

OR HB 3162

High Priority Chemicals of Concern for Children's Health in Children's Products

Good afternoon Mr. Chairman and members of the committee, my name is Tim Shestek with the American Chemistry Council. Our member companies are the leading manufacturers of chemical products and we certainly share the objective of the bill sponsors as the safety of our products is our top priority. We invest significant resources in product and environmental stewardship and share a common commitment to advancing the safe and secure management of chemical products and processes. If we didn't believe our products were already safe for their intended uses, we wouldn't be making them.

Two major points I'd like to touch on today include 1) our concern that the underlying premise on which this bill is based is fundamentally flawed and 2) many of the issues that this bill seeks to address – reporting information about chemicals; prioritization of chemicals; assessment of chemicals; and regulation of chemicals – are being addressed under new and expanded regulatory programs at US EPA.

LACK OF SCIENTIFIC FOUNDATION

We believe the bill falls short on two fundamental science policy issues:

- The false presumption that the presence of any identified chemical in a children's product means the product is somehow harmful; and,
- The bill's underlying premise that children's products contain chemicals that pose a risk to the health of Oregon's children.

For any chemical, natural or synthetic, the degree of toxicity and the potential for harm is dependent upon the dose and exposure. Federal government agencies, including the USEPA and the Centers for Disease Control, as well as states such as Washington readily acknowledge that the mere presence of a substance in the environment, in our bodies, or in our products, does not equate to the risk of harm.

As drafted, the bill would simply result in a list of chemicals present in certain children's products without any corresponding information for the public as to what the information means or perhaps more importantly doesn't mean. The bill includes those chemicals already on the Washington State Department of Ecology's Reporting List of Chemicals of High Concern to Children -- but bear in mind Washington's Department of Ecology has not conducted any sort of assessment that reaches any scientific conclusion about the safety of these products. In fact, Ecology clearly states on its website the following:

- **The presence of a chemical in a children's product does not necessarily mean that the product is harmful to human health or that there is any violation of existing safety standards or laws.**

- **The reporting triggers are not health-based values.**
- **The data should not be used determine the safety of an individual product.**

Under HB 3162, the identified presence of a chemical would in fact trigger a requirement for companies to either remove or substitute the chemical or undertake an undefined waiver process. Compiling a list of chemicals is not the same as conducting a scientific evaluation on how those chemicals are used, in what amounts and whether their use poses an unreasonable risk.

In addition, it appears that there is an assumption that products on the marketplace today contain ingredients that are known to harm children. More than a dozen federal laws are in place to regulate the safety of chemicals in commerce implemented by EPA, the Consumer Product Safety Commission and Food and Drug Administration to name a few. I've taken the liberty of passing out a spreadsheet with more information on federal statutes regulating chemicals. This thinking also does not take into account the inherent need of chemical and consumer product manufacturers – both from a legal and product stewardship standpoint – to ensure their products are safe.

FEDERAL EFFORTS

Finally, it is important for the committee to understand that USEPA is implementing new reporting and risk assessment projects to further enhance the nation's chemical regulatory scheme.

In February of this year, USEPA released information on more than 7,600 chemicals it had collected from chemical manufacturers about the use of chemicals in industrial, commercial and consumer product applications. EPA has required companies to report information on chemical use on a regular basis for many years, but this year's report represented a major expansion of previous years – requiring more information on more chemicals than ever before. This included EPA's requirement that manufacturers report what they know about uses of chemicals in children's products. All of this information is publicly available on EPA's website. I've passed out an EPA fact sheet and draw your attention to the point that this data collection program "constitutes the most comprehensive source of basic screening-level, exposure related information on chemicals available to EPA."

EPA is using this type of information to inform chemical risk screening, assessment and priority setting. Last year, EPA identified 83 "Work Plan" chemicals for review and assessment and regulation where warranted. To identify these 83 priority chemicals for further review, EPA first developed a broad list of about 400 chemicals based on hazard, use and exposure screening level criteria (e.g. criteria like PBTs, probable/known carcinogens, used in children's products, repro/developmental children's health concerns, detected in biomonitoring, etc.) and then applied hazard and exposure based scores to these, based on very specific criteria.

In January, EPA developed targeted “work plan” assessments for five of the 83 work plan chemicals to be completed this year (others in 2014-2018). These five are out for public review and comment right now. This will be followed by a scientific peer review of these assessments and only at that point will EPA decide what, if any, restrictions/regulations are needed to manage the risks posed by these chemicals in various uses. I’ve passed out some additional background information on the EPA “work plan” chemical assessment effort.

At a minimum, we encourage the State of Oregon to comprehensively review the work being undertaken at EPA and leverage that information before embarking on a separate, state specific chemical reporting/management program.

For these reasons and for the reasons stated by my colleagues, we respectfully oppose HB 3162 as currently drafted. Thank you for the opportunity to provide these comments.

