A photograph of a hospital room. In the foreground, a hospital bed is made with white linens and two pillows. To the right of the bed is a desk with a sink, a glass of water, and some papers. On the desk, there are two vases of flowers: one with red flowers and another with pink and red flowers. A water bottle is also on the desk. In the background, there is a wall with various medical equipment, including a telephone and a light fixture.

Guide to Choosing Safer Products and Chemicals

Implementing
Chemicals Policy
in Health Care

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MAY 2008

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I. Why do we need to address chemicals as a whole?

Every person is exposed to a complex mixture of hundreds of exogenous chemicals every day. Industrial societies are experiencing an increase in diseases and conditions such as cancers, birth defects, and infertility that are linked, to a varying extent, and in part, with environmental exposures.¹ Contamination also jeopardizes the health of wildlife and ecosystems.²

1. Although mounting evidence links chemical exposures to negative health outcomes, our nation's laws created to protect the public and workers are inadequate. Independent reviews have found that the laws:

- Fail to provide for adequate testing of existing and new chemicals and materials, including nanomaterials, so that we are ignorant of the full hazards of most chemicals;³
- Fail to regulate known hazards because these laws don't give regulators adequate authority;⁴
- Fail to provide incentives for safer alternatives to come to market or to require their use; and
- Fail to provide individuals with the right to participate in a decision-making process regarding chemical use in their community or workplace.

2. Once chemicals are in use they can be widely dispersed throughout the environment. Environmental monitoring shows that high hazard industrial chemicals and chemicals with unknown health effects are:

- Widely distributed in the environment, the food web, and measurable in humans at levels that, in some cases, are known to cause adverse health effects in laboratory animals and wildlife; and
- Can be released throughout the lifecycle of a product, from the manufacturer, through the use and disposal.

“Every person is exposed to a complex mixture of hundreds of exogenous chemicals every day. Industrial societies are experiencing an increase in diseases and conditions such as cancers, birth defects, and infertility that are linked, to a varying extent, with environmental exposures.”

3. The burden is on the health care industry, one of the downstream users of chemicals and products. Currently, if it is to get done at all, product users must:

- Investigate potential health impacts and research and test alternatives;
- Make product selection decisions with incomplete information about product constituents and toxicity;
- Continue to use hazardous materials, with associated liability and health concerns.

4. Addressing chemicals on a chemical-by-chemical basis has proven insufficient. Many environmental purchasing programs and environmental campaigns target specific chemicals of concern for reduction. However, hazardous chemicals remain in commerce because:

- Manufacturers switch from a targeted chemical to an untested or unlisted chemical that is not necessarily preferable;
- The chemical by chemical approach is very costly and slow; and
- When the government fails to require manufacturers to perform toxicity testing, the burden then shifts to the public to finance testing and environmental monitoring of chemicals in commerce, further slowing change.

“Health care institutions have a particular ethical responsibility to use products containing chemicals that pose less risk to human health.”

II. Why are all health care institutions crucial partners in addressing chemicals as a whole?

- *Health care institutions have a particular ethical responsibility to use products containing chemicals that pose less risk to human health.* A growing number of hospitals are taking a “better safe than sorry” approach to chemicals—eliminating known and likely hazards and switching to safer alternatives. Benefits of this approach to the bottom line can include reduced disposal costs, reduced liability, and improved health for employees.
- *Changes in health care purchasing can move markets to sustainability.* Health care can use its significant purchasing power to transform the design and manufacture of products toward greater sustainability. Because the health care sector purchases products from virtually every industry sector—and in significant quantities—health care has the power to literally drive green innovation throughout the economy.
- *All institutions can make a difference.* Small institutions may be more flexible, while large institutions have greater purchasing power, but all can be leaders in innovation and models for other industry sectors.

Chapter Notes

1. CHE Toxicant and Disease database, <http://database.healthandenvironment.org/>
2. See for instance the Millennium Ecosystem Assessment <http://www.maweb.org/en/index.aspx>
3. “Chemical Hazard Data Availability Study: What Do We Really Know About the Safety of High Production Volume Chemicals?” US EPA, April 1999, <http://www.epa.gov/chemrtk/pubs/general/hazchem.pdf>
4. “Chemical Regulation: Options Exist to Improve EPA’s Ability to Assess Health Risks and Manage Its Chemical Review Program,” GAO-05-458, US Government Accounting Office, June 2005, <http://www.gao.gov/new.items/d05458.pdf>

Explanation of a Comprehensive Chemicals Policy Program in Health Care

I. What is a Comprehensive Chemicals Policy Program (CCPP)?

A CCPP is the sum total of actions taken by an institution to address the long-term goals below.

II. What is the purpose of an institutional Comprehensive Chemicals Policy Program?

The purpose of the Program is ultimately to improve human and ecosystem health by changing our approach to chemicals manufacture, use, management, regulation, and information, driving the design of products and processes towards least toxic design. This Program should be a complement to other environmental programs and goals.

III. What are the long-term goals of a Comprehensive Chemicals Policy Program?

- Eliminate from commerce chemicals that are toxic to humans or the environment.
- Eliminate from commerce chemicals that have not been thoroughly evaluated for toxicity and environmental impact.
- Shift the burden for chemical safety testing from the public and consumers to manufacturers and suppliers.
- Shift the burden for monitoring emerging chemically-related environmental problems to manufacturers.
- Ensure that consumers and workers have complete information about the constituents of the products they use. Then they can accurately assess and compare product environmental impacts, in order to prefer products with a better environmental profile, and to act quickly when new information indicates a particular chemical is causing problems.
- Drive the design of products upfront to be least toxic throughout the product life cycle.

“The purpose of the Program is ultimately to improve human and ecosystem health by changing our approach to chemicals manufacture, use, management, regulation, and information, driving the design of products and processes towards least toxic design.”

IV. What principles should guide a Comprehensive Chemicals Policy Program?

Principles embedded in a Comprehensive Chemicals Policy Programs include:

- **Precaution:** Precaution leads us to act when credible threats of harm exist, although some uncertainty may remain.
- **Substitution:** This principle leads us to eliminate or reduce the use of hazardous substances by substituting less-hazardous substances, redesigning the product, or by using technological or organizational measures to achieve the same function, while maintaining cost-effectiveness and quality of care. Substitution requires an evaluation of inherent hazards, and is consistent with a hierarchy of controls approach to addressing occupational health hazards.
- **Design for life and health:** This principle leads us to drive the design of products up front to be least harmful and most just to workers, users and the environment throughout the life cycle of the product.
- **Comprehensive producer responsibility:** This principle asserts that the producer's responsibility for the environmental impact of its products starts with the extraction of the raw material and continues through manufacturing, product use, and the end of life or post-consumer stage of the product's life cycle, as well as chemical releases during these stages.

“The benefits... can include safer workplaces, communities, and ecosystems leading to reduced disease and health care expenditures and reduced long-term costs and liability.”

- **Full Disclosure and Right to Know:** This principle leads us to require full information on product content and materials, and on the health and environmental impacts of the chemicals, products and materials we use, and to provide that information to customers, workers, and the public.
- **Accountability:** This principle leads us to be transparent in our actions and to publicly report on progress toward our goals. We also seek to hold vendors accountable for the information, products, and services they provide.
- **Worker Involvement** engages workers and exposed groups in preventive activities and evaluation of alternatives.
- **Necessity:** This principle leads us to carefully consider the necessity of the product and/or the services it provides and reduce use where possible.

V. Why should we implement a Comprehensive Chemicals Policy Program?

The benefits will depend on which strategies an organization chooses to emphasize, but can include:

- Safer workplaces, communities, and ecosystems leading to reduced disease and health care expenditures;
- Reduced long-term costs and liability;
- Increased information for better decision making;
- Market pressure for more testing, the provision of better information, and the design of safer products; and
- Increased momentum at the local, state, and federal levels toward reformed chemicals policy regulation.

VI. Where should I start?

Implementing a chemicals policy is an iterative and continually evolving activity. Consider your organizational needs and goals. One approach is to choose a task or step within one strategy to pilot. Implementation strategies can be piloted with individual suppliers, product areas, or departments. You can develop an action plan in this area, and then evaluate results before expanding your pilot. Eventually, your organization should have active work in all of the strategy areas.

B1

Developing a Written Institutional Chemicals Policy

It is important to signal organizational commitment by adopting a company-wide policy that clearly articulates the company's vision, values, principles, and specific objectives.

I. Consider Existing Institutional Values

Review existing institutional policies related to the environment, occupational safety, chemicals management, and liability. Think about how changing the institutional approach to chemicals management and information fits in with these existing policies and the institution's values.

