creating an in-store recycling program for the collection and recycling of consumer products with prioritized chemical of concern. The program shall include:
   i) Labeling consumer products that require end-of-life management with "return to the store for recycling;"
   ii) Placement of recycling bins at retail centers in visible and accessible locations for consumers;
d) Compensation to retailer and centers for administration of recycling program.
e) [Manufacturers] shall, every two years, provide an electronic report to the Toxics Information Clearinghouse containing the following:
   i) amount of products placed on the market over two year period by total tonnage,
   ii) amount of products recovered for recycling over the two year period.

8) **Research and Development.** In order to recognize and reward innovations and foster the development of new technologies, this subpart may be waived if the [manufacturer] can demonstrate that research is in progress for the prioritized chemical of concern, and its alternatives, through a collaboration with other users of the prioritized chemical of concern or by an independent party who has provided documentation verifying the above.
a) Parties seeking to apply for research and development grants shall provide a written research and development notice and shall specify:
   i) The substantive elements of the research and development program, which shall include but is not limited to:
      (1) Identification and nature of research on a specific product and or application of a prioritized chemical of concern,
      (2) Design of product with chemicals that are not priority chemicals of concern,

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(3) Use of chemical ingredients that are restorative of the environment,
(4) Design of product for ease of dismantling, reclamation, recycling, and remanufacture,
(5) Design products that optimize use of recycled materials,
(6) Design products with less mass,
(7) Design products with longer life (and add service after the sale),
(8) Reduce packaging,
(9) Redesign products to be sustainable throughout product life cycle
(10) Other criteria as deemed necessary and appropriate including but not limited to:
(A) Prevent waste rather than treating it or cleaning it up.
(B) Incorporate all materials used in the manufacturing process in the final product.
(C) Use synthetic methods that generate substances with little or no toxicity to people or the environment.
(D) Design chemical products to be effective, but reduce toxicity.
(E) Phase-out solvents and auxiliary substances when possible.
(F) Use energy efficient processes, at ambient temperature and pressure, to reduce costs and environmental impacts.
(G) Use renewable raw materials for feedstocks.
(H) Reuse chemical intermediates and blocking agents to reduce or eliminate waste.
(I) Select catalysts that carry out a single reaction many times instead of less efficient reagents.
(J) Use chemicals that readily break down into innocuous substances in the environment.
(K) Develop better analytical techniques for real-time monitoring to reduce hazardous substances.
(L) Use chemicals with low risk for accidents, explosions and fires.

ii) The expected amount of time required for each substantive element;
iii) The processes, pollution control equipment, and emissions which are likely to be affected by the program;
iv) Potential or expected benefits of the program; and
v) The basis upon which the results of the program will be evaluated.

b) The research and development program being undertaken shall include a provision for the employment of qualified independent firm(s) to prepare written reports at least annually which evaluates each completed significant stage of the research and development program, including all relevant information and data generated by the program.

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9) **Continuous Improvement.**
   a) Each [manufacturer] shall conduct an active program to continuously review the effectiveness of its alternatives assessments.
   b) An annual electronic report/questionnaire, detailing the results of the review shall be accessible via the Toxics Information Clearinghouse.
   c) The report shall include:
      i) Identification of specific targets for reduction of:
         (1) virgin materials
         (2) energy use,
         (3) greenhouse gas emissions,
         (4) water use, and
         (5) solid and hazardous waste.
      ii) Specific metrics identified by the department.

SECTION 7. ENFORCEMENT

This rule applies to *any consumer product offered for sale or use in the State of California*. The rule is enforceable pursuant to the provisions of Chapter 6.5 of the Health and Safety code.

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Statutory Definitions (Excerpted)

CALIFORNIA HEALTH AND SAFETY CODE

SECTION 25251

For purposes of this article, the following definitions shall apply:

(a) "Clearinghouse" means the Toxics Information Clearinghouse established pursuant to Section 25256.
(b) "Council" means the California Environmental Policy Council established pursuant to subdivision (b) of Section 71017 of the Public Resources Code.
(c) "Office" means Office of Environmental Health Hazard Assessment.
(d) "Panel" means the Green Ribbon Science Panel established pursuant to Section 25254.
(e) "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 any of the following:
(1) A dangerous drug or dangerous device as defined in Section 4022 of the Business of 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 of Professions Code.
(4) A food as defined in subdivision (a) of Section 109935.
(5) The packaging associated with any of the items specified in paragraph (1), (2), or (3).
(6) A pesticide as defined in Section 12753 of the Food and Agricultural Code or the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. Sec. 136 and following).
(7) Mercury-containing lights defined as mercury-containing lamps, bulbs, tubes, or other electric devices that provide functional illumination.
(f) This section shall remain in effect only until December 31, 2011, and as of that date is repealed, unless a later enacted statute, that is enacted before December 31, 2011, deletes or extends that date.