FACT SHEET: CHEMICALS SNAPSHOT

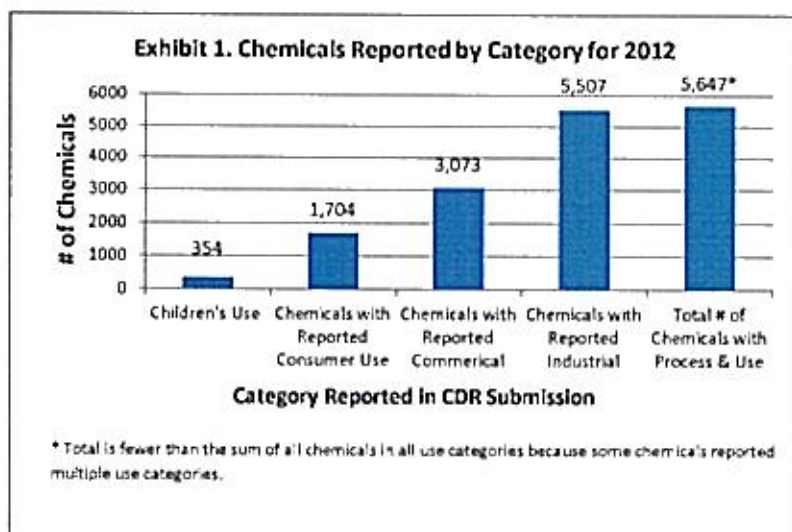
This fact sheet provides a brief overview of the chemical manufacturing, processing, and use information collected for the 2012 Chemical Data Reporting (CDR) rule. When using the data presented in this fact sheet, users should recognize that they do not have access to the complete CDR data set and should draw conclusions from the available data with care.

2012 CDR Data

Under the CDR rule, EPA collects screening-level, exposure-related information on certain chemicals included on the [Toxic Substances Control Act \(TSCA\) Chemical Substance Inventory \(TSCA Inventory\)](#) and makes that information available for use by EPA and, to the extent possible, the public. The 2012 CDR data are reported to EPA by manufacturers (including importers) of chemicals manufactured (including imported) in volumes of 25,000 pounds or more at a single site during calendar year 2011. The 2012 data also include information on industrial processing and consumer and commercial uses of certain chemicals currently listed on the TSCA Inventory. The CDR data allow EPA to have a good sense of domestic chemical manufacturing, as well as imports and use information helpful for assessing potential exposure and risk.



For the 2012 submission, 1,515 companies reporting for 4,753 sites submitted information on 7,674 chemicals.



Chemical Uses

Chemical use information is important because it helps EPA to better assess routes of potential exposure. For the 2012 CDR, EPA required that manufacturers (including importers) report consumer and commercial uses separately to distinguish between the use types. Therefore, CDR submitters are able to report a chemical's use in three

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categories: industrial, commercial, and consumer. A chemical's use information may be reported in more than one category. CDR manufacturers are also required to report whether a chemical is used in products intended for children. The 2012 data show that 354 of the chemicals reported were intended for use in children's products, 1,704 chemicals were used for consumer applications, 3,073 were used for commercial applications, and 5,507 were used for industrial applications. Process and use information was reported for 5,647 chemicals by CDR submitters for 2012.

Chemicals Reported as Used in Children's, Consumer, and Commercial Products

The threshold in 2012 to report manufacturing information for chemicals under the CDR rule was 25,000 pounds, which was the same for the 2006 collection. However, EPA expanded the range of chemicals for which more in-depth processing and use information was reported by lowering the reporting threshold for processing and use information from 300,000 pounds to 100,000 pounds.



For the 2012 CDR, 354 chemicals were reported as used in products intended for children. For purposes of the CDR, "intended for use by children" means the chemical or mixture is used in or on a product that is specifically intended for use by children age 14 or younger. Table 1 presents the top 20 chemicals reported to be used in children's products, according to the 2012 CDR data.

As stated above, the 2012 CDR required manufacturers (including importers) to report consumer and commercial uses separately. For the purposes of CDR, "Consumer use" means the use of a chemical or a mixture containing a chemical (including as part of a manufactured item, or article, such as furniture or clothing) when sold to or made available to consumers for their use. "Commercial use" means the use of a chemical substance or a mixture containing a chemical substance (including as part of an article) in a commercial enterprise providing saleable goods or services, for example dry cleaning. Table 2 lists the top 20 chemicals reported to be used in consumer products. Table 3 lists the top 20 chemicals reported to be used in commercial products.