The policy should articulate the connection to the company's core values, mission or ethical framework, and describe the future imagined by implementing the policy. Review Principles listed in Section A2. Two Examples are given below:

II. Model Draft Chemicals Policy

Recognizing the interconnection between human health and ecosystem health, and consistent with [organization name]'s mission/values, [organizational name] is committed to aligning our purchasing decisions with the long-

Example: Excerpt from Health System's Chemicals Policy

Vision: [Health System] aspires to create an environment for its workers, members and visitors that is free from the hazards posed by chemicals that are harmful to humans, animals and the environment. We will take the following actions to achieve our vision:

Internal focus

- Identify high priority chemicals and chemical groups; regularly update and prioritize these data resulting in a living list of chemicals of concern.
- Conduct an inventory of product standards for presence of chemicals of concern.
- Understand cost implications of substitutions and incorporate cost of ownership model into purchasing systems.
- Communicate preferences to GPO, vendors and manufacturers.
- When appropriate, communicate desired alternatives and reasons to employees, members and the communities we serve.
- Continue to pursue green building activities.
- Develop goals and metrics to measure progress and include mechanisms for sharing successes and lessons with the public.

Contracting focus

- Create appropriate contractual obligations with manufacturers, suppliers and distributors to:
 - avoid identified chemicals of concern
 - conduct and share results of extended toxicity testing
 - disclose processes that use chemicals of concern even if the chemicals used in the processes are not a part of the end product
 - Substitute safer alternatives identified through hazard analysis
 - Integrate a cost-of-ownership approach to assessing alternative products

External focus

- Support sound public policies that promote greater evaluation of chemicals and public disclosure.
- Influence manufacturers to provide materials disclosure and performance of safety tests.
- Promote labeling of products with all ingredients.
- Influence medical research into less hazardous clinical and laboratory products and processes.

term goal of a healthy environment and workplace by implementing a comprehensive chemicals policy program. [Organization name] seeks to drive the design of products to be least harmful and most just to workers, users and the environment throughout the life cycle of the product - [Organization name] seeks:

- To support the substitution of toxic chemicals with chemicals or processes of lesser environmental impact;
- To eliminate data gaps in the knowledge of the toxicity, environmental attributes, and use of the chemicals used to manufacture products;
- To support an economy where manufacturers, suppliers, and consumers are provided with sufficient information to compare options on toxicity and environmental impact of the chemicals and products they use; and
- To conduct our programs in accordance with the following principles: precaution; substitution, design for life and health, comprehensive producer responsibility, full disclosure and right to know, accountability, worker involvement and necessity.

“ It is important to signal organizational commitment by adopting a company-wide policy that clearly articulates the company's vision, values, principles, and specific objectives.”

I. What is a Plan of Action?

A plan of action is a written plan, indicating which tasks must be done, and who is responsible for those tasks, with a timeline. Writing a plan of action can help clarify who must do what to start with implementation.

II. What elements should be included in the Plan of Action?

This process is similar to the Plan-Do-Check-Act Cycle.⁵ The plan should include the following elements:

Measurable Goals

It is important to identify implementation steps that can be measured, so you can track your progress. Establish organizational goals, metrics and baselines to assess progress for the length of the pilot or, for ongoing programs, yearly. The metrics will depend on the strategies chosen for implementation. Examples of possible metrics are the number of products with target chemicals no longer on contract, the number of target chemical products no longer purchased, or the number of contracts reviewed for disclosure of chemical content.

Timelines, Point People, and Scheduled Review of Pilot Results and Planning for Future Actions

Specific steps should have timelines, and each person responsible for a task should be required to report on the results. Someone (or more often, a group of people) should then be responsible for reviewing progress. Progress reviews and future planning should be scheduled as part of the implementation plan.

“It is important to identify implementation steps that can be measured, so you can track your progress.”

Education and Capacity Building

The level of success often depends upon the understanding that vendors, employees, boards, clients, and other constituents have of the importance of the project. Depending on the specific strategies used, it might be necessary to provide one-time or regular staff training and education, and/or to develop materials to educate other constituent groups about the purpose of the policy, how it is being implemented, and how success will be measured. Decision-makers within the institution should be regularly updated on progress, and staff members who are responsible for implementing the policy should have the metrics reflected in their performance reviews.

Labeling and Communication

If customers/members/suppliers are not informed about the institutional chemicals policy in terms appropriate to each constituency, it will be difficult to achieve full success. Depending on the strategy chosen, this may mean continually updated labeling in catalogs or in other modes of communication as information is generated. For instance, if the implementation plan includes making available products containing only tested ingredients, such products could be identified in catalogs or when delivered. Include non-literate symbols and use the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Information on GHS is available at http://www.unece.org/trans/danger/publi/ghs/ghs_rev00/00files_e.html and <http://www.osha.gov/dsg/hazcom/ghs.html>.

Report on Progress

In your annual report, sustainability report, website, or other appropriate place, your institution should report progress on meeting your chemicals policy goals. In addition, the project's priorities, goals and progress should be included in newsletters or regular communications from organizational leadership.

Auditing Information

Some of the strategies below involve collecting information from suppliers. In these cases, it is recommended that a subset of vendor submissions be audited regularly to assess the accuracy, quality and completeness of environmental information submitted, and the auditing policy should be communicated to vendors. Suppliers may not have adequate internal communication systems in place to ensure that information provided by salespeople is accurate and complete.

“In your annual report, sustainability report, website, or other appropriate place, your institution should report progress on meeting your chemicals policy goals.”

Chapter Notes

5. For more information on the Plan-Do-Check-Act cycle, also known as the Deming Cycle, see <http://www.asq.org/learn-about-quality/project-planning-tools/overview/pdca-cycle.html>. Also see Global Environmental Management Initiative at <http://www.gemi.org> for more information and suggestions on continuous improvement.

I. A Comprehensive Chemicals Policy Program should fit in with other environmental and occupational health initiatives.

1. A Comprehensive Chemicals Policy Program complements other environmental initiatives. A Chemicals Policy Program:

- Is not a substitute for existing environmental programs, such as environmental purchasing programs, pollution prevention programs and environmental management systems.
- Should be incorporated into, and consistent with, these other programs.
- Is consistent with the hierarchy of controls⁶ approach to eliminating occupational illnesses and injuries.

2. Examples of integrating chemicals policy into existing programs include:

- Environmental Purchasing Programs: Using purchasing preferences to prefer products in which all ingredients have been fully tested for health and environmental effects. Expanding the list of chemicals to be avoided to include a longer list of problematic chemicals.
- Occupational Health Programs: Analyzing patterns of occupational health complaints to prioritize chemicals and products for which safer substitutes should be sought, and for which full ingredient lists should be obtained. Occupational health complaints can also be used to identify problematic chemicals that have not previously been recognized as such.

“Consider whether a product or process is even necessary or could be used or done less often.”

II. An assessment of alternatives should include consideration of process changes or the possibility of doing without a product.

Consider whether a product or process is even necessary or could be used or done less often.

- For instance, if you are installing new flooring or interiors, many are available that require fewer maintenance chemicals. Or, for existing floors that need to be finished and stripped, use a system to determine when the finish has worn away to the point where refinishing is necessary.⁷

III. Participation and buy-in are crucial.

Each organization will have its own cultures and procedures, and these processes must fit the culture. In order to be successful, those individuals who will ultimately be responsible for implementing and supporting this policy must feel “ownership.” This means they view the policy and/or implementation plan as something for which they are personally responsible. One key way to create “ownership” is to involve these individuals in the process from the beginning, so they contribute to its creation. Involving key individuals from the beginning can also prevent poorly designed policies or implementation plans.

IV. Key stakeholders need to be included in policy and implementation plan development.

Each organization will differ in key stakeholders. Buy-in is crucial. It is important for senior management to support this policy, so ideally they should lead its development. Champions in your organization, people who are already interested in and committed to environmental issues or occupational health, should be supported and engaged in this process. Also think carefully about who, and what departments, may be involved in implementation and support.

This list could include:

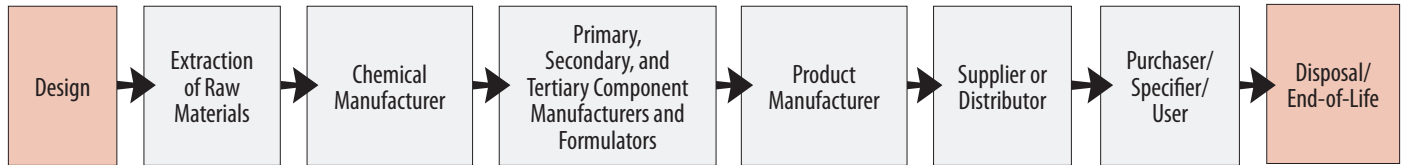
- senior management;
- supply chain management;
- procurement;
- health care professionals;
- product selection committees;
- environmental, safety, and facilities services;
- corporate lobbying personnel;
- workers and their representatives,
- health and safety committees, and members (for Group Purchasing Organizations).