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Department of Toxic Substances Control

QUESTIONS and CONCERNS RAISED IN PUBLIC WORKSHOPS REGARDING AB1879 REGULATORY PACKAGE DEVELOPMENT

INTRODUCTION

The California Department of Toxic Substances Control is developing Rules for Safer Alternatives to Chemicals of Concern in Consumer Products, pursuant to AB 1879 (Chapter 559, Statutes of 2008).

Great efforts have been taken to initiate an in-depth and thoughtful discussion of options, to seek widespread input, and to involve all interested parties, stakeholders and the public in this process. A Wiki was used to gather initial thoughts and suggestions online. Several public workshops were held. A draft Straw Proposal was developed and posted on the DTSC website and discussed at several more public workshops. Guidance was sought from the Green Ribbon Science Panel at two day-long meetings followed by yet another public workshop. The multitude of comments received have been compiled and considered as DTSC staff weigh the various options for promulgating rules that achieve the ultimate goal of decreasing toxics in consumer products to protect public health and the environment.

The following synopsis of major issues raised during the past several months is provided to highlight questions that must be addressed as the final draft rules are completed. DTSC is sharing this synopsis of the wide range of questions, concerns and options raised in the public workshops so that all interested parties are aware of the areas DTSC will focus on in developing these rules, and to continue seeking examples from knowledgeable parties of *specific* processes and language that can be included in the final draft rules.

DTSC urges and welcomes a more focused response from interested parties of actual language and specific processes to be considered in this next phase of decision-making. As staff work toward completing the final rule package that will ultimately be subject to the state's formal Administrative Procedures Act (APA) process, DTSC welcomes continued and focused reaction to these various issues. DTSC will have additional public review of the draft proposed rules prior to beginning the formal APA process.

QUESTIONS and CONCERNS RAISED

1. Scope, Applicability, and Starting Point

Scope of the program must be better defined and narrowed to allow for a pragmatic, implementable, and realistic program.

Questions:

Chemicals

1.1. Should *chemicals* be the entry point for determining which *consumer products* are regulated?
1.2. Which chemicals should be addressed first? What objective criteria should be applied to make that determination?
1.3. Should chemicals be grouped, or phased, by sub-type or class (such as surfactant, preservative, insulator, plasticizer, etc. or some other grouping scheme)? If so, what are those groups, phases, or sub-types?
1.4. How many chemicals would be included in the first collection (suite) of chemicals in the initial rule? In the second rule? In subsequent rules?

1.5. What is the process to move from a *chemical* to a particular *consumer product* for alternatives analysis? How is that done and by whom? How long does that process take?
1.6. How many *consumer products* would result from that first suite of chemicals? From subsequent suites?

Lists of lists

1.7. Should "lists of lists" of chemicals be the entry point for determining which consumer products are regulated?
1.8. Which government lists should be used? For what purpose(s)?
1.9. Which authoritative bodies' lists should be used? For what purpose(s)?
1.10. What is the process to move from a chemical on a list to a particular consumer product for alternatives analysis? How is that done and by whom? How long does that process take?

Product categories

1.11. Should *product categories* be the entry point for determining which consumer products are regulated?
1.12. What are the highest priority categories? Why?
1.13. How are product categories defined—consistently across industry? What objective criteria define each category?
1.14. Should products be grouped, or phased, by sub-type? If so, what are those groups, phases, or sub-types?
1.15. How many discrete products are included in each category, group, or sub-type?

Integrated entry pathway

1.16. How should *chemicals* and *products* be combined as an integrated entry point?
1.17. Which specific chemicals and specific consumer products should be in the first rulemaking? In subsequent rules?
1.18. What is the "intersection" between *chemical* and *product*? How is that intersection determined? By whom? How would an integrated mechanism work?
1.19. How many *consumer products* would be included?
1.20. What information is required so the mechanism would function effectively and efficiently?
1.21. Who has such information?