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CHEMICAL DATA REPORTING



Table 1: Top 20 Chemicals Used in Children's Products

(Based on production volume reported to be used in children's products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses**
1	Calcium carbonate	471-34-1	1) Paper products 2) Non-TSCA use 3) Plastic and rubber products not covered elsewhere
2	Aluminum	7429-90-5	1) Food packaging 2) Metal products not covered elsewhere 3) Water treatment products
3	Propane	74-98-6	1) Plastic and rubber products not covered elsewhere
4	Ethane	74-84-0	1) Plastic and rubber products not covered elsewhere
5	Butane	106-97-8	1) Plastic and rubber products not covered elsewhere
6	Calcium oxide	1305-78-8	1) Non-TSCA use
7	Ethyl benzene	100-41-4	1) Plastic and rubber products not covered elsewhere 2) Toys, playground, and sporting equipment 3) Furniture and furnishings not covered elsewhere
8	2-Methylpropane (Isobutane)	75-28-5	1) Plastic and rubber products not covered elsewhere
9	Aluminum chloride hydroxide	12042-91-0	1) Water treatment products
10	Zinc	7440-66-6	1) Metal products not covered elsewhere
11	Glycerol	56-81-5	1) Personal care products
12	Dicalcium silicate	10034-77-2	1) Adhesives and sealants
13	Hexadecanoic acid	57-10-3	1) Laundry and dishwashing products 2) Personal care products
14	Titanium dioxide	13463-67-7	1) Non-TSCA use 2) Personal care products 3) Arts, crafts, and hobby materials
15	Sodium hydroxide	1310-73-2	1) Personal care products 2) Water treatment products
16	Aluminum hydroxide	21645-51-2	1) Plastics and plastic products not covered elsewhere 2) Foam seating and bedding products 3) Floor coverings

* The top uses listed are based on the uses reported for each chemical, not necessarily the intended use of the product by children. Descriptions under top uses are taken from appendix D of the 2012 CDR Instructions.

** Manufacturers (including importers) are reporting on downstream uses of a chemical; therefore, some uses were reported as non-TSCA uses.

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CHEMICAL DATA REPORTING



Table 1: Top 20 Chemicals Used in Children's Products (Cont.)

(Based on production volume reported to be used in children's products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses**
17	Butanedionic acid	577-11-7	1) Non-TSCA use
18	Fluorosilicic acid	16961-83-4	1) Water treatment products
19	1,6 Diisocyanatohexane homopolymer	28182-81-2	1) Floor coverings
20	Hetastarch	9005-27-0	1) Paper products

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Table 2: Top 20 Chemicals Used in Consumer Products

(Based on production volume reported to be used in consumer or both consumer and commercial products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses**
1	Tricalcium silicate	12168-85-3	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants
2	Ethanol	64-17-5	1) Fuels and related products 2) Personal care products 3) Ink, toner, and colorant products
3	Dicalcium silicate	10034-77-2	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants 3) Building/construction materials – wood and engineered wood products
4	Propane	74-98-6	1) Fuels and related products 2) Plastic and rubber products not covered elsewhere 3) Personal care products

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CHEMICAL DATA REPORTING



Table 2: Top 20 Chemicals Used in Consumer Products (Cont.)

(Based on production volume reported to be used in consumer or both consumer and commercial products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses**
5	Sulfuric acid	7664-93-9	1) Batteries 2) Paper products 3) Water treatment products
6	Butane	106-97-8	1) Fuels and related products 2) Plastic and rubber products not covered elsewhere 3) Personal care products
7	Toluene	108-88-3	1) Fuels and related products 2) Paints and coatings
8	Sodium carbonate	497-19-8	1) Building/construction materials not covered elsewhere 2) Laundry and dishwashing products 3) Water treatment products
9	Aluminum calcium iron oxide	12068-35-8	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants 3) Building/construction materials - wood and engineered wood products
10	Aluminum	7429-90-5	1) Metal products not covered elsewhere 2) Food packaging 3) Building/construction materials not covered elsewhere
11	Isopentane	78-78-4	1) Fuels and related products 2) Personal care products
12	Aluminum calcium oxide	12042-78-3	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants
13	Gasoline	86290-81-5	1) Fuels and related products
14	Calcium carbonate	471-34-1	1) Paper products 2) Adhesives and sealants 3) Non-TSCA use
15	Ethylene dichloride	107-06-2	1) Plastic and rubber products not covered elsewhere

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Table 2: Top 20 Chemicals Used in Consumer Products (Cont.)

(Based on production volume reported to be used in consumer or both consumer and commercial products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses**
16	Ammonium sulfate	7783-20-2	1) Agricultural products (non-pesticidal)
17	Diammonium phosphate	7783-28-0	1) Agricultural products (non-pesticidal) 2) Ink, toner, and colorant products
18	Chloroethene	75-01-4	1) Plastic and rubber products not covered elsewhere
19	Lead	7439-92-1	1) Batteries 2) Metal products not covered elsewhere 3) Non-TSCA use
20	Urea	57-13-6	1) Agricultural products (non-pesticidal) 2) Lawn and garden care products 3) Fuels and related products

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Table 3: Top 20 Chemicals Used in Commercial Products

(Based on production volume reported to be used in commercial or both consumer and commercial products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses**
1	Ethanol	64-17-5	1) Fuels and related products 2) Paints and coatings
2	Tricalcium silicate	12168-85-3	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants
3	Iron oxide	1309-37-1	1) Metal products not covered elsewhere 2) Building/construction materials not covered elsewhere 3) Water treatment products

*The top uses listed are based on the uses reported for each chemical, not necessarily the intended use of the product by commercial enterprises. Descriptions under top uses are taken from appendix D of the 2012 CDR Instructions.