Chapter Notes

6. The Hierarchy of Controls approach to occupational health protection is a set of actions that are prioritized from the most protective to the least protective: elimination, substitution, isolation, engineering remedies, administrative remedies, and personal protective equipment. See section C3, Occupational Health Implementation Strategy, for more information.
7. See “Never Strip Floors Again!” *Cleaning and Maintenance Management Online*, Volume 40, Issue 8 - August 2003, at <http://www.cmmonline.com/article.asp?indexid=6633860>

C1

Supply Chain Implementation Strategy



I. What is a supply chain?

- The supply chain is the entire set of manufacturers and distributors that are responsible for bringing a product to the market from raw material to final product. The supply chain includes the companies involved in extraction of raw materials such as metal or petroleum, the companies that create the alloys or plastics used in the components, the component manufacturers, and the manufacturer that puts the components together.
- The design of a product, which may be done by the final specifier, the product manufacturer, or other members of the supply chain, can dramatically affect the environmental impact of a product. A product designed with fewer hazardous substances, or designed to be more durable, may have a reduced environmental impact during production and at the end of its life.
- The product should be designed to minimize or eliminate impacts from extraction through disposal, including transportation. The supply chain traditionally has not included the design of a product, nor does it include the disposal or end-of-life of a product, but both the design and the end-of-life must be considered in chemicals policy implementation. Consideration of the impacts of a product from design through disposal is often called taking a 'lifecycle approach' to the evaluation of a product, and is critical when implementing a chemicals policy.

II. Why is it useful to address the supply chain?

- Releases of hazardous chemicals can occur throughout the life-cycle of a product, from the manufacture and use through disposal. To reduce your environmental footprint, and to protect communities where products are being made or disposed, health care must communicate the desire for safer products throughout the life-cycle.
- Each entity in the supply chain may be responsible for the material choices that have an impact on the environmental profile of the product. Some entities have more responsibility than others. Working with upstream suppliers will help your institution achieve its chemicals policy goals.
- By seeking suppliers that are working on chemicals policy goals, you can use your purchasing dollars to support this shift in the marketplace.

III. But won't most suppliers find these requests burdensome?

- Many manufacturers are already addressing some of the important goals of chemicals policy described in the above sections. As more customers ask for these things, more manufacturers will be willing and able to do them.

- It is important to consider the burden to suppliers when deciding on implementation steps. Organizations may wish to have informal discussions with key suppliers about these issues before implementing any additions to contract requirements. Some manufacturers will be unaccustomed to detailed requests about ingredients/component materials or questions about their chemical hazard reduction programs. These suppliers may need extra time to compile this information. There are consultants and software programs available to help suppliers track this information.
- Various degrees of implementation can be used to accommodate the burden on suppliers:
 - › *Statement of Intent.* Communicate to your suppliers through an RFP statement, corporate policy, or other means that by a specific future date your institution intends to prefer companies that are taking certain actions or willing to provide particular information.
 - › *Preference.* Set up a mechanism within your institution's procurement or contracting system to prefer suppliers who are taking these actions.
 - › *Requirement.* Require suppliers to take these actions in order to have a contract.

IV. What can a supply chain strategy accomplish?

- Reduce the number of hazardous or untested products your institution purchases.
- Signal the entire supply chain that less toxic products and products with ingredient and toxicity information will be preferred, and/or that suppliers that move towards chemicals policy goals will be rewarded.

C.1.1 Supply Chain Strategy 1: Narrowing Data Gaps

I. What is a Data Gap Strategy?

The phrase “data gaps” refers to lack of information on the health and environmental impacts of chemicals, as well as the lack of information on the chemical ingredients of many products, and the lack of monitoring for the presence of these chemicals in the environment and in people. A data-gap strategy uses your organization’s influence over its supply chain to encourage and support suppliers that are actively working to provide a full list of product ingredients, and to provide the toxicity and environmental information about all the chemicals they use. A data-gap strategy ultimately seeks to reduce the use of unknown, untested and potentially hazardous chemicals.

II. What steps can we encourage our suppliers to take?

- *Make public a list of all the constituents of their products.* This allows consumers to have adequate information to evaluate alternatives and to act immediately when an ingredient is newly identified as toxic or environmentally problematic. Where trade secret information is claimed, the manufacturer should be willing to provide this information to key purchasers within institutions.
- *Compile and make publicly available information on the extent and results of toxicity testing completed and evaluation of potential for persistence and bioaccumulation(for all constituents of their products).⁸*
- *Make measurable progress towards eliminating the use of untested chemicals in their products.*
- *Support (financially or in other ways) the creation of publicly available toxicity data and the evaluation of potential for persistence and bioaccumulation for all chemical ingredients including untested chemicals they use.*
- *Engage in a review of proposed new chemicals and materials, such as nanomaterials, before they use them, to determine if toxicity testing has been done and if safer alternatives exist.*

“What are “data gaps?”

“Data gaps” refers to lack of information on the health and environmental impacts of chemicals, the lack of information on the chemical ingredients of many products, and the lack of monitoring for the presence of these chemicals in the environment and in people.”

As with other approaches, this strategy can be phased-in and can start small and grow from there. An organization may wish to choose one question related to data gaps to ask their suppliers, or may wish to begin by sitting down informally with certain suppliers to discuss these questions.

III. Why is this strategy useful?

Because the data available about products and alternatives are often insufficient, doing business with companies that provide comprehensive information or are working to provide more information about the chemicals they use can help your institution make more informed choices in the future. Even if your institution is a small purchaser, it is important to begin asking these questions of suppliers. Over time, with many institutions requesting the same information, suppliers will begin generating answers. Although at first your institution may not be able to use the information, it is still important to request this information to signal the market that, over time, these data gaps must be filled.

IV. What are the limitations of this strategy?

- Because many manufacturers are just beginning to address the problem of data gaps, this is a long-term strategy where the results may not be immediate.
- This strategy may involve asking companies to provide information that may be viewed as a trade secret.
- This strategy may involve asking companies for information they will find difficult to provide.
- It can be difficult to validate the information provided by suppliers regarding data gaps.
- While it is possible to design a data gap strategy that addresses the toxic chemicals used and emitted during production of the materials and chemicals that end up in the product, the strategy described here does not address such issues in the interest of simplicity.

VI. How can we use supply chain mechanisms to encourage the narrowing of data gaps?

Below are listed a wide variety of questions for suppliers that you can use to ascertain their progress towards narrowing data gaps. When considering questions to ask, remember the ultimate goal of this strategy, which is to support companies working to narrow data gaps, and remember that this is an iterative process where more questions can be asked over time. As described in the case study, some organizations choose to start with one or a few questions. Mechanisms for validating the answers should also be considered, taking into account the time and effort that may be required to review validating documentation. Each question suggested below can be used alone, or in combination with other suggested questions.

Chapter Notes

8. For definitions and discussion of persistence and bioaccumulation, see <http://www.louisvillecharter.org/paper.phaseout.shtml>

C1.1.1 SUPPLY CHAIN STRATEGY 1: NARROWING DATA GAPS

Supplier Questions

V. Suggested data gap supplier/manufacturer general questions with yes/no or essay answers

Choose some or all.

Topic	Example Question
Chemical Inventory	<i>Materials/Chemical Identification.</i> Have you inventoried all chemicals and materials used and generated in the production of the products you sell, across all product lines? [Please describe any progress you have made.]
Public Disclosure	<i>Full Public Ingredient Disclosure.</i> Do you publicly disclose full ingredient and materials lists for all your products, beyond what is required on Material Safety Data Sheets? [Please explain.]
Confidential Disclosure	Are you willing to give us full ingredient and materials lists for all your products available on this contract?
Toxicity Testing	<i>Review of Toxicity Testing.</i> Has a Screening Information Data Set (SIDS) screen or equivalent dossier of tests and screens been completed for all chemicals and materials used in all your products? [Please explain your progress.] (Information on SIDS is available in the Manual for Investigation of HPV Chemicals at http://www.oecd.org/document/7/0,2340,en_2649_34379_1947463_1_1_1_1,00.html)
Review Before Use	<i>Precautionary Review.</i> Does your company review all proposed new uses of chemicals and materials, such as nano-materials, to determine if less toxic or safer alternatives are available, before the new chemical or material is used? [Please explain what criteria you use.]
Active Search for Replacements	<i>Targeted Replacement.</i> Are you targeting particular chemicals and materials of concern for elimination from your products? (Such as toxic metals, halogenated chemicals, polyvinyl chloride (PVC) plastic or persistent bioaccumulative toxicants.) [If so, please list chemicals you have targeted for elimination or reduction or URL where list is available.]
Review Before Use	Does your company avoid introducing the use of chemicals and materials that have shown evidence of toxicity, persistence, or bioaccumulation? [Please describe your screening method.]
Review Before Use	Does your company avoid introducing the use of chemicals and materials that do not have sufficient toxicity testing or that have not been evaluated for persistence or bioaccumulation?

VI. Suggested data gap supplier/manufacturer questions with numeric answers

Choose some or all.

