American Chemistry Council℠

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Re: Information on Chemicals for Clearinghouse

The American Chemistry Council (ACC) appreciates the opportunity to provide the attached information to assist the department in implementation of SB 509 (Simitian), legislation that establishes a Toxics Information Clearinghouse for the collection, maintenance, and distribution of specific chemical hazard traits and environmental and toxicological end-point data.

If you have any questions or comments, please feel free to contact us. We look forward to our continued work together on this important public policy initiative.

INFORMATION ON CHEMICALS FOR CLEARINGHOUSE

The State of California has enacted SB 509, which requires the Department of Toxic Substances Control (DTSC) to establish a Toxics Information Clearinghouse for the collection, maintenance, and distribution of specific chemical hazard traits and environmental and toxicological end-point data. The Office of Environmental Health Hazard Assessment is required to evaluate and specify the hazard traits and environmental and toxicological end-points and any other relevant data that are to be included in the clearinghouse by January 1, 2011.

The U.S. chemical industry believes there is considerable value in publicly-available, electronically searchable databases of information on chemicals. The American Chemistry Council (ACC), for example, helped establish the High Production Volume (HPV) Challenge Program in cooperation with US EPA and the Environmental Defense Fund. Through this program, industry has provided information consistent with the internationally agreed to Screening Information Data Set, covering environmental fate and several toxicity endpoints. When complete, the US EPA's High Production Volume Information System (HPVIS) will contain information on approximately 3,000 commercial chemicals that represent 95% of the chemicals in U.S. commerce by volume. **See http://www.epa.gov/hpv/index.htm** for more information on the HPV program. ACC has also produced and posted a short video with helpful hints on how to search for chemical information. See **http://www.americanchemistry.com/s_acc/sec_policyissues.asp?CID=316&DID=1142** .

The California online database would benefit by including direct links to the abundant information on chemicals already available on the Internet. A summary of major sources is attached to this document. These sources provide an important means by which DTSC can achieve the mandate contained in SB 509 to minimize the cost of establishing the Clearinghouse and avoiding any duplication of effort.

In establishing the Toxics Information Clearinghouse, the DTSC has an important opportunity to provide information not just on hazard characteristics, but also on use and exposure information. Chemical safety is a function of both hazard and exposure, and the Clearinghouse would be even more valuable if it addresses both elements.

It should however be clear that not all chemicals require identical information on hazard traits, environmental and toxicological end-points. An acutely toxic chemical, for example, likely does not require chronic toxicity data if chronic effects are unlikely to develop based on information about its use and exposure. Use and exposure patterns should direct what information is reasonably expected to be available for a chemical product. Chemicals with widespread or dispersive uses, or chemicals likely to be released in their use pattern, should be expected to have more hazard and use information than those with occupational exposures (which are generally controlled by process and personnel protective measures). **In short, DTSC should take care not to create an unfair perception of a given chemical simply because data on every end-point is not available.**

Information available in the online Toxic Information Clearinghouse should help provide an understanding of the nature, magnitude and probability of a potential adverse health or environmental effect. The set of data/ information on a chemical in the Clearinghouse should provide relevant study data and information to assist users in understanding potential risks, not just hazards.

Standard Information Parameters. The following table summarizes the general information that the Clearinghouse should seek to provide on covered chemicals.

Substance Identity	Phys / Chem Properties	Toxicity / Ecotoxicity
CAS Number(s)	Melting Point	Toxicity data and information relevant to understanding potential risk to human health (including info. on relevant route of exposure e.g. oral, dermal, inhalation)
Name(s)	Boiling Point	Ecotoxicity data and information relevant to understanding potential risks to the environment e.g., fish, daphnia or algae)
CAS Descriptor (Only inorganic)	Relative Density	
Structural Formula	Vapor Pressure	**Environmental Fate**
Composition being assessed	Partition Coefficient	Biodegradability
Use Pattern (categories / types)	Water Solubility	
Sources of Exposure	Ignition temperature	
	Physical state	

Communication Data and Information to Promote Understanding of Toxicity Assessment in Relation to Use and Exposure Patterns. Because risk is a function of both toxicity and exposure, it is desirable to portray toxicity information linked to anticipated use and exposure patterns. The Clearinghouse should make every effort to assure that communications explain that not every substance needs to have an extensive, expensive, animal-intensive, toxicity testing and exposure dataset in order to be adequately characterized. Chemicals differ in physical/chemical characteristics and in many other ways that influence toxicity and risk.