**Manufacturers (including importers) are reporting on downstream uses of a chemical; therefore, some uses were reported as non-TSCA uses.

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Table 3: Top 20 Chemicals Used in Commercial Products (Cont.)

(Based on production volume reported to be used in commercial or both consumer and commercial products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses*
4	Ammonia	7664-41-7	1) Agricultural products (non-pesticidal) 2) Plastic and rubber products not covered elsewhere 3) Fabric, textile, and leather products not covered elsewhere
5	Urea	57-13-6	1) Agricultural products (non-pesticidal) 2) Lawn and garden care products 3) Building/construction materials – wood and engineered wood products
6	Ammonium nitrate	6484-52-2	1) Agricultural products (non-pesticidal) 2) Explosive materials 3) Lawn and garden care products
7	Propane	74-98-6	1) Fuels and related products 2) Plastic and rubber products not covered elsewhere 3) Agricultural products (non-pesticidal)
8	Butane	106-97-8	1) Fuels and related products 2) Plastic and rubber products not covered elsewhere 3) Personal care products
9	Dicalcium silicate	10034-77-2	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants 3) Building/construction materials – wood and engineered wood products
10	Sulfuric acid	7664-93-9	1) Batteries 2) Paper products 3) Water treatment products
11	Diammonium phosphate	7783-28-0	1) Agricultural products (non-pesticidal) 2) Building/construction materials – wood and engineered wood products 3) Building/construction materials not covered elsewhere
12	Monoammonium phosphate	7722-76-1	1) Agricultural products (non-pesticidal) 2) Lawn and garden care products 3) Building/construction materials not covered elsewhere

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CHEMICAL DATA REPORTING



Table 3: Top 20 Chemicals Used in Commercial Products (Cont.)

(Based on production volume reported to be used in commercial or both consumer and commercial products and excluding chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs). Top Uses excludes "NKRA" and "Other" designations.)

Rank	Chemical Name	CASRN	Top Uses**
13	Calcium carbonate	471-34-1	1) Agricultural products (non-pesticidal) 2) Paper products 3) Adhesives and sealants
14	Sulfur	7704-34-9	1) Agricultural products (non-pesticidal) 2) Water treatment products 3) Lawn and garden care products
15	Aluminum calcium iron oxide	12068-35-8	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants 3) Building/Construction Materials - wood and engineered wood products
16	Sodium carbonate	497-19-8	1) Building/construction materials not covered elsewhere 2) Laundry and dishwashing products 3) Water treatment products
17	Ethylene	74-85-1	1) Plastic and rubber products not covered elsewhere 2) Non-TSCA use
18	Aluminum	7429-90-5	1) Metal products not covered elsewhere 2) Food packaging 3) Building/construction materials not covered elsewhere
19	Aluminum calcium oxide	12042-78-3	1) Building/construction materials not covered elsewhere 2) Adhesives and sealants
20	Toluene	108-88-3	1) Fuels and related products 2) Paints and coatings

*The top uses listed are based on the uses reported for each chemical, not necessarily the intended use of the product by commercial enterprises. Descriptions under top uses are taken from appendix D of the 2012 CDR Instructions

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CHEMICAL DATA REPORTING



Information by Production Volume

Production volume information is important because CDR reporting is triggered by the production volume of certain chemicals and because it can be used to assess potential exposure and risk. The total reported production volume (domestically manufactured and imported) for the 2012 data was 9.5 trillion pounds. In comparison, the total reported production volume (manufactured and imported) for the most recent data collection in 2006 was 9.9 trillion* pounds. Preliminary analysis indicates that several factors influenced the decline in overall reported production volume, including decreases in several large commodity chemicals and change in industrial processes.

The top chemicals reported based on production volume in the 2012 data collection are shown in Table 4. The table also presents the 2006 production volume for each chemical.

Table 4: Top 20 Chemicals Based on the Total Reported Production Volume

(Numbers reflect volume ranges, in order to protect confidential business information. Excludes chemicals of unknown or variable composition, complex reaction products and biological materials (UVCBs), for example petroleum streams.)