Topic	Example Question
Chemical Inventory	For what proportion of the products offered on this contract have you inventoried all the chemicals and materials used in the production of these products? By which date do you expect this inventory to be complete for all products?
Byproduct Inventory	For what proportion of the products offered on this contract have you inventoried all the chemicals generated as byproducts of production of these products?
Toxicity Testing	For what proportion of the chemicals and materials used in the products offered on this contract have you determined the extent of toxicity testing and evidence for persistence and bioaccumulation?
Toxicity Testing	For what proportion of the chemicals and materials used in the products offered on this contract have you determined that available toxicity test data is incomplete or insufficient?
Active Search for Replacements	How many of the chemicals and materials used in the products offered on this contract have been targeted for substitution, reduction, or elimination due to indications of toxicity, persistence, bioaccumulation, or inadequate test data?
Active Search for Replacements	Of the chemicals already targeted for substitution, reduction, or elimination, for how many has this substitution, reduction, or elimination been completed?
Minimization of Untested Chemicals and Materials	Of the chemicals inventoried that show indications of inadequate test data, for what proportion are you financing additional toxicity testing?
Upstream chemical testing and ingredient disclosure	Of the chemicals in your product(s), for what percentage have you contacted upstream suppliers to seek information on the extent and results of toxicity testing?

VII. Ideas for Measurable Goals

When choosing a data gap strategy, consider how you can measure your success. Measurable goals could include number of contracts or products where vendors offer full ingredient disclosure, number of vendors using no untested chemicals, number of vendors supporting additional toxicity testing, or other goals depending on your priorities.

C1.1.2 SUPPLY CHAIN STRATEGY 1: NARROWING DATA GAPS

Examples

VIII. Example of Data Gap Vision

Example statement indicating vision of responsible suppliers:

Most industrial chemicals are not fully tested for their effects on health and the environment. This means that health care systems are required to use chemicals that have not been fully evaluated for their health and environmental impacts. Further, vendors are often not able to provide a full list of product ingredients for their products. Thus, our institution would like to do business with companies that:

1. Have inventoried all chemicals and materials used and generated in the production of their products.
2. Are willing to disclose to us all the chemicals and materials present in their products.
3. Know the following about each and every one of the chemicals and materials intentionally present in, generated in the production of, and used in the production of their products:
 - a. What toxicity testing has been done;
 - b. Results of any toxicity testing;
 - c. Whether these chemicals have a potential to be persistent or to bioaccumulate;
 - d. Whether these chemicals have been identified as carcinogens, reproductive toxicants, mutagens, developmental or neurological toxicants, or as causing other types of health effects;
 - e. Whether basic toxicity testing, sufficient to qualify under the Organization for Economic Cooperation and Development (OECD)'s Screening Information Dataset (SIDS) for High Volume Production (HPV) Chemicals, has been completed and made public⁹;
 - f. Whether these chemicals are showing indication that they may cause harm to public health, ecosystem health, and the environment; and
- g. Whether these chemicals demonstrate additional effects in mixtures.
4. Are actively seeking less toxic replacements for, or ways to eliminate use of, chemicals or materials that show indications of or potential for toxicity, persistence, bioaccumulation, other toxicity endpoints, or are targeted for reduction by the EPA, or OSPAR Commission¹⁰, or other authoritative body.
5. Are actively seeking test or modeling data, or are seeking to reduce or eliminate the use of, chemicals that have not been tested for basic toxicity endpoints or not been evaluated for persistence or bioaccumulation.
6. Review the use of new chemicals and materials, such as nanomaterials, before their introduction, to minimize the use of chemicals and materials that are or show the potential to be toxic, persistent, or bioaccumulative or those targeted for reduction by EPA, the OSPAR Commission, or other authoritative body.
7. Are actively requiring their suppliers and all the suppliers and manufacturers down their supply chain to take responsibility in a similar way by assisting with these endeavors and applying them to their own manufacturing processes.
8. Provide Material Safety Data Sheets that reflect all health issues and acute and chronic exposures.

“Most industrial chemicals are not fully tested for their effects on health and the environment. This means that health care systems are required to use chemicals that have not been fully evaluated for their health and environmental impacts.”

Case Study: Data Gap RFP Question

One health care system uses this question on all its RFPs:

Comprehensive Screening. [System] is committed to using products where all ingredients have been fully evaluated for toxicity and environmental impact. Can supplier deliver to [System] an estimate of the percentage of the chemical components of your product and packaging for which basic toxicity testing has been done? Basic toxicity testing is defined as sufficient to qualify under the Organization for Economic Cooperation and Development (OECD)'s Screening Information Dataset (SIDS) for High Volume Production (HPV) Chemicals. Information on what tests are needed is referenced in the Manual for Investigation

of HPV Chemicals Chapter 2: SIDS, The SIDS Plan and the SIDS Dossier found at <http://www.oecd.org/dataoecd/13/18/36045056.pdf> and <http://www.oecd.org/dataoecd/13/14/36045229.pdf>

___ Yes, percentage of chemical components and packaging for which basic toxicity testing has been done is: ___%

___ No, at this time the supplier cannot deliver an estimate of the percentage of the chemical components of product and packaging for which basic toxicity testing has been done.

Chapter Notes

- Information on what tests are needed is referenced in the Manual for Investigation of HPV at http://www.oecd.org/document/7/0,2340,en_2649_34379_1947463_1_1_1_1,00.html.
- The Convention for the Protection of the Marine Environment of the North-East Atlantic (the "OSPAR Convention") was opened for signature at the Ministerial Meeting of the Oslo and Paris Commissions in Paris on 22 September 1992. For more information see <http://www.ospar.org>

C.1.2 Supply Chain Strategy 2: Targeted Chemicals

I. What is a targeted-chemical strategy?

A targeted-chemical strategy involves:

1. Specifically identifying chemicals your institution believes are a priority for elimination in commerce,
2. Specifically identifying materials that your institution believes should be a priority due to their ability to create priority chemicals in their life cycle,
3. Communicating this priority to your institution's suppliers, and
4. Using your institution's purchasing power to support companies that are eliminating these chemicals or materials and replacing them either with substances known to be less hazardous, or with non-chemical alternatives such as changed design.

The process of implementing this strategy includes two distinct tasks:

1. Deciding which chemicals to target, and
2. Deciding how to use supply chain approaches to discourage the continued use of these chemicals.

II. Why is this strategy useful?

1. Organizations that continue to use chemicals known to cause problems may encounter increased liability and/or increased risk of occupational or patient injury. By targeting chemicals where there is strong evidence of or plausible and serious concerns about health risks or environmental problems, organizations may reduce their liability and/or incidents of occupational and patient injury.
2. The manufacture and disposal of hazardous products used in health care can place burdens on communities that host manufacturing and disposal facilities. By adopting this strategy, health care's toxic footprint is reduced, thereby improving the health of those communities as well.
3. By preferring products known to be less hazardous, your institution can drive the market toward safer products and support manufacturers that are investing in research and development toward safer technologies.

“The manufacture and disposal of hazardous products used in health care can place burdens on communities that host manufacturing and disposal facilities.”

III. What are the limitations of this strategy?

- A chemicals policy strategy that is limited to targeting chemicals on particular lists may reward companies that replace a listed chemical with an untested chemical. A strategy targeting particular lists of chemicals should be accompanied by a strategy designed to simultaneously encourage vendors to stop using untested chemicals.
- While it is possible to design a targeted chemical strategy that addresses the toxic chemicals used and emitted during production of the materials and chemicals that end up in the product, the strategy described here does not address such issues in the interest of simplicity.

IV. How can we use supply chain mechanisms to discourage the use of the chemicals we choose to target?

A timed sequence of different RFP requests or requirements can be used to encourage suppliers to phase out targeted chemicals. This sequence is described in Figure 1. These steps can be piloted with one or a few contracts, and the results can be reviewed before moving on to the next step.

V. Which chemicals should we target?

There are over 75,000¹¹ registered chemicals (an unknown fraction of which are used regularly). Approximately three thousand¹² of these are used in major quantities. It is not possible to address all of them at the same time, and at the same level of intensity. Therefore, priorities should be identified, while still signaling to vendors that a broader list of chemicals/materials of concern will be addressed in the future.

Priority chemicals should reflect the company's values and mission. For instance:

- A cancer center might want to prioritize the elimination of known cancer-causing chemicals, or a children's hospital may want to prioritize developmental toxicants.
- Institutions may want to prioritize chemicals responsible for the most occupational exposure incidents or other problems at the institution over the last year.

Institutions can choose to target chemicals appearing on authoritative lists, or can choose to target chemicals with particular attributes. See Appendix 1 for examples and explanations of lists of chemicals to target.