In particular, certain substances such as pesticides and pharmaceuticals are designed or developed to have biological effects, while commodity chemicals and pesticide inert ingredients, with some exceptions, generally do not possess this same kind of biological activity. Since risk is a function of both inherent toxicity and exposure, production processes and use patterns that influence exposure will ultimately influence potential risks to human health. These principles – that the processes appropriate for evaluating potential risk from commodity chemicals need to consider both use and exposure and toxicity – are the reason that the OECD's SIDS program, the US EPA HPV and PMN programs and EU's REACH have production/use/exposure "triggers" for toxicity study data requirements.

Any single mandated battery of tests beyond the screening tier (for example, beyond the base set in the US HPV dataset) would not permit flexibility to set rational testing priorities based on anticipated toxicity and exposure potentials. Many testing and evaluation programs currently rely on tiered approaches.

For example, the FDA bases its tiered approach for obtaining data on direct food additives and color additives on the principle that the degree of effort expended to reduce uncertainty about the safety of a direct food additive or color additive should relate in a logical way to the likelihood

that use of the substance poses a health risk to the public. Similarly, EPA's approach to evaluating the toxicity study data requirements for assessing potential human health hazards from exposures to inert pesticide ingredients, antimicrobial pesticides, and biopesticides is flexible and tiered such that the required data are deemed by EPA to be commensurate with the potential exposure and risks associated with that use patterns (EPA 2002).[1]

Although there may be differences among different tiered testing frameworks, in general, the tiered testing approach involves sequential testing, in which data are evaluated and decision criteria are applied to determine whether to proceed or not to proceed with further testing, and to determine which specific type of test should be conducted. Some features of tiered testing strategies that confer advantages over non-stratified batteries of toxicity tests include: (1) more efficient use of resources, animals and time to identify chemicals that are of highest concern for public and environmental health; (2) more flexibility to allow tailoring of testing for specific toxicities, populations, or other risk assessment and risk management needs; (3) readily interpretable testing results because tests are pre-sorted into levels according to sensitivity and selectivity; (4) timely evaluation and identification of chemicals that may pose unacceptable risks; and (5) rapidly available results for chemicals that present low potential for serious toxicity.

It has clearly been shown that a hazard based "data gap" is not necessarily a "data need" with respect to characterizing potential risks. A "data gap" indicates information that is lacking, and can refer to data, analyses or presentation; not every "data gap", however, is a "data need." "Data needs" are those specific "data gaps" requiring additional work before the potential risks can be adequately characterized. Devoting resources to toxicity "data gaps" irrespective of whether the specific information is actually needed (that is, data or information which is viewed as necessary to characterize risks with an adequate degree of scientific certainty), would be scientifically unjustifiable, require unnecessary animal testing and unwarranted costs.

For these reasons, the Clearinghouse should develop approaches that will provide an accurate and fair presentation of data and information relevant to assessing potential risk of different types of chemicals. Furthermore, the Clearinghouse must refrain from characterizing any fields as "data gaps" or "data needs" since this is not the purpose of the Clearinghouse.

Data Sources

It is important to establish that data from *in vivo* animal studies are not necessarily required to provide appropriate information on chemicals. DTSC should make clear that alternative information sources from authoritative programs in the US (EPA, FDA, etc.), OECD and REACH are entirely appropriate to include in the Clearinghouse. These sources may include:

- (Quantitative) Structure Activity Relationships. Theoretical models that can be used to predict the physicochemical and toxicological properties of molecules based on the chemical structure (applicable if structure is in domain). Under the US HPV and European REACH programs the category approach has been accepted.
- Read-across and Category Approaches. In Read-across, endpoint information for one chemical is used to make a prediction of the endpoint for another chemical, which is considered to be "similar." With the Category Approach, chemicals are grouped together based on structural or other critical similarities, and therefore physicochemical, fate and

[1] US EPA (2002) Guidance document on methodology for determining the data needed and the types of assessments necessary to make FFDCA 408 safety determinations for lower toxicity pesticide chemicals. http://www.epa.gov/oppfead1/cb/csb_page/updates/lowertox.pdf

toxicological properties are likely to be similar or follow a regular pattern, and these can be interpolated from one substance to another within the category. (For further information see US EPA and OECD HPV programs).