2. Exemption

Many stakeholders commented that certain uses of specific chemicals should be exempt from the regulation when it can be shown that a specific use of a chemical does not pose a threat to human health, safety, or the environment.

Questions:

2.1. What are the pros and cons of including a possible exemption for a chemical or chemical ingredient in a consumer product which presents:
  2.1.1. an insignificant level of hazard?
  2.1.2. for which exposure is adequately controlled through product design and manufacture?
2.2. Should "de minimis" quantities of a chemical be a consideration for an exemption? If so how? How much (what quantity)?
2.3. Should "de minimis" instead be used in the prioritization process? If so, how?

3. Hazard Traits

Some stakeholders have commented that the list of categories is too broad. Others say the initial end-points reflect chronic human health effects and minimize or ignore ecological and other effects. Stakeholders commented that fewer hazard end-points should be used initially and others phased-in via subsequent rulemaking.

Questions:

3.1. Which hazard end-points should be the initial priority? Why?

3.2. How and when should other end-points be considered?
3.3. Which end-points should be added, deleted, or changed? Why?
3.4. Should end-points be grouped—such as chronic and acute human health, ecological effects, lethal and sub-lethal, sensitivity, etc.? What are those groups?
3.5. Who should decide? OEHHA? A particular authoritative body for a respective end-point (such as IARC for cancer)?
3.6. How should hazard trait information be used in prioritization? In alternatives assessment? In regulatory response?
3.7. How much time should allowed for hazard characterization?
3.8. Does this time period differ by product category (i.e., chemical formulation versus manufactured article, relative to product cycle, etc.)?
3.9. If so, how should those time differences be addressed in the rule?
3.10. Should the Toxics Information Clearinghouse be linked to the required processes? If so, how and when? In what way?
3.11. Once the hazard end-points for chemical ingredients in a consumer product are determined, what information should be provided to the supply chain for that product? How and when should that information be shared?

4. Data Requirements

How should data requirements be defined to avoid broad, unclear, or should specify particular test methods.

Questions:

4.1. How could the data requirements be made more specific to improve the hazard characterization step?
4.2. What types of data should not be allowed or used in characterizing a hazard end-point of a chemical ingredient in a consumer product?
4.3. Should specific test methods be required? If so, which ones?
4.4. How much time should be allowed to conduct testing and generate required data—where no data now exists?

5. Prioritization

Should DTSC consider other criteria for prioritization than the ones listed below?

Priority 1: Anticipated to be released during use or disposal, or to which humans are being exposed.
Priority 2: Will not be released during use, but may be released after disposal.
Priority 3: Will not be released during use or disposal.

Questions:

5.1. What criteria should be used to prioritize and determine *which consumer products* must conduct alternatives analysis and the resulting regulatory response?
5.2. Should "de minimis" quantities of chemicals be included in a prioritization process? If so, how?
5.3. Should tiers be included in prioritization? What are those tiers?
5.4. Should phasing be part of prioritization? What are those phases?
5.5. Should risk considerations be included in a prioritization scheme? If so, which risk considerations? How and by whom?
5.6. Should exposure considerations be included in a prioritization scheme? If so, which exposure considerations? How and by whom?
5.7. Should market share and unit volume be included in prioritization (i.e., target most widely used consumer products)?
5.8. Who should determine priorities?

5.9. Should the priorities be set forth directly in the rule? Alternatively, should a recurring public process to set priorities be prescribed in the rule?
5.10. Once the hazard end-points and prioritization of chemical ingredients, as chemicals of concern, in a consumer product is completed, what information should be shared with the supply chain for that consumer product?
5.11. How and when should this information be provided? To whom in the supply chain?

6. Alternatives Assessment

Because a wide variety of products would potentially contain a variety of chemicals of concern, a one-size-fits-all analysis likely would not be very informative. Instead, a more useful alternatives analysis will likely be process- and product-specific; or should a tiered approach to alternative assessments be used?

Questions:

6.1. Should the alternatives analysis process consider different factors for different types of products? If so, what differences would you suggest and for what types of products?
6.2. Should the alternatives analysis process provide a special process or special provisions for products that have existing ongoing programs for evaluating and comparing alternatives? If so, what would you suggest this process or provisions would be and what would be the conditions for allowing them?

A potentially huge number of products may be identified that contain a potentially huge number of chemicals of concern.