Figure 1: Suggested Supply Chain Mechanisms to Discourage the Use of Targeted Chemicals

Degree	Approach	Communication to Suppliers	Organizational Tasks	Contracting Preference or Requirement	Measurable Goals and Numbers to Track
Lenient	Communication	Communicate to suppliers that you would like them to prioritize reducing and eliminating chemicals on these lists. Communicate to vendors that in the future you will ask them to disclose which products contain these chemicals.	Plan for and decide on a date when you will start requesting disclosure.		1. Track how many suppliers are notified and in which way.
Less Lenient	Disclosure Request	Ask suppliers to disclose to you which products contain chemicals on these lists.	Set up a system where suppliers can provide this information to you on a product-by-product basis.	Prefer vendors who comply with this request.	1. Track how many suppliers comply with this request. 2. Audit select supplier replies and track how many appear to be thorough. 3. Set goal of number of contracts where disclosure compliance was used in vendor selection process.
Strict	Preference for Substitutes	Ask suppliers to indicate to you which products they offer can serve as substitutes for products that traditionally contained chemicals on these lists.	Set up a system where suppliers can provide this information, which should include the name of the chemical or technology used to replace the targeted chemical. Ensure purchasers (customers) can see this information and use it in their purchasing.	Prefer vendors who offer safer alternatives.	1. Set goal of number of contracts where preference for vendors that offer safe alternatives was applied in vendor selection process.
More Strict	Required Substitutes	Require that suppliers restrict products containing targeted chemicals to those where no alternative exists on the market.	Research which products would necessarily serve as exceptions.	Require suppliers to sign a contract indicating they will not supply products containing these listed chemicals.	1. Set goal of number of contracts where supplier assures that no products containing targeted chemicals will be available.

VI. Should we give our suppliers all these chemical lists?

Because so little is known about many of these chemicals and what products contain them, it can make sense to ask about a particular list of chemicals for almost all contracts that involve products.

A tiered implementation approach is suggested. In this approach, an organization chooses chemicals or lists to prioritize first (Tier 1 chemicals). Over time, more chemicals or lists are integrated into the program.

For example, the organization may start with the communication approach (see Figure 1), first communicating to suppliers the list of Tier 1 chemicals and that starting within some period of time, these suppliers will be preferred if they disclose which products they sell that contain those chemicals.

Then, once the organization has started preferring suppliers who provide this information, the organization can provide their vendors with the list of Tier 2 chemicals, and communicate that within some period of time (say one year), the suppliers will be preferred if they disclose which products they sell contain Tier 2 chemicals. Such a strategy is illustrated in Figure 2.

Note that many chemical lists are updated regularly, so the URL of the list should be checked every time the list is used to ensure you and the supplier are using the most recent version.

Figure 2: Suggested Phase-In Targeted Chemical Reduction Requirements

Tier 3 Chemicals			Communicate future preference for suppliers that disclose which products contain Tier 3 Chemicals	Prefer suppliers that disclose which products contain Tier 3 Chemicals or require disclosure	Prefer suppliers that offer alternatives to products containing Tier 3 Chemicals	Require that suppliers restrict products containing Tier 3 Chemicals to those where no alternative exists	
	Tier 2 Chemicals		Communicate future preference for suppliers that disclose which products contain Tier 2 Chemicals	Prefer suppliers that disclose which products contain Tier 2 Chemicals or require disclosure	Prefer suppliers that offer alternatives to products containing Tier 2 Chemicals	Require that suppliers restrict products containing Tier 2 Chemicals to those where no alternative exists	Continue same requirement
		Tier 1 Chemicals	Communicate future preference for suppliers that disclose which products contain Tier 1 Chemicals	Prefer suppliers that disclose which products contain Tier 1 Chemicals or require disclosure	Prefer suppliers that offer alternatives to products containing Tier 1 Chemicals	Require that suppliers restrict products containing Tier 1 Chemicals to those where no alternative exists	Continue same requirement
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	

VII. Suggestions for Tiered Priority Chemicals

1. Suggestion for Tier One Chemicals.

Organizations may wish to start with only a few chemicals or a short list of chemicals. See Appendix 1 for links to recommended lists.

Persistent, Bioaccumulative, Toxic Chemicals (PBTs) are a good choice for Tier 1 prioritization. Rationale: PBT chemicals are prioritized for phase out in many authoritative government programs because PBTs released to the environment can contaminate the earth and the foodweb for years. Persistent chemicals do not easily degrade. These chemicals can travel by atmospheric transport far from their sources. Bioaccumulative chemicals build up in the food chain—animals cannot excrete them as quickly as they take them in. This effect can magnify exponentially up the food chain.

Asthmagens are chemicals that can trigger or induce asthma. Rationale: It is well-documented that patients, staff and visitors to hospitals and clinics are at some

risk of experiencing an asthma attack. The presence of asthmagens and other respiratory toxicants poses threats particularly to people who are already ill. The prevalence of asthma in children and adolescents has risen by 25-75% per decade since 1960. Asthma in the workplace is the most commonly cited occupational lung condition. Workplace exposures result in decreased performance, lost work time and significant costs for health care. Prioritizing workplace hazards for reductions and elimination can result in improved performance, better patient outcomes, and decreased costs. Health Care Without Harm has developed a list of chemicals known to be associated with asthma in health care.¹³

Emerging Chemicals and Materials of Concern.

These chemicals are usually persistent, bioaccumulative toxic chemicals, but concerns about them are too new for them to have been added to most authoritative lists. Emerging materials of concern could include some nanomaterials. **Rationale:** US PBT lists are *not* regularly updated, so they often miss chemicals that have recently been identified as problematic. Some of these chemi-

What are the limitations of using established chemical lists?

As described above, using lists of targeted chemicals is only one part of a comprehensive chemicals policy, because lists are always inherently incomplete and not comprehensive. Lists are incomplete for the following reasons:

- *Omission of untested chemicals.* Lists of chemicals with specific health risks (i.e. lists of carcinogens, or lists of reproductive toxicants) do not contain chemicals that have not been tested for this risk. A list of carcinogens contains only chemicals that have been *tested* for carcinogenicity, and for which there are a sufficient number of studies for scientists to be confident in the conclusions. Since most chemicals have never been tested for carcinogenicity, these lists are inherently limited.
- *Use of political, volume, environmental presence, or other criteria for inclusion.* Most lists use criteria other than toxicity or environmental attributes to determine which chemical gets on the list. Often these criteria are not explicit or are not applied equally to all chemicals, because the list was determined in the course of international negotiations or there is a public petition process to change the list.
- *No list for some endpoints.* For some toxicity endpoints, such as aquatic toxicity, no group has developed a list.
- *No list developed for the purpose of addressing chemicals in the supply chain.* All the lists described in Appendix 1 were developed for purposes other than implementing a supply chain chemicals policy. Some lists will be time-consuming for suppliers to review because they contain many items that are not relevant to this purpose—such as pharmaceuticals or they include hazards associated with activities, such as working under UV lamps. Most established lists do not specifically target toxic materials that may be rare elsewhere but tend to be used in health care.
- *No authoritative list for some endpoints.* For some endpoints, authoritative lists, such as those established by government bodies, are not available because there is no regular mechanism for establishing and maintaining such lists. For some of these endpoints, other groups have developed lists, and we note these in Appendix 1.

cal classes represent major environmental and public health threats. These chemicals include: perfluorinated chemicals and brominated flame retardants. See rationale under PBTs. There are no testing requirements for some new technologies such as nanomaterials.

Carcinogens, Mutagens and Reproductive Toxicants include chemicals that can cause cancer, genetic mutations and reproductive system damage. **Rationale:** Exposure to these chemicals is clearly linked to health problems that health care providers would like to prevent. The state of California publishes a list of chemicals known to the state to cause cancer and reproductive toxicity, and products sold in California that pose a risk of exposure to these substances must be labeled as such. Thus, most of your suppliers will be familiar with this list. In addition, this list is well established, and is regularly updated.

2. Suggestion for Tier Two or Tier Three Chemical Lists

Very Persistent, Very Bioaccumulative Chemicals (vPvB). Chemicals that have incomplete toxicity data, but evidence a strong tendency to persist and to bioaccumulate should also be prioritized. **Rationale:** See above rationale for persistence and bioaccumulation. Because there is so little data on toxicity, chemicals that will be around for years and that have the potential to contaminate the entire food web - but have not been thoroughly tested - should be presumptively phased out until they are adequately tested. In addition, chemicals with these characteristics are considered so problematic that the European Union will require authorization for use under the new European chemical regulatory system.

Endocrine Disrupters. Exposure to chemical substances can cause adverse effects on the endocrine system, which is comprised of the organs and glands that secrete hormones. Hormones control normal physiological processes, maintaining the body's homeostasis. Compounds that are toxic to the endocrine system may cause diseases such as hypothyroidism, diabetes mellitus, hypoglycemia, reproductive disorders, and cancer.¹⁴ **Rationale:** Chemicals which are endocrine disrupters have been targeted for concern by various US regulatory bodies and will be required to be authorized under the new European chemical regulatory system.

Important Indoor Air Pollutants. Chemicals known to be linked to asthma or indoor air quality health concerns should be prioritized. **Rationale:** In a 1987 study, the U.S. Environmental Protection Agency (U.S. EPA) ranked indoor air pollution fourth in cancer risk among the top environmental problems analyzed. Indoor air pollutants are often higher than outdoor air.¹⁵ Workplace exposures result in decreased performance, lost work time and significant costs for health care. Prioritizing workplace hazards and indoor air pollutants for reductions and elimination can result in improved performance, better patient outcomes, and decreased costs.

Neurotoxicants can damage the brain or nervous system. **Rationale:** Chemicals that are known to disrupt the functioning of the nervous system should be prioritized, particularly in areas where children will be present.