- No relevant exposure information. In some cases, testing is either not scientifically relevant or possible (e.g. ph, vapor, solubility). The Clearinghouse should be robust enough to recognize those situations.
- In vitro methods. Non-animal testing data - validated in accordance with national and internationally accepted principles (e.g. ICCVAM, ECVAM, and OECD).
- Expert judgment. On the basis of existing data further testing is deemed to be not necessary.
- Epidemiological Studies. Data available from human studies (case control studies, cohort studies and other relevant epidemiological studies).
- Available Literature and databases. On the basis of expert judgment whether data and source is valid. Prerequisite for the use of existing information / data is to evaluate their scientific quality. In line with OECD guidance, evaluation of existing data should take into consideration three aspects - adequacy, reliability and relevance of the available information.

Data Quality

In general, the Clearinghouse should rely on data carried out pursuant to Good Laboratory Practices (GLP). In cases where non-GLP data is available, it should be able to be included in the Clearinghouse subject to appropriate explanation and context.

SOURCES OF PUBLIC INFORMATION ON CHEMICALS

There is a common misconception that there isn't a lot of information available on chemicals and their effects on people and the environment. But an abundance of information on chemicals is easily available to the public, researchers, government regulators, and industry via the internet. Learn more at the following sources.

National Library of Medicine. For nearly 40 years, the National Library of Medicine's (NLM) Toxicology and Environmental Health Information Program (TEHIP) has been a significant leader in organizing and providing public access to an extensive storehouse of toxicological information through its online databases. With the advent of the Internet, TEHIP has expanded its role to also serve as a pre-eminent portal to toxicological information worldwide. Its primary databases reside within the web-based TOXNET system, and include the scientifically peer-reviewed Hazardous Substances Data Bank (HSDB), the U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS) and Toxics Release Inventory, the National Cancer Institute's Chemical Carcinogenesis Research Information System (CCRIS) and the TOXLINE file of over 3 million bibliographic references.

TEHIP's ChemIDplus is an extensive chemical dictionary that extends beyond simple nomenclature to offer displays of molecular structures and links from particular chemicals to other databases containing more information. Specialty files in occupational safety and health, and household products have recently been added to TEHIP's suite of resources. Additional databases in risk assessment, drugs, toxicology education, and global resources, are under development. "Special Topics" pages lead users to structured summaries and links in areas such as arsenic, chemical warfare agents, biological warfare, and West Nile Virus. A database on alternatives to the use of live animals, a three-module toxicology tutor, and a glossary of terms in toxicology are among TEHIP's other information aids, as well an increasing commitment to serving consumers, as witnessed by the animated ToxTown program. Outside the sphere of TEHIP, NLM offers additional databases, such as PubMed, of significant value to toxicology researchers.

The database is available at the National Library of Medicine's "Environmental Health & Toxicology" web page at **http://sis.nlm.nih.gov/enviro.html.** A 100 page user manual is available online called "TOXNET and Beyond: Using the National Library of Medicine's Environmental Health and Toxicology Portal" at **http://sis.nlm.nih.gov/enviro/toxnetmanual112008.pdf.**

ATSDR. The Agency for Toxic Substances and Disease Registry (ATSDR) produces *Toxicological Profiles* for hazardous substances found on the National Priorities List (NPL) of contaminated sites. ATSDR also prepares toxicological profiles for the Department of Defense (DOD) and the Department of Energy (DOE) on substances related to federal sites. The *Toxicological Profiles* summarize in detail existing hazard and exposure information on chemicals, and are written for technical audiences.