6.3. Should the number of consumer products required to complete an alternatives assessment be managed in some way in the alternatives analysis process? If so, in what way?
6.4. If DTSC selected a process that includes various levels or types of alternatives analysis requirements for various situations, what should those situations be and what should be included in the alternatives analysis process for each of the different levels?
6.5. Are there situations when an alternatives analysis should be expedited or eliminated? If so, what are the conditions of such situations? What would be included in an expedited alternatives analysis?
6.6. If an alternatives analysis is not required for certain products or alternatives, how will potentially regrettable or unforeseen impacts of alternatives be identified? Should they be identified?
6.7. How should potential alternatives be defined? What types of alternatives should be required to be considered in the alternatives analysis? What should be done if no potential alternatives exist?

The alternatives analysis process is likely to include a comparison step in which dissimilar impacts are compared for the consumer product and potential alternatives. In this step impacts associated with hazard, exposure, environmental, economic and other life cycle factors will need to be compared so that a determination of the preferred option(s) can be identified.

6.8. How should dissimilar impacts associated with the consumer product and potential alternatives be compared after the impacts of each have been characterized? What format should be used? Would there be decision rules, and if so, what would they be? Are some factors more important than others?
6.9. If DTSC creates heuristic decision rules for comparing the impacts associated with the consumer product and the alternatives, what should these rules be? What values should these rules reflect?
6.10. Should the comparison step in the alternatives analysis result in an identification of a “preferred” alternative? Which is most appropriate? How would you suggest defining “preferred” alternative?
6.11. Should the process require that a “preferred” alternative be adopted in lieu of that original consumer product? Who should decide if an alternative should be implemented and how should it be required?

If it is assumed that a manufacturer of a consumer product that contains a chemical of concern is in the best position to know or to obtain the information needed to evaluate the product and its potential alternatives, the manufacturer

could perform the analysis. However, several stakeholders assert that manufacturers may not conduct the evaluation objectively or may not seriously consider all potential alternatives.

6.12. Who should be required to perform the alternatives analysis for a particular consumer product and why?
6.13. How much discretion should the person performing the analysis have in making determinations in the analysis, including but not limited to the type and magnitude of the impacts and the selection of an alternative or other course of action? Should there be standards governing these determinations, and if so, what should they be?
6.14. How should DTSC verify that an alternatives analysis is adequate and complete?
6.15. If DTSC creates a third party system for performing alternatives assessment, what requirements should be specified for the third party and for the alternatives analysis? Should this system be mandatory? Should the third party requirements specify any standards for the analysis or the third party? If so, would these standards be?
6.16. Should the alternatives analysis require the same alternatives to be considered for products containing the same chemical of concern that may be produced by different manufacturers and different processes?
6.17. Should the alternatives analysis process include provisions that allow transparency and public comment with regard to the alternatives analysis? If so, how much of the analysis should be made public and how should the public comments be incorporated into the process?
6.18. Should a provision be included in the alternatives analysis process that will allow others in the marketplace to benefit from alternatives analyses that have already been completed for similar products? If so, what would this provision be?

Although a full life-cycle analysis is known to be a highly resource-intensive exercise, the statute requires the alternatives analysis process to be developed using life cycle tools and that the process should be simplified and accessible.

6.19. How much time should be allowed to complete an alternatives assessment? Should the timeframe be different depending on the type of product, such as a chemical formulation, like a cleaning product, or a manufactured item that is comprised of assembled parts, like a toy? If so, what types of differences should be allowed, and what types of products should they apply to?
6.20. Should a "beta" test of the alternatives analysis process be included in the regulations? If so, what would the provisions of such a test be? How would the results of the test be incorporated into the required alternatives analysis process?

7. Regulatory Responses

The statue requires that the regulations specify response actions which include:

- Not requiring any action.
- Imposing requirements to provide additional information needed to assess a chemical of concern and its potential alternatives.
- Imposing requirements on the labeling or other type of consumer product information.
- Imposing a restriction on the use of the chemical of concern in the consumer product.
- Prohibiting the use of the chemical of concern in the consumer product.
- Imposing requirements that control access to or limit exposure to the chemical of concern in the consumer product.
- Imposing requirements for the manufacturer to manage the product at the end of its useful life, including recycling or responsible disposal of the consumer product.
- Imposing a requirement to fund green chemistry challenge grants where no feasible safer alternative exists.
- Any other outcome the department determines accomplishes the requirements of this article.