Developmental Toxicants. Developmental toxicants are agents that cause adverse effects on the developing child. Effects can include birth defects, low birth weight, biological dysfunctions, or psychological or behavioral deficits that manifest as the child grows. Maternal exposure to toxic chemicals during pregnancy can disrupt the development or even cause the death of the fetus.

Immune System Toxicants. Immunotoxicity is defined as adverse effects on the functioning of the immune system that result from exposure to chemical substances. Altered immune function may lead to the increased incidence or severity of infectious diseases or cancer, since the immune system's ability to respond adequately to invading agents is suppressed. Identifying immunotoxicants is difficult because chemicals can cause a wide variety of complicated effects on immune function. **Rationale:** The immune system is the body's defense. Compromised immune systems allow the development of disease that would not ordinarily take hold. Eliminating immune system toxicants may be particularly crucial in the health care setting, where patients are already ill, and may have compromised immune systems.

Chapter Notes

11. “What is the TSCA Chemical Substance Inventory?” US EPA, <http://www.epa.gov/opptintr/newchems/pubs/invntory.htm> cited 11/27/06.
12. “Chemical Hazard Data Availability Study: What Do We Really Know About the Safety of High Production Volume Chemicals?” US EPA, April 1999, <http://www.epa.gov/chemrtk/pubs/general/hazchem.pdf>.
13. *Risks to Asthma Posed by Indoor Health Care Environments A Guide to Identifying and Reducing Problematic Exposures*, “Health Care Without Harm,” Autumn 2006, <http://www.noharm.org/details.cfm?type=document&id=1315>
14. “Endocrine Toxicants,” Scorecard website, http://www.scorecard.org/health-effects/chemicals-2.tcl?short_hazard_name=endo&all_p=t
15. “Indoor Air Pollution: A Serious Public Health Problem,” California Air Resources Board, 5/2/01, <http://www.arb.ca.gov/research/indoor/rediap.htm>

C1.2.1 SUPPLY CHAIN STRATEGY 2: TARGETED CHEMICALS

Case Study: Major Health System

Case Study: Major Health System Targets Chemicals in RFPs

Major Health System is requesting that all vendors disclose which of their products contain chemicals identified as carcinogens, reproductive toxicants, persistent, bioaccumulative toxicants, halogenated organics, and phthalates by appending these questions to all their RFPs along with a disclosure spreadsheet:

A. Phthalate Reduction. Major Health System is committed to minimizing the amount of phthalates, including di-ethylhexyl phthalate (DEHP), used in their operation and desires to avoid the acquisition of products that contain phthalates whenever feasible alternatives exist that do not compromise patient care. Supplier must provide information in relation to those Products that contain phthalates. Chemicals considered phthalates include but are not limited to bis (2-ethylhexyl) phthalate (DEHP) (CAS 117-81-7); dibutyl phthalate (DBP) (CAS 84-74-2 201-557-4); benzyl butyl phthalate (BBP) (CAS 85-68-7); diisononyl phthalate (DINP) (CAS 28553-12-0 and 68515-48-0); diisodecyl phthalate (DIDP) (CAS 26761-40-0 and 68515-49-1); dioctyl phthalate (DNOP) (CAS 117-84-0)

___ The Products do not contain phthalates.

___ The Products that contain phthalates are identified in Exhibit A to this Agreement, which specifies the chemical name of the phthalate and the amount of phthalates contained in each product that contains phthalates and indicates if a feasible phthalate-free alternative is available. Supplier must specify the alternative component that is replacing DEHP.

B. Halogenated Flame Retardants (HFRs) and other halogenated organic chemicals. Major Health System is committed to minimizing the amount of halogenated organic chemicals (HOCs) used in their operation and desires to avoid the acquisition of Products that contain HOCs when-

ever feasible alternatives exist that do not compromise patient care. HOCs are defined as chemicals containing a carbon-halogen bond. Halogens include fluorine, chlorine, bromine, and iodine. Supplier must provide information in relation to those Products that contain HFRs and HOCs.

___ The Products do not contain HOCs.

___ The Products that contain HOCs are identified in Exhibit A to this Agreement, which specifies the amount of HOCs contained in each product that contains HOCs and indicates if a feasible HOC-free alternative is available. Supplier must specify the alternative component that is replacing halogenated flame retardants.

C. Persistent, Bioaccumulative and Toxic Compounds Reduction. Major Health System is committed to minimizing the amount of persistent, bioaccumulative and toxic compounds (PBTs) designated as an EPA Waste Minimization Priority Chemical at <http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm>, and the Great Lakes Binational Toxics Strategy at <http://www.epa.gov/glnpo/p2/bns.html>, used in their operation and desires to avoid the acquisition of Products that contain PBTs whenever feasible alternatives exist that do not compromise patient care. Supplier must provide information in relation to those Products that contain PBTs.

___ The Products do not contain PBTs.

___ The Products that contain PBTs are identified in Exhibit A to this Agreement, which specifies the amount of the PBTs contained in each product that contains PBTs and indicates if a feasible PBT-free alternative is available. Supplier must specify the alternative component that is replacing the PBTs.

more>>

D. Carcinogens and Reproductive Toxins Reduction.

Major Health System is committed to minimizing the amount of carcinogens and reproductive toxins (as delineated on the lists for California Proposition 65, http://www.oehha.ca.gov/prop65/prop65_list/newlist.html) used in their operations and desires to avoid the acquisition of Products that contain carcinogens and reproductive toxins whenever feasible alternatives exist that do not compromise patient care. Supplier must provide information in relation to those Products that contain carcinogens or reproductive toxins.

___ The Products do not contain carcinogens or reproductive toxins.

___ The Products that contain carcinogens or reproductive toxins are identified in Exhibit A to this Agreement, which specifies the amount of carcinogen or reproductive toxin contained in each product that contains a carcinogen or reproductive toxin and indicates if a feasible carcinogen-free or reproductive toxin-free alternative is available. Supplier must specify the alternative component that is replacing the carcinogen or reproductive toxin.

I. What is an Advocacy Strategy?

An advocacy strategy is a plan to influence policy beyond your institution in order to achieve your chemicals policy goals.

II. Why is this strategy necessary?

- The failure of chemical regulation in the United States creates a burden for product purchasers and users (see A1, *Comprehensive Chemicals Policy in Health Care: Rationale*).
- This failure creates difficulties for health care, including assessing the risks posed by products, and the safety of alternatives.
- Historically voluntary initiatives on the part of chemical manufacturers have not been sufficient to solve the problem.
- It is extremely inefficient for each institution to develop its own disclosure, testing and screening requirements, and for vendors to meet a multiplicity of requests.
- The burden on purchasers and users would be greatly reduced if laws and regulations required full toxicity testing, with publicly available results, provided support for the development of safer alternatives, and required substitution with safer chemicals and incentives to drive markets toward those alternatives.

III. Are there efforts currently underway to reform our laws and regulations?

Major legislative efforts to improve chemical regulation are occurring across the globe:

- In Europe, the new Registration, Evaluation and Authorization of Chemicals (REACH) regulations¹⁶ will require comprehensive testing for all chemicals (with greater requirements for high volume chemicals) and authorization for uses of chemicals deemed most hazardous. This regulation is likely to have global repercussions because the European market is so large, and many US companies sell products in Europe.
- In the United States, there are proposals for reform at the state and national level:
 - › In California, a proposed bill to reform that state's policy was introduced in 2007.
 - › State legislators in Washington, Massachusetts, Maine, New York, Illinois, Minnesota, Michigan, Connecticut, Oregon, and other states have proposed legislation related to chemicals policy goals.
 - › At the national level, the Kid's Safe Chemicals Act was first introduced in 2006. It proposes a total overhaul of our chemical testing program.
- Globally, the International Conference on Chemicals Management of the UN adopted the Strategic Approach to International Chemicals Management (SAICM)—a global policy framework for international action on chemical hazards that supports the achievement of the goal, by the year 2020, that chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health.

IV. What legislative and policy initiatives should health care support?

Legislative and policy initiatives that could reduce the burden on health care include:

- Phase outs of problematic chemicals that lead to disease
- Incentives for the creation and adoption of safer chemicals
- Requirements for the full disclosure of chemical ingredients
- Requirements for full toxicity testing for all chemicals
- Requirements for substitution of hazardous chemicals with safer alternatives
- Green chemistry initiatives that help provide incentives for the development of alternatives

V. Why is health care's voice important?

Health care's mission to prevent and heal makes the sector a particularly powerful advocate for safer chemicals laws. Because the current chemical regulatory system creates a large burden for health care facilities that are attempting to create a healthy environment and workplace, health care is in a position to advocate for new policies and regulations that better serve their mission and interests. The inertia of our current regulatory system will require powerful voices to redirect our laws toward solutions that better serve public, worker and patient health, and the economic well-being of downstream industries.