The ATSDR ToxFAQs™ is a series of summaries about hazardous substances for general audiences. Information for this series is excerpted from the ATSDR *Toxicological Profiles* and Public Health Statements. Each fact sheet serves as a quick and easy to understand guide. Answers are provided to the most frequently asked questions (FAQs) about exposure to hazardous substances found around hazardous waste sites and the effects of exposure on human health.

- **ATSDR, Toxicological Profiles and ToxFAQs: http://www.atsdr.cdc.gov**

High Production Volume Chemicals. Under the "HPV Challenge" program American Chemistry Council members are making screening information and test data publicly available on high production volume (HPV) chemicals. HPV chemicals represent more than 95 percent of the U.S. market for commercial chemicals by volume. Information provided includes 17 endpoints internationally agreed as sufficient to initially assess chemical hazards including physical/chemical properties, environmental fate, ecotoxicity, and hazards to human health. This program has already made more data publicly available - and faster - than any chemical regulatory program in history. For more information and to view the data, visit the HPV Challenge web sites at:

- **US HPV Chemical Challenge Program: http://www.epa.gov/hpv/pubs/hpvrstp.htm**
- **Environmental Protection Agency (EPA)'s HPV Information System: http://www.epa.gov/hpvis/index.html**

EPA is in the process of sorting and prioritizing the data in the High Production Volume Information System (HPVIS) through use of an algorithm established by a federal advisory committee (the National Pollution Prevention and Toxics Advisory Committee - NPPTAC). The results of EPA's prioritization, any decisions on further data or risk management needs, and assessment of those chemicals will be publicly available.

In 2007, the EPA began development and post interim screening-level hazard characterizations for chemicals that were part of the HPV Challenge Program. In 2008, EPA updated the interim screening-level hazard characterizations and combined them with use and exposure data under the 2006 Inventory Update Reporting (IUR) Rule to develop and post Risk-Based Prioritizations (RBPs). The RBPs identify potential risks, note scientific issues and uncertainties, and indicate the initial priority being assigned by the Agency for potential future appropriate action. In 2008, as part of the Agency's commitment under the Chemical Assessment and Management Program (ChAMP), EPA began developing initial evaluations of moderate production volume (MPV) chemicals – those chemicals with production between 25,000 pounds and one million pounds per year.

ACC has also produced and posted a short video with helpful hints on how to search for chemical information. See **http://www.americanchemistry.com/s_acc/sec_policyissues.asp?CID=316&DID=1142.**

- **HPV Chemical Hazard Characterizations: http://www.epa.gov/hpvis/abouthc.htm**
- **MPV Chemical Hazard-Based Prioritizations: http://www.epa.gov/champ/pubs/abouthbp.htm**
- **Risk-based prioritizations: http://iaspub.epa.gov/oppthpv/hpv_hc_characterization.get_report?doctype=1**
- **HPV Screening Process: http://www.epa.gov/oppt/npptac/pubs/recommendations.htm**

VCCEP. Under the Voluntary Children's Chemical Evaluation Program (VCCEP), EPA evaluates both hazard and exposure information submitted by companies which have volunteered to in this pilot program to determine potential effects on children's health. This information is publicly available at:

- **VCCEP: http://www.epa.gov/chemrtk/vccep/index.htm**

TSCATS. The Toxic Substance Control Act Test Submission database, TSCATS, is a central system for the collection, maintenance, and dissemination of information on unpublished technical reports submitted by industry to EPA under TSCA. Studies on over 8,000 chemicals are categorized into three broad subject areas (health effects, environmental effects, and environmental fate). Searches can be conducted using these subject areas as well as indexing terms.

• **TSCATS: http://www.syrres.com/eSc/tscats_info.htm**

Integrated Risk Information System. EPA and its Office of Research and Development maintain an electronic database called the Integrated Risk Information System (IRIS) and it contains descriptive and quantitative information on human health effects that may result from exposure to various chemicals in the environment. According to EPA's website, IRIS was initially developed for EPA staff in response to a growing demand for consistent information on chemical substances for use in risk assessments, decision-making and regulatory activities. Information in IRIS is intended for those without extensive training in toxicology, but with some knowledge of health sciences. The heart of the IRIS system is its collection of computer files covering individual chemicals.