Questions:

The law requires a response action following the completion of an alternative analysis. Criteria for actuating a response action and appropriate time frames for implementation are needed for each of these response actions.

7.1. What criteria should be used to impose each of the above listed response actions? Why?
7.2. What are appropriate timeframes for implementing each of these response actions? Are there circumstances or situations that should be considered to provide additional time for implementation?
7.3. What, if any, other specific outcomes would you recommend that DTSC consider?

The conclusion of the alternative analysis should provide the basis for the response actions. Criteria can be developed in regulation that would prescribe the specific response actions that a manufacturer must implement to appropriately address their specific alternative analysis findings (self-implementing). Some commenters object to the self-implementing approach because it allows the manufacturers to evaluate which response action would be most appropriate without DTSC or third party review.

7.4. If DTSC prescribes in regulation the response action that must be taken for a particular alternative analysis outcome, which response actions lend themselves to be implemented in this manner? Which response actions should be subject to DTSC discretion on a case by case basis? Why?
7.5. Should DTSC review an implementation plan which details how and when a response action will be conducted before a response action is implemented? Are there instances when review would not be necessary?

The statute allows prohibiting the use of a *chemical of concern in a consumer product*. Many commenters object to banning a chemical or chemicals given tremendous economic consequences to industry and consumers when no other response action is available when there are no potential alternatives. Conversely, many commenters are concerned that hazardous chemicals continued to be used in consumer products and should be banned more quickly.

7.6. What should be the criteria for prohibiting the use of a specific chemical in consumer products?
7.7. Should there be a separate regulatory process for imposing such a prohibition? If so, what should it be?

The conceptual outline identifies significant impacts as a trigger for response actions.

7.8. If a safer alternative does not exist, should response actions be used to reduce hazards, or reduce exposures? Why?
7.9. Should we have a response action to address significant life cycle impacts, or accelerate the development of safer alternatives?
7.10. How should we define "significant impact" for the purpose of requiring a response action?
7.11. If we can not define a significant impact, how can we link a specific response action to the findings in the alternative analysis?

The statute provides a requirement to fund green chemistry challenge grants where no feasible safer alternative exists.

7.12. What mechanisms are available to fund green chemistry challenge grants? What would these mechanisms entail?
7.13. How and by whom would these be funded?
7.14. How can we best use an option for research and development proposals? How could this be implemented?
7.15. Should a certification program be used to acknowledge innovation that results in safer product substitutions or other advances that promote green chemistry? How would we develop this type of program?

A variance procedure would allow for modifications of provisions that address issues that have not been anticipated. Many commenters feel that this will be a way for manufacturers to defer the implementation of the regulations while creating an overwhelming workload for DTSC.

7.16. In an effort to accommodate very different situations, does a variance adequately allow DTSC to accommodate extensions of a deadline, exclusions based on a de minimis threshold, or modifications of a response action? What should the criteria be?

8. Terms and Definitions

Clear and meaningful definitions of key terms are necessary to ensure the success of the regulation.

Questions:

8.1. How should the following terms be defined?
- 8.1.1. "Authoritative body"
- 8.1.2. "Chemical"
- 8.1.3. "Chemical ingredient:
- 8.1.4. "Chemical of concern"
- 8.1.5. "Consumer product"
- 8.1.6. "Manufacturer"

9. Role of State Government

How broad a role should state government have in implementing this rule?

Questions:

9.1. What is the proper role for state government for this rule?
9.2. Should DTSC set rules for required processes?
9.3. Should DTSC conduct those processes directly?
9.4. Should DTSC mandate standards, protocols, and methodologies for those processes? If so, what should be included in the initial rule? Which of these must be developed further (by the public or private sector, or both) before it can be applied as a general rule of applicability?
9.5. Should DTSC test consumer products?
9.6. How should DTSC monitor the overall system?
9.7. Should the initial rule be expanded or revised periodically—to add chemicals or products, to revise procedures, to set performance or professional standards, etc.?
9.8. If so, what should be part of the first rulemaking? What should be part of the second and third rulemakings?
9.9. How should the subject(s) of those subsequent rulemakings be determined?
9.10. Which *consumer products* are also regulated by other governmental agencies?
9.11. Should a fee or assessment be levied by state government?
9.12. If so, how high should the fee be set?
9.13. Who should be assessed that fee?