Chemical Name	CASRN	2012 Production Volume Range (billion pounds)	2006 Production Volume Range (billion pounds)	Change (2006 to 2012)
1. Carbon dioxide	124-38-9	125-130	35-40	↑
2. Ethanol	64-17-5	75-80	15-20	↑
3. Sulfuric acid	7664-93-9	70-75	70-80	↑
4. Tricalcium silicate	12168-85-3	65-70	120-125	↓
5. Calcium carbonate	471-34-1	50-55	145-150	↓
6. Iron oxide	1309-37-1	50-55	15-20	↑
7. Propane	74-98-6	40-45	70-75	↓
8. Butane	106-97-8	35-40	45-50	↑
9. Ammonia	7664-41-7	35-40	35-40	-
10. Cumene	98-82-8	35-40	5-10	↑
11. Ethane	74-84-0	35-40	20-25	↑
12. 2-Methylpropane (isobutane)	75-28-5	20-25	20-25	↑
13. Ethylene	74-85-1	20-25	50-55	↑
14. Urea	57-13-6	20-25	15-20	↑
15. Calcium oxide	1305-78-8	20-25	55-60	↓
16. Phosphoric acid	7664-38-2	20-25	10-15	↑
17. Sulfur	7704-34-9	20-25	20-25	↑
18. Dicalcium silicate	10034-77-2	15-20	85-90	↓
19. Propylene	115-07-1	15-20	130-135	↓
20. Ammonium nitrate	6484-52-2	15-20	10-15	↑

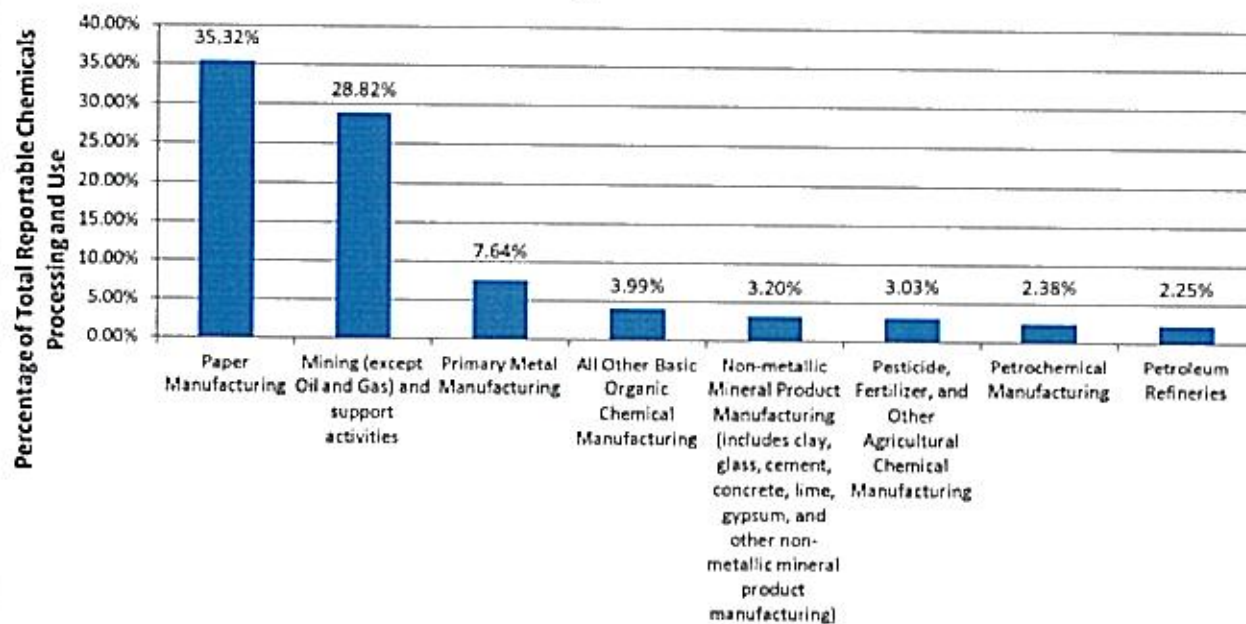
* EPA's comparison between 2012 and 2006 data identified mistakes in 2006 reporting for certain sulfite liquors. Based on anticipated corrected submissions from the reporting companies, the total production volume for the 2006 reporting period went from 26 trillion to 9.9 trillion.

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Industrial Sectors that Process and Use CDR Chemicals

For each reportable chemical, manufacturers (including importers) were required to report the Industrial Sector (IS) for all sites that received the chemical from them directly or indirectly and that process and use the chemical. For the purposes of CDR, "industrial use" means use at a site at which one or more chemicals or mixtures are manufactured (including imported) or processed. Exhibit 2 depicts the breakdown of the top eight industrial sectors reported for the 2012 data collection.

Exhibit 2. 2012 Top Eight Industrial Sectors that Processed and Used Reportable Chemicals



*Exhibit 2 represents 87% of the 2012 processing and use data for reportable chemicals. The 8 industrial sectors with the largest percentages of processing and use of reportable chemicals are displayed.

Recycling

CDR reporters were required to identify whether a chemical was recycled, remanufactured, reprocessed, or reused. According to the 2012 CDR submission, recycling was reported for 18 percent of chemicals. Collection of recycling information is valuable because EPA and other interested parties can analyze future trends in recycling.