- **To learn more about IRIS and to view the list of IRIS substances visit: http://www.epa.gov/iris/**

ESIS. The European Chemical Substance Information System (ESIS) is an electronic system that provides information on both new and existing substances in the EU. It includes proposed classification and labeling for 3,300 chemicals, information and data for roughly 2,500 EU HPV chemicals and final risk assessment reports for chemicals with completed assessments. ESIS also allows users to download the data on chemicals submitted in IUCLID.

• **ESIS can be found at: http://ecb.jrc.it/ESIS/**

The European Union REACh program is expected to result in the availability of hazard data on all chemicals in the European market, as well as use-specific chemical risk assessments for chemical on the European market above a specific threshold. Data will be publicly available, and fully searchable, formatted in software known as IULCLID.

Organization for Economic Cooperation and Development. The International Council of Chemical Associations has committed to submit data and assessments for 1,000 global HPV chemicals to the 30 developed nations of the OECD for government assessment. OECD assessments are published as soon as they are completed on the OECD website. The data included in those assessments are also available, via the United Nations Environment Program (UNEP).

• **OECD HPV Database: http://cs3-hq.oecd.org/scripts/hpv/**
• **UNEP HPV Datasets: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html**

The EXICHEM database is a pointer system on current, planned and completed activities on existing chemicals in OECD member countries and other relevant bodies. It was created to provide information for the OECD member countries on "who is doing what with which chemicals", (e.g. information gathering, testing, evaluation), in order to assist countries that are identifying opportunities for co-operation.

• **EXICHEM is found at: http://webdomino1.oecd.org/ehs/exichem.nsf**

IPCS. The International Program on Chemical Safety (IPCS - a joint program of UNEP, ILO and WHO) developed INCHEM - a freely available collection of internationally peer-reviewed documents about chemicals and chemical safety. It was initiated in 2003 in response to priorities established by the Intergovernmental Forum on Chemical Safety (IFCS) and provides convenient worldwide full-text electronic access to chemical safety-related documents provided by intergovernmental organizations. All documents referenced by INCHEM contain hazard information and the site can be queried by key-words and free text. INCHEM contains Environmental Health Criteria documents, and cancer assessments by the International Agency for Research on Cancer.

The International Chemical Safety Cards (ICSC) found on the IPCS site summarizes essential information on chemical substances; developed cooperatively by the IPCS and the Commission of the European Union (EC). The International Chemical Safety Cards summarize essential health and safety information on chemical substances in a clear way, and are not only intended to be used at the "shop floor" level by workers, but also by other interested parties in factories, agriculture, construction and other places of work.

Also on the IPCS site are Environmental Health Criteria (EHC) documents. These documents provide critical reviews of the effects of chemicals on human health and the environment. They include technical information on sources of exposure, environmental transport, health effects, and kinetics/metabolism in laboratory animals. There are more than 200 EHC documents posted.

The IPCS site also provides access to Concise International Chemical Assessment Documents (CICADs), which characterize hazard and dose-response to exposures of chemicals. They summarize the information considered critical for risk characterization.

- **IPCS INCHEM: http://www.inchem.org/**
- **INCHEM ICSC: http://www.inchem.org/pages/icsc.html**
- A list of chemicals with EHC documents can be found at **http://www.who.int/ipcs/publications/ehc/ehc_alphabetical/en/index.html**
- The CICADs are posted at **http://www.who.int/ipcs/publications/ehc/ehc_alphabetical/en/index.html**

EDF Scorecard. The Environmental Defense Fund created Scorecard.org, which provides information on more than 11,200 chemicals, including chemicals used in large amounts in the United States and the chemicals regulated under major environmental laws. You can search for information by typing in the chemical's name (or any common synonym) or the chemical's standard identification number (Chemical Abstracts Service or CAS registry number).

- **http://www.scorecard.org/chemical-profiles/**