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

Department of Toxic Substances Control

News Release

T – 06 – 09
Maziar Movassaghi, Acting Director

FOR IMMEDIATE RELEASE
April 9, 2009

Contact: Angela Blanchette
(510) 540-3732

DTSC Announces Members of New Green Ribbon Science Panel for California's Green Chemistry Program

Sacramento, CA – Cal/EPA's Department of Toxic Substances Control (DTSC) today announced the selection of 27 members to the state's new Green Ribbon Science Panel, an advisory panel created for California's Green Chemistry program, an innovative approach to removing or reducing toxic chemicals in products sold in California.

The Green Ribbon Science Panel was established with passage of two landmark Green Chemistry laws signed last year by California Governor Arnold Schwarzenegger (AB 1879 - Feuer and SB 509 - Simitian). The Panel will provide advice and act as a resource to DTSC and the California Environmental Policy Council pursuant to AB 1879, which directs the Department to develop regulations that: (1) create analytical methods for safer chemical alternatives, and (2) identify and prioritize chemicals of concern. Panel members will serve staggered three-year terms and may be reappointed with no limitations.

"I am pleased to make today's announcement and trust that the distinguished panelists will soundly advise on development of the state's Green Chemistry regulations," said DTSC Acting Director Maziar Movassaghi. "Since the Green Chemistry Initiative was launched in 2007, the Department has been honored to work on this exciting endeavor to bring safer, less toxic products into the marketplace. With our Green Chemistry efforts, California continues to be on the forefront of creating environmental policies with far-reaching global impacts."

Panel duties include:

- Advising DTSC and the Council on scientific and technical matters in support of significantly reducing adverse health and environmental impacts of chemicals used in commerce, as well as the overall costs of those impacts to the state's society;
- Advising DTSC on the development green chemistry and chemicals policy recommendations and implementation strategies and details, and ensuring these recommendations are based on a strong scientific foundation;
- Advising DTSC and making recommendations for chemicals the panel views as priorities for which hazard traits and toxicological end-point data should be collected;
- Advising DTSC in the adoption of green chemistry regulations; and
- Advising DTSC on any other pertinent matter in implementing AB 1879, as determined by DTSC

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The Panel consists of members with expertise in the following areas:

Chemistry	Pollution Prevention	Materials Science
Chemical Engineering	Cleaner Production Methods	Nanotechnology
Environmental Law	Environmental Health	Chemical Synthesis
Toxicology	Public Health	Research
Public Policy	Risk Analysis	Maternal and Child Health

DTSC management selected the 27 panel members from more than 80 applicants based on the following criteria: education, expertise and practical experience in the fields shown above; experience serving on scientific and environmental policy advisory panels; and proven excellence with collaborative problem-solving skill and communication skills.

The initial meeting of the Panel will be held on April 29-30 at the Red Lion Inn in Sacramento. The Panel will meet a minimum of twice per year with additional meetings scheduled as needed.

Following is a list of members selected for the state's new Green Ribbon Science Panel:

- **Ken Geiser**, Ph.D., CO-CHAIR of the Panel, serves as Professor of Work Environment and as the Director of the Lowell Center for Sustainable Production at the University of Massachusetts, Lowell. He co-authored the Massachusetts Toxics Use Reduction Act and served as Director of the Massachusetts Toxics Use Reduction Institute from 1990 to 2003.
- **Deborah Raphael**, CO-CHAIR of the Panel, has spent the last 15 years working within local government to design and implement programs around the reduction of hazardous chemicals used in city operations and consumer products. She is the Program Manager for the City & County of San Francisco's Toxics Reduction and Green Building Programs.
- **William F. Carroll**, Ph.D., CO-CHAIR of the Panel, is a Vice President of Occidental Chemical Corporation and an Adjunct Industrial Professor of Chemistry at Indiana University. He contributed to the United Nations Environment Programme's Best Available Techniques/Best Environmental Practices Guidelines for implementation of the Stockholm Convention on Persistent Organic Pollutants. In 2005 he was President of the American Chemical Society.
- **Ann Blake**, Ph.D., is an independent consultant who has worked for 16 years in the area of environmental and public health regulation and chemicals policy reform at the local, regional, national and international levels. She worked for the California Environmental Protection Agency's Department of Toxic Substances Control as a hazardous waste inspector and Northern California Pollution Prevention Coordinator.
- **Jae Choi**, Ph.D., has more than 40 years experience in industry and has been recognized as a "Green" materials and chemistry subject matter expert at the Avaya company. He holds 26 U.S. patents and has five other U.S. patents pending.
- **Bruce R. Cords**, Ph.D., is Vice President for Environment, Food Safety and Public Health for Ecolab Inc., the world's leading provider of cleaning, food safety and infection prevention products and services. He serves as Chairman of the Board of Advisors of the University of Georgia's Center for Food Safety, and is a member of the Food Science and Nutrition Advisory Council at the University of Minnesota. Dr. Cords is a nationally recognized authority on foodborne disease and an industry expert on foodborne viruses.
- **George Daston**, Ph.D., is a Research Fellow overseeing human safety research at Procter & Gamble Company. He has served as President of the Teratology Society, Councilor of the Society of Toxicology, on the U.S. EPA Board of Scientific Counselors, National Toxicology Program Board of Scientific Counselors, National Research Council's Board of Environmental Studies and Toxicology, and National Children's Study Advisory Committee.
- **Tod Delaney**, Ph.D., is President of First Environment, Inc. and has more than 30 years of industry experience as a chemical and environmental health engineer. He currently serves as the