VI. What are the elements of an Advocacy Strategy?

1. Learn what efforts are currently underway to reform laws and regulations in your state and nationally.
 - Contact HCWH at 703-243-0056 or email info@hcwh.org.
2. Consider what type of advocacy will best serve the interests of your institution.
 - Testifying at legislative hearings
 - Writing letters
 - Joining state coalitions working for reform
 - Advocating with elected representatives
 - Publicizing the organization's position on the need for chemicals policy reform

3. Educate institution's lobbyists about need for chemicals policy reform
4. Support state level efforts to reform chemicals policy
5. Support federal efforts to reform chemicals policy

VII. What principles could I consider to evaluate whether a federal or state initiative advances chemicals policy reform?

Health Care Without Harm has endorsed the "Louisville Charter for Safer Chemicals," a set of six principles to guide reform of our nation's chemical laws. Those principles are:

1. Require Safer Substitutes and Solutions
2. Phase Out Persistent, Bioaccumulative, or Highly Toxic Chemicals
3. Give the Public and Workers the Full Right-to-Know and Participate
4. Act with Foresight
5. Require Comprehensive Safety Data for All Chemicals
6. Take Immediate Action to Protect Communities and Workers (see <http://www.louisvillecharter.org/>).

The American Nurses Association has endorsed a chemicals policy that "advocates a course of action both nationally and globally and through the nationwide state legislative agenda that reduces the use of toxic chemicals requiring that less harmful chemicals be substituted whenever possible; supports labeling and full disclosure mechanisms; demands adequate information on the health effects of chemicals and chemicals in products before they are introduced on the market; creates more streamlined methods for chemicals to be removed from use..."

Chapter Notes

16. See http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm for more information on REACH.

I. What is an occupational health strategy?

An occupational health strategy regularly and systematically identifies hazardous exposures in the workplace and uses elements from the Hierarchy of Controls to protect workers. Mechanisms for worker participation in decision-making are a critical part of this strategy. The Hierarchy of Controls approach is a set of actions that are prioritized from the most protective to the least protective:

1. Elimination of the hazard from the workplace when feasible.
2. Substitution for the hazard with less hazardous products and processes.
3. Engineering remedies, such as isolating workers from exposures or increased room ventilation to dilute airborne exposures.
4. Administrative remedies such as limiting the time any given worker is exposed to potentially hazardous exposures.
5. Personal protective equipment, such as gloves, respirators, and eye protection.¹⁷

II. Why do we need an occupational health substitution strategy?

An occupational health strategy maintains a safe and healthy workplace. Prevention not only reduces major illness and injury, but is more cost-effective. In addition to worker safety, patient safety needs to be considered when selecting potentially hazardous chemicals to be used in the health care setting (i.e. disinfectants, sterilants, pesticides, cleaners and other hazardous chemicals). By implementing a comprehensive occupational health policy, employers will determine the health risks associated with current products and processes, eliminate hazards where possible, and identify safer alternatives. This process results in the selection of safer substitutes or the elimination of unnecessary hazards, creates healthier and safer work places and patient/public areas. This process will also ideally help create market forces for the creation of safer alternatives.

“Health care is the leading industry for work-related asthma.”

Presently, workers in the U.S. are protected by the Occupational Safety and Health Administration’s (OSHA’s) Hazard Communication (Haz Com) Standard, often referred to as the Worker Right-to-Know. The Haz Com standard does not provide sufficient worker protection, because it merely mandates that workers receive information about potentially hazardous exposures rather than require additional worker protection. While educating workers about potential health and safety hazards is a critical element of the standard’s requirement, without a requirement for associated reduction of exposures, no real health and safety progress is achieved. This is further hindered by the poor quality of information provided by chemical manufacturers on Material Safety Data Sheets (MSDS), which are the chief conveyor of information related to potentially hazardous chemicals. MSDS sheets have been demonstrated to be inaccurate and in some cases incomprehensible. There is also no standardized format for key information.

III. Are health care workers at increased risk?

Due to the toxic nature of many chemicals in the health care setting, additional protection is needed for health care workers. Health care is the leading industry for work-related asthma. Several chemicals that are commonly used in health care are either asthmagens (meaning they can cause asthma) or asthma triggers (meaning they cause symptoms in a person with asthma). Potentially toxic chemicals in hospitals include glutaraldehyde, latex, ethylene oxide (EtO, a sterilant), cleaning products, pesticides, drugs, disinfectants, and floor care products (wax and strippers). Finally, many of the pharmaceuticals that health care workers may handle are associated with reproductive and developmental effects.

IV. What is the process for establishing an occupational health strategy?

An occupational health strategy begins with the development of a committee at the health care institution that is charged with implementing a program to decrease workplace chemical exposures. Existing health and safety committees may serve this function. This multidisciplinary team approach is critical for creating an infrastructure for the occupational health program that is sustainable as well as health protective for workers and patients. This committee should include frontline workers, such as nurses, housekeeping and laboratories and representatives from key departments, such as the health and safety department and environmental services. If there is an occupational health clinic/office within the facility, it should be represented as well.

V. What are the elements of an occupational health strategy?

- Development or empowering of existing occupational health committee.
- Implementation of a facility based Incident Reporting System.
- Creation of a system for workers to identify chemicals of concern, and to request an evaluation of a chemical or exposure.
- Transparent method for assessments of exposure to hazards.
- Review of scientific literature regarding chemicals of concern, and surveys of workers' symptoms that may be related to exposure (headaches, dizziness, asthma, respiratory distress, nausea).

“An occupational health strategy begins with the development of a committee at the health care institution that is charged with implementing a program to decrease workplace chemical exposures.”

VI. What are the tasks of an occupational health program committee?

- Evaluate hazards in the hospital that can lead to occupational problems (key questions about the hazards to be evaluated include where the chemical is used, who is exposed, what are potential health effects).
- Develop a plan to communicate those hazards to appropriate staff.
- Research and evaluate alternatives to the hazards (get data on alternatives).
- Develop an elimination or substitution strategy where safer alternatives are available.
- Control hazards where safer substitutes are not available by applying the hierarchy of controls with engineering, work practice and Personal Protective Equipment (PPE) to protect workers.

Chapter Notes

17. When applying PPE to protect workers from chemicals that cannot be substituted, the chemical barrier property of the gloves must be considered. Latex is an inadequate barrier for many chemicals. Every facility should at the minimum provide nitrile gloves for protection and access to silver shield gloves.

D1

Annotated List of Chemical Lists for Consideration of use in Supply Chain Targeted Chemicals Strategy as Outlined in Section C.1.2

Note that the list of chemicals included in this document is not comprehensive. In addition, as described in section C.1.2., using lists of targeted chemicals is only one part of a comprehensive chemicals policy, because lists are always inherently incomplete and not comprehensive. Lists are incomplete for the following reasons:

- Omission of untested chemicals. Lists of chemicals with specific health risks (i.e. lists of carcinogens, or lists of reproductive toxicants) do not contain chemicals that have not been tested for this risk. A list of carcinogens contains only chemicals that have been tested for carcinogenicity, and for which there are a sufficient number of studies for scientists to be confident in the conclusions. Since most chemicals have never been tested for carcinogenicity, these lists are inherently limited.
- Use of political, volume, environmental presence, or other criteria for inclusion. Most lists use criteria other than toxicity or environmental attributes to determine which chemical gets on the list. Often these criteria are not explicit or are not applied equally to all chemicals, because the list was determined in the course of international negotiations or there is a public petition process to change the list.
- No list for some endpoints. For some toxicity endpoints, such as aquatic toxicity, no group has developed a list.
- No list developed for the purpose of addressing chemicals in the supply chain. All the lists described below were developed for purposes other than implementing a supply chain chemicals policy. Some lists will be time-consuming for suppliers to review because they contain many items that are not relevant to this purpose--such as pharmaceuticals or they include hazards associated with activities, such as working under UV lamps. Most established lists do not specifically target toxic materials that may be rare elsewhere but tend to be used in health care.
- No authoritative list for some endpoints. For some endpoints, authoritative lists, such as those established by government bodies, are not available because there's no regular mechanism for establishing and maintaining such lists. For some of these endpoints, other groups have developed lists, and we note these below.

Category	List	URL	Advantages	Limitations for Supply Chain Strategy	Changes Regularly?	Recommendation for use in Supply Chain Strategy
PBTs	Washington State PBT Rule List	List starts on page 8 of the rule, found at http://www.ecy.wa.gov/lawsrules/wac173333/p0407_cont_a.pdf	This is the only PBT list to include chemicals recently identified as environmentally problematic, such as certain brominated flame retardants.	This list includes chemicals no longer in commerce or not intentionally produced, such as dioxins and furans and polycyclic aromatic hydrocarbons. Although this list includes two phthalates, it does not include Di (2-Ethylhexyl) Phthalate, commonly used in medical devices, which is not generally bioaccumulative.	This list may change, but is not regularly updated.	Yes, HCWH recommends using this list to target PBTs in a Supply Chain Strategy.