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Confidential Business Information

Data submitters for the 2012 CDR were able to designate individual CDR data elements as confidential business information (CBI). Eleven percent of the information for the 2012 CDR was claimed as CBI by submitters. Table 5 presents the percentage of CBI claims for different data elements reported in 2012 and a comparison to 2006.

Table 5: CBI Claims by CDR Data Element

Category	Percentage of CBI Claims In 2012	Percentage of CBI Claims In 2006	Change (2006 to 2012)
Chemical Identity	3%	9%	↓
Domestic Production Volume	23%	32%	↓
Import Volume	18%	20%	↓
Processing and Use Information	6%	28%	↓
Used in Children's Products	0.4%	24%	↓

For Additional Information

For more information please visit the CDR website at <http://www.epa.gov/cdr>.

A non-confidential collection of historical data, as well as the 2012 CDR data is available at <http://www.epa.gov/cdr/tools/data/index.html>.

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Federal Statutes Regulating Chemicals

Abbreviation	Statute	Brief Summary
1. TSCA	Toxic Substances Control Act 15 U.S.C. §§ 2601 – 2695d	<ul style="list-style-type: none"> • Requires premanufacture notification for all new chemicals not on the TSCA Inventory; authorizes Environmental Protection Agency (EPA) to restrict new chemicals of concern • Authorizes EPA to require periodic reporting of information about chemicals, including manufacturing and use data and health and safety studies • Requires reporting of information that reasonably supports the conclusion of substantial risk • Authorizes EPA to require data submission (akin to premanufacture notice) before companies engage in “significant new uses” of chemicals • Authorizes EPA to issue test rules, and reporting rules for chemicals it finds may pose an unreasonable risk; chemicals may also be tested by industry through voluntary programs under TSCA • Authorizes EPA to require testing to meet good laboratory practice standards and validated protocols • Authorizes EPA to ban or restrict chemicals that pose an unreasonable risk to human health or the environment • Requires certification of TSCA compliance for all imported chemicals • Requires notification to EPA of export of chemicals that have been restricted in the United States • Supports EPA initiatives to prioritize and review chemicals and take regulatory actions to restrict chemicals where EPA deems necessary
2. FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act 7 U.S.C. §§ 136 – 136y	<ul style="list-style-type: none"> • Requires all pesticide products and their active ingredients, including antimicrobials and certain kinds of preservatives, to be registered prior to sale • Registration requires data showing that the pesticide is effective and does not pose an unreasonable risk to man or the environment; burden of proof is on pesticide manufacturer

Abbreviation	Statute	Brief Summary
		<ul style="list-style-type: none"> • Authorizes EPA to require testing to meet good laboratory practice standards and validated protocols • Requires registration of producing establishments • Requires annual production reporting • Requires reporting of adverse effects information • Requires certification of FIFRA compliance for imported pesticides • Requires detailed package labeling • Requires notification of export of unregistered pesticides
3. FFDCA	Federal Food, Drug, and Cosmetic Act 21 U.S.C. §§ 301 – 399d	<ul style="list-style-type: none"> • Prohibits the sale of any food, drug, medical device, or cosmetic that is adulterated or misbranded • Requires premarket approval of food additives, color additives, new dietary ingredients, drugs, and medical devices, including their components, based on a showing that they are safe • Requires producers of food additives that are not “generally recognized as safe” to demonstrate to a reasonable certainty that no harm will result from the intended use of their additives • Broadly defines “food additive” to include small transfers from food packaging materials
4. FQPA	Food Quality Protection Act 110 Stat. 1489, amending FIFRA and FFDCA	<ul style="list-style-type: none"> • Requires EPA to set tolerances, or maximum safe residue limits, for pesticide residues on foods • Expands EPA authority over food contact substances, e.g. antimicrobials in or on food packaging • Includes special protections for infants and children • Requires EPA to expedite approval of reduced risk pesticides
5. CAA	Clean Air Act 42 U.S.C. §§ 7401 – 7671q	<ul style="list-style-type: none"> • Sets mandatory performance levels for reducing emissions of toxic air pollutants from various categories of industrial facilities • Requires plans for the prevention of emergency releases to air of highly toxic chemicals • Requires air pollution sources to meet emission limits and obtain permits from EPA or states • Requires reporting and recordkeeping under the permits • Requires phasing out of production and use of ozone-destroying chemicals and encourages the development of “ozone-friendly” substitutes