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International Convener for the new ISO 14066 standard for National Greenhouse and Energy Reporting System and as chairman of the board for the Business Council for Sustainable Energy.

- **Richard Denison**, Ph.D., is the Senior Scientist for the Environmental Defense Fund and has 25 years of experience in policy, hazard and risk assessment and management for chemicals and nanomaterials. Dr. Denison recently served on California's Green Chemistry Initiative's Science Advisory Panel.
- **Arthur T. Fong**, Ph.D., is a senior scientist/toxicologist at IBM and a member of the IBM Corporate Environmental Affairs team. He is a member of the Steering Committee and Technical Committee of the U.S. EPA Flame Retardants in Printed Circuit Boards (PCBs) Partnership, and is co-lead of the Semiconductor Industry Association nanotechnology environmental health and safety working group to encourage responsible and sustainable development of nanotechnology and proactive safe nanotechnology worker protection practices.
- **Lauren Heine**, Ph.D., advises organizations seeking to integrate green chemistry and engineering into product and process design and development activities as Principal for the Lauren Heine Group and a Senior Science Advisor with Clean Production Action. She was previously the Director of Applied Science at GreenBlue where she directed the development of CleanGredients™, a unique, web-based information platform, developed in partnership with the U.S. EPA Design for the Environment Program
- **Dale Johnson**, Ph.D., is an Adjunct Professor in Molecular Toxicology at UC Berkeley and President & CEO of Emiliem, Inc. He has extensive experience in the healthcare industry working in pharmaceutical and biotechnology companies on drug discovery and development and risk/benefit assessments related to human health. He is a Diplomate of the American Board of Toxicology and co-editor of the journal *The Chemistry of Metabolic and Toxicological Processes*, *Current Opinion in Drug Discovery & Development.*
- **Michael Kirschner**, President of Design Chain Associates, LLC, has worked in engineering and engineering management for such electronics companies as Compaq, Tandem Computers, Intergraph, and Intel. Design Chain Associates helps manufacturers understand and develop proactive strategies and tactics to comply with international environmental regulations as well as customer and Non-Governmental Organization influences and requirements that impact their products.
- **Richard Liroff**, Ph.D., founded and serves as Executive Director of the Investor Environmental Health Network, a group of investment management organizations advised by environmental health advocates, working to reduce production and use of toxic chemicals by business. He is author/editor of a half-dozen books and more than 50 articles and reports on environmental policy.
- **Timothy F. Malloy**, J.D., is a Professor of Law, and a Faculty Director of the UCLA Law and Environmental Health Sustainable Technology Policy Program. He is a Co-Director of the School of Law's Frank G. Wells Environmental Law Clinic and a member of the UC Center for Environmental Implications of Nanotechnology.
- **Scott Matthews**, Ph.D., is the Research Director of the Green Design Institute and Associate Professor in the Departments of Civil and Environmental Engineering and Engineering and Public Policy at Carnegie Mellon University. Dr. Matthews serves as chair of the Committee on Sustainable Systems and Technology with the Institute of Electrical and Electronic Engineers.
- **Roger McFadden**, is the Chief Scientist for Staples CE and has worked as a formulating and consulting chemist and product design engineer for several product manufacturing companies in the U.S. and Canada. He is a charter member of the Green Chemistry Commerce Council (GC3).
- **Kelly Moran**, Ph.D., is President of TDC Environmental, LLC, an environmental consulting firm specializing in water quality and pollution prevention. She co-founded the Brake Pad Partnership and the Urban Pesticides Pollution Prevention Project and sits on the California Source Reduction Advisory Committee.
- **Oladele A. Ogunseitan**, Ph.D., M.P.H., is Professor and Chair in the Program in Public Health, College of Health Sciences at U.C. Irvine, where he is also a Professor of Social Ecology. He