(Part 2 of 4) Annotated List of Chemical Lists for Consideration in Targeted Chemicals Strategy

Category	List	URL	Advantages	Limitations for Supply Chain Strategy	Changes Regularly?	Recommendation for use in Supply Chain Strategy
PBTs & PTs	EPA's RCRA Waste Minimization Prioritization List	http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm		This list was established to prioritize chemicals in hazardous waste, not chemicals in commerce. This list includes chemicals no longer in commerce or not intentionally produced, such as dioxins and furans and polycyclic aromatic hydrocarbons.	This list is unlikely to change.	Yes, HCWH recommends using this list to target PBTs & PTs in a Supply Chain Strategy.
Asthmagens	Health Care Without Harm has developed a list of chemicals known to be associated with asthma in health care.	http://www.noharm.org/details.cfm?type=document&ID=1315	This list was developed by experts in health care based on a review of the peer-reviewed literature. It is health care specific and studies show these chemicals are linked to negative outcomes in institutions.	The list is not an authoritative government list.	No	Yes, HCWH recommends using this list to target asthmagens in a Supply Chain Strategy.
Emerging Chemicals of Concern	California Department of Toxic Substances Control	http://www.dtsc.ca.gov/AssessingRisk/EmergingContaminants.cfm	These chemicals, although recently identified as problematic, may pose great threats to health and the environment.	This is not an official list but an informal listing of chemical categories that have been recently identified as problematic.	Yes	Yes, HCWH recommends this list to address emerging chemicals of concern in a Supply Chain Strategy.
Carcinogens	California Proposition 65 list of chemicals known to the state to cause cancer or reproductive toxicity	Scroll down at http://www.oehha.org/prop65/prop65_list/Newlist.html to link to the most recent list.	This list includes almost all substances identified as carcinogens by IARC and the NTP (See below).	California does not have the resources to review all chemicals in commerce, thus this list is inherently limited. If you wish to use only the list of carcinogens, not the list of reproductive toxicants, you must specify clearly in your vendor communications.	This list is updated regularly.	Yes, HCWH recommends using this list to target carcinogens in a Supply Chain Strategy.
Carcinogens	International Agency for Research on Cancer (IARC) Substances in Group 1, 2A, and 2B.	http://monographs.iarc.fr/ENG/Classification/crthall.php	IARC is a highly respected organization.	IARC does not have the resources to review all chemicals in commerce, thus this list is inherently limited.	This list is updated regularly.	HCWH suggests using the California Proposition 65 list to target carcinogens in a Supply Chain Strategy because the Prop. 65 list includes almost all the chemicals on the IARC list, although this list could be used if a small list is desired.

(Part 3 of 4) Annotated List of Chemical Lists for Consideration in Targeted Chemicals Strategy

Category	List	URL	Advantages	Limitations for Supply Chain Strategy	Changes Regularly?	Recommendation for use in Supply Chain Strategy
Carcinogens	US National Toxicology Program (NTP) Report on Carcinogens Known and Reasonably Anticipated Human Carcinogens	http://ntp.niehs.nih.gov/index.cfm?objectid=72016262-BDB7-CEBA-FA60E922B18C2540	The US NTP is a respected organization.	NTP does not have the resources to review all chemicals in commerce, thus this list is inherently limited.	This list is updated regularly.	HCWH suggests using the California Proposition 65 list to target carcinogens in a Supply Chain Strategy because the Prop. 65 list includes almost all the chemicals on the NTP list.
Reproductive Toxicants	California Proposition 65 list of chemicals known to the state to cause cancer or reproductive toxicity	Scroll down at http://www.oehha.org/prop65/prop65-list/Newlist.html to link to the most recent list.	This is the only list of reproductive toxicants maintained by a US government body.	California does not have the resources to review all chemicals in commerce, thus this list is inherently limited. If you wish to use only the list of reproductive toxicants not the list of carcinogens, you must specify clearly in your vendor communications.	This list is updated regularly.	Yes, HCWH recommends using this list to target reproductive toxicants in a Supply Chain Strategy.
Very persistent, very bioaccumulative (vPvB)	European Union	http://www.defra.gov.uk/environment/chemicals/achs/060606/achs0614d.pdf		This list is not final and currently available only as a draft.	It is not known when this list will be updated or finalized.	Yes, HCWH recommends using this list to address the substances labeled (in red) as PBTs, vPvBs, and POPs in a Supply Chain Strategy.
Endocrine disrupters	Environmental Defense Scorecard	http://www.scorecard.org/health-effects/chemicals-2.tcl?short_hazard_name=endo&all_p=t	This list compiles information from many different sources. This list contains all the chemicals from the EU Annex 6 list described below, plus other chemicals identified from other sources.	This list was not prepared by an authoritative body and the method to create it is not well-documented.	It is not known if this list is updated.	Yes, HCWH recommends using this list to target endocrine disrupters in a Supply Chain Strategy.
Endocrine disrupters	European Union Final Report Towards the establishment of a priority list of substances for further evaluation of their role in endocrine disruption Annex 15, List of 66 substances with classification high, medium or low exposure concern	List is at http://ec.europa.eu/environment/docum/pdf/bkh_annex_15.pdf . The remainder of the report is at http://ec.europa.eu/environment/docum/01262_en.htm .	The European Union used a transparent and robust method to prioritize chemicals.		This is a draft list created as part of a process to create a final list. It is not known when the list will be finalized.	Yes, HCWH recommends this list to target endocrine disrupters in a Supply Chain Strategy.

(Part 4 of 4) Annotated List of Chemical Lists for Consideration in Targeted Chemicals Strategy

Category	List	URL	Advantages	Limitations for Supply Chain Strategy	Changes Regularly?	Recommendation for use in Supply Chain Strategy
Indoor Air Contaminants Chronic Reference Exposure Level (CREL) Chemicals	California Office of Environmental Health Hazard Assessment (OEHHA)	http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html	This is a list of chemicals with established exposure limits due to concerns about occupational or indoor air exposures. This list is used as part of California's 1350 indoor air standard.		This list is updated when new CRELs are established.	Yes, HCWH recommends this list for addressing air pollutants in a Supply Chain Strategy.
Neurotoxicants	List from "Developmental neurotoxicity of industrial chemicals" by P Grandjean and P Landrigan, published in The Lancet, Volume 368, Issue 9553, 16 December 2006-22 December 2006, Pages 2167-2178.	Currently available at http://www.precaution.org/lib/developmental_neurotox_of_chemicals.061108.pdf .	The paper transparently explains the selection criteria for the list. This list contains 201 chemicals.	This list was not prepared by an authoritative body.	This list is not updated.	Yes, HCWH recommends this list for addressing neurotoxicants in a Supply Chain Strategy.
Neurotoxicants	Environmental Defense Scorecard list of suspected neurotoxicants	http://www.scorecard.org/health-effects/chemicals-2.tcl?short_hazard_name=neuro&all_p=t	This is one of the few compiled lists of suspected neurotoxicants. This list contains over 1000 chemicals.	This list was not prepared by an authoritative body and the method to create it is not well-documented.	It is not known if this list is updated.	Yes, HCWH recommends this list for addressing neurotoxicants in a Supply Chain Strategy.
Known developmental toxicants	Environmental Defense Scorecard	http://www.scorecard.org/health-effects/chemicals.tcl?short_hazard_name=devel&all_p=t	This list is one of the few developmental toxicant lists assembled.	This list was not prepared by an authoritative body and the method to create it is not well-documented.	It is not known if this list is updated.	Yes, HCWH recommends this list for addressing known developmental toxicants in a Supply Chain Strategy.
Immune toxicants	Environmental Defense Scorecard	http://www.scorecard.org/health-effects/chemicals.tcl?short_hazard_name=immun&all_p=t	This list is one of the few immune system toxicant lists assembled.	This list was not prepared by an authoritative body and the method to create it is not well-documented.	It is not known if this list is updated.	Yes, HCWH recommends this list for addressing immune toxicants in a Supply Chain Strategy.

The draft checklist below can be adapted to accommodate your institutional implementation plan.

Initial tasks:

- Is someone responsible for ensuring that a process to consider a chemicals policy moves forward?
- Buy-in: are all important constituents involved?

Creating a Policy:

- Has it been determined how chemicals policy fits in with other existing programs?
- Have existing institutional values been considered?
- Does the policy take into account:
 - Precaution
 - Substitution
 - Extended producer responsibility
 - Full disclosure and right-to-know
 - Accountability
- Has policy been created?
- Has policy been approved?

Plan of action/Pilot project:

- Does the action plan take into account:
 - Precaution
 - Substitution
 - Extended producer responsibility
 - Full disclosure and right-to-know
 - Accountability
- Has the plan of action been created?
- Does the plan of action include:
 - Measurable Goals
 - Timelines
 - Point people responsible and accountable for particular implementation tasks
 - Education of constituents
 - Labeling and communication to constituents
 - Auditing of information collected
- Is someone responsible for ensuring the plan of action is followed and completed?
- Have you created your own checklist based on your plan of action?

Continuing:

- Has a review of the pilot project(s) been scheduled?
- Has the pilot project been reviewed and evaluated?
- Is there a plan for future action based on pilot project results?
- Has an annual progress report been scheduled?
- Has an annual progress report been completed and disseminated?