Abbreviation	Statute	Brief Summary
6. FWPCA / CWA	Federal Water Pollution Control Act (Clean Water Act) 33 U.S.C. §§ 1251 – 1387	<ul style="list-style-type: none"> • Controls chemical discharges of pollutants to waters through the National Pollutant Discharge Elimination System (NPDES) permit program • Imposes both technology-based standards and effluent guidelines • Operates pretreatment program for industrial facilities that discharge chemicals in waste water into municipal sewer systems
7. SDWA	Safe Drinking Water Act 42 U.S.C. §§ 300f – 300j-26	<ul style="list-style-type: none"> • Requires EPA to set national health-based standards for chemicals and other contaminants in drinking water • Requires public water systems to test for contaminants and meet drinking water standards; operators must be certified
8. RCRA/ SWDA	Resource Conservation and Recovery Act, amending the Solid Waste Disposal Act 42 U.S.C. §§ 6901 – 6992k	<ul style="list-style-type: none"> • Gives EPA “cradle-to-grave” authority to control hazardous waste • Requires hazardous waste identification and tracking • Establishes extensive permitting and operating requirements for hazardous waste generators, transporters, treatment facilities, storage facilities, and disposal facilities • Requires corrective action to clean up releases of hazardous wastes or hazardous waste constituents at RCRA-regulated sites • Provides framework for management of non-hazardous solid waste
9. CERCLA / Superfund	Comprehensive Environmental Responsibility, Compensation, and Liability Act 42 U.S.C. §§ 9601 – 9675	<ul style="list-style-type: none"> • Establishes processes and standards for clean-up of hazardous waste sites and removal and remediation of contaminants • Imposes strict liability for clean-up for potentially responsible parties, including prior owners/operators, entities that arranged for waste disposal, and others, thereby ensuring that care is taken against chemical releases going forward to avoid this liability • Establishes National Oil and Hazardous Substance Pollution Contingency Plan (NCP) • Created the Agency for Toxic Substances and Disease Registry (ATSDR) within CDC Public Health Service, and other offices
10. EPCRA	Emergency Planning and Community Right-to-Know Act 42 U.S.C. §§ 11004 – 11050	<ul style="list-style-type: none"> • Requires companies to submit detailed annual reports on releases and transfers of certain toxic chemicals (Toxic Release Inventory or TRI reporting); makes reported data publicly available • Requires every community in the United States to be part of a comprehensive emergency response plan; facilities must participate in the planning process

Abbreviation	Statute	Brief Summary
		<ul style="list-style-type: none"> • Requires companies to maintain material safety data sheets (MSDSs) for hazardous chemicals and to submit the MSDSs or lists of chemicals, and annual inventory of these chemicals, to state and local emergency planning entities and the local fire department (Tier I or Tier II reporting) • Requires immediate notification of accidental chemical releases to state and local emergency planning entities • Requires notification of the presence of high quantities of listed “extremely hazardous substances” to state and local entities
11. PPA / P2 Act	Pollution Prevention Act 42 U.S.C. §§ 13101 – 13109	<ul style="list-style-type: none"> • Requires companies to file an annual toxic chemical source reduction and recycling report along with TRI report • Requires EPA to consider the effects of its regulations on reduction of pollution production at the source and to coordinate with other agencies to promote source reduction • Creates a Source Reduction Clearinghouse to foster information exchange on source reduction techniques and technical assistance for businesses • Provides grants to states for source reduction programs
12. OSH Act	Occupational Safety and Health Act 29 U.S.C. §§ 651 – 678	<ul style="list-style-type: none"> • Establishes wide-ranging hazard communication program • Requires manufacturers and importers of hazardous materials to conduct hazard evaluations of the products they manufacture or import • Requires labels and material safety data sheets for hazardous materials at the workplace and accompanying initial shipments to new customers • Requires companies to provide personal protective equipment and training to protect against chemical and other workplace risks • Requires recordkeeping of workplace injuries and illnesses and reporting of serious incidents • Maintains Occupational Chemical Database with EPA • Established the National Institute of Occupational Safety and Health (NIOSH) which researches, inter alia, chemical safety
13. HMTA	Hazardous Materials Transportation Act 49 U.S.C. §§ 5101 – 5127	<ul style="list-style-type: none"> • Requires identification of potential hazards (including toxicity, flammability, corrosivity, etc.) of transported materials and

Abbreviation	Statute	Brief Summary
		<p>products</p> <ul style="list-style-type: none"> • Requires hazard communication (shipping papers, package marking and labeling, and vehicle placarding) for various classes of hazardous materials including listed materials, hazardous wastes, and marine pollutants • Specifies packaging safety requirements • Specifies operational and training requirements for transportation of chemicals and hazardous materials by various modes (air, water, road, rail, pipeline) • Administered by Department of Transportation’s Pipeline and Hazardous Materials Safety Administration
14. CPSA / CPSIA	Consumer Product Safety Act, as amended by the Consumer Product Safety Improvement Act 15 U.S.C. §§ 2051 – 2089	<ul style="list-style-type: none"> • Establishes independent Consumer Product Safety Commission • Governs manufacturers (including importers), distributors, and retailers • Sets preference for consensus voluntary private sector standards (e.g. ANSI, ASTM) but authorizes CPSC to impose mandatory standards for product safety • Restricts lead paint and phthalates in children’s products or child care articles • Requires labeling, tracking, third party testing and certification for children’s products • Requires general conformity certification with each shipment • Requires reporting of product defects or non-compliance with mandatory standards • Enforced by retail, import, and internet surveillance
15. PPPA	Poison Packaging Prevention Act 15 U.S.C. §§ 1471 – 1477	<ul style="list-style-type: none"> • Requires CPSC to establish standards for special packaging of any household chemical, including fuels, cosmetics, and other substances customarily stored by households, in order to protect children from hazards • Makes alternative labeling option available where child-protective packaging would make the household substance unavailable to elderly or disabled persons
16. FHSA	Federal Hazardous Substances Act 15 U.S.C. §§ 1261 – 1278	<ul style="list-style-type: none"> • Requires container labeling for hazardous household products to help consumers safely store and use those products and to give