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directs the Research and Education in Green Materials component of U.C.'s Systemwide Toxic Substances Research & Teaching Program. He is Principal Investigator of a National Science Foundation funded project on Biocomplexity in the Environment: Materials Use, Science, Engineering and Society (MUSES).

- **Robert Peoples**, Ph.D., is the Director of the American Chemical Society Green Chemistry Institute® and has been a member of American Chemical Society (ACS) for 35 years. He serves on several local and national boards including the Carpet America Recovery Effort, Georgia Pollution Prevention Advisory Board, and Green Standard.org. He is a member of several organizations including the National Recycling Coalition, Society of Plastics Engineers, and the American Chemical Society.
- **Julia Quint**, Ph.D., is a public health scientist and retired Chief of the Hazard Evaluation System and Information Service (HESIS), an occupational health program in the California Department of Public Health (CDPH). Julia currently serves on the Scientific Guidance Panel of the California Environmental Contaminant Biomonitoring Program, the Tracking Implementation Advisory Group of the California Environmental Health Tracking Program, the Cal/OSHA Health Experts Advisory Committee, and the National Academy of Sciences Committee on Tetrachloroethylene.
- **Julie Schoenung**, Ph.D., is a Professor in the Department of Chemical Engineering and Materials Science at U.C. Davis, and a Co-Director for the University of California Toxic Substances Research and Teaching Program Lead Campus in Green Materials.
- **Megan R. Schwarzman**, M.D., M.P.H, is a research scientist with the Program in Green Chemistry and Chemicals Policy at U.C. Berkeley Center for Occupational and Environmental Health (COEH), School of Public Health. She was a co-author of the 2008 report to Cal/EPA, *Green Chemistry: Cornerstone to a Sustainable California.*
- **Anne Wallin**, Ph.D., is the Director of Sustainable Chemistry for Dow Chemical Company and leads the company's Life Cycle Assessment Expert Group. She is a member of the External Advisory Board for the Graham Environmental Sustainability Institute at the University of Michigan and a co-author of several publications and patents.
- **John Warner**, Ph.D., is the President and CTO of the Warner Babcock Institute for Green Chemistry. He established the world's first Green Chemistry Ph.D. program at the University of Massachusetts-Boston and is co-author of the book *Green Chemistry: Theory and Practice*, which first described the *Twelve Principles of Green Chemistry*.
- **Michael P. Wilson**, Ph.D., M.P.H., is a research scientist at the Center for Occupational and Environmental Health (COEH), School of Public Health at U.C. Berkeley, where he conducts research and practice in environmental health sciences and science policy. He is the chief author of a 2006 UC report, commissioned by the California Legislature, *Green Chemistry in California: A Framework for Leadership in Chemicals Policy and Innovation*.
- **Julie Zimmerman**, Ph.D., is an Assistant Professor jointly appointed in the School of Engineering and Applied Science (Environmental Engineering Program) and the School of Forestry and Environment at Yale University. She also serves as the Associate Director for Research for the Center for Green Chemistry and Green Engineering at Yale.

For more biographical information on the state's Green Ribbon Science Panel members, visit DTSC's website at http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/Green_Ribbon_Bios.cfm

More information on the California Green Chemistry Initiative can be found on the Department's website at http://www.dtsc.ca.gov/GreenChemistry

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FOR GENERAL INQUIRIES: Contact the Department of Toxic Substances Control by phone at (800) 728-6942 or visit www.dtsc.ca.gov. To report illegal handling, discharge, or disposal of hazardous waste, call the Waste Alert Hotline at (800) 698-6942.

The mission of the Department of Toxic Substances Control is to protect public health, safety, and the environment from toxic harm.