Abbreviation	Statute	Brief Summary
		<p>information on first aid</p> <ul style="list-style-type: none"> • Authorizes the CPSC to ban certain products that are so dangerous or the nature of the hazard is such that labeling is not adequate to protect consumers
17. FPLA	Fair Packaging and Labeling Act 15 U.S.C. §§ 1451 – 1461	<ul style="list-style-type: none"> • Requires each package of household consumer commodities to bear a label on which there is information necessary to prevent consumer deception • Administered by the Federal Trade Commission and FDA
18. CSA	Controlled Substances Act 21 U.S.C. §§ 801 – 971	<ul style="list-style-type: none"> • Restricts the manufacture, import, export, distribution, and use of chemicals which are narcotics or can be used to make narcotics • Administered by the Drug Enforcement Administration in the Department of Justice and by FDA
19. CFATS	Department of Homeland Security Appropriations Act 6 U.S.C. § 121 note	<ul style="list-style-type: none"> • Authorizes the Department of Homeland Security (DHS) to establish risk-based Chemical Facility Anti-Terrorism Standards for the security of chemical facilities • DHS assigns facilities to one of four risk tiers; different assessment and planning obligations are imposed for the different tiers
20. CWC	Chemical Weapons Convention Implementation Act 22 U.S.C. §§ 6701 – 6771	<ul style="list-style-type: none"> • Authorizes reporting of information about chemicals that may be used to make chemical weapons • Authorizes international inspection of facilities where chemicals that may be used to make chemical weapons are present • Administered by the Department of Commerce’s Export Administration and by the Department of State

TSCA Work Plan Chemicals: Methods Document

Environmental Protection Agency

Office of Pollution Prevention and Toxics

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Background

In the Agency's August 2011 [*Discussion Guide: Background and Discussion Questions for Identifying Priority Chemicals for Review and Assessment*](#), EPA described the two-step process the Agency intended to use to identify potential candidate chemicals for near-term review and assessment under the Toxic Substances Control Act (TSCA). The Agency intends to use these TSCA Work Plan Chemicals to help focus and direct the activities of the Existing Chemicals Program in the Office of Pollution Prevention and Toxics (OPPT). [EPA invited public comment](#) through an [online discussion forum](#) conducted from August 18 through September 21, 2011, as well as through a webinar and stakeholder meeting held on September 7, 2011. The meeting summaries and public comments are available for review in the docket for this activity, [EPA-HQ-OPPT-2011-0516](#), which can be accessed online at <http://www.regulations.gov>.

As described in the *Discussion Guide*, EPA notes that identification of a chemical as a TSCA Work Plan Chemical does not itself constitute a finding by the Agency that the chemical presents a risk to human health or the environment. Such a determination would be the result of a risk assessment. Rather, identification of a chemical as a TSCA Work Plan Chemical indicates only that the Agency intends to consider it for further review. The Agency believes that identifying these chemicals early in the review process would afford all interested parties the opportunity to bring additional relevant information on those chemicals to the Agency's attention in order to further inform the review. In order to take risk management actions on a chemical substance under various sections of TSCA, the Agency would have to make the appropriate findings required by the specific provisions of the statute.

Identification of some chemicals as TSCA Work Plan Chemicals (Work Plan) does not mean that EPA would not consider other chemicals for risk assessment and potential risk management action under TSCA and other statutes. EPA will consider other chemicals if warranted by available information. In addition, EPA may subsequently identify other candidates for review in addition to this initial group, and may adapt the factors and data sources used in this process based on the experience acquired during this initial phase. Further, while the chemicals identified through this process as TSCA Work Plan Chemicals will likely be well-characterized for hazard and have information indicating exposure potential, some will have more limited data and EPA will continue to use its TSCA information collection, testing, and subpoena authorities, including sections 4, 8, and 11(c) of TSCA, to develop needed information on additional chemicals that currently have less robust hazard or exposure databases.

Two-Step Process

As described in the *Discussion Guide*, EPA's two-step prioritization process was intended to select an initial group of candidate chemicals for review by using a specific set of data sources to identify chemicals meeting one or more of the following factors:

- Chemicals identified as potentially of concern for children's health (e.g., chemicals with reproductive or developmental effects).
- Chemicals identified as persistent, bioaccumulative, and toxic (PBT).
- Chemicals identified as probable or known carcinogens.
- Chemicals used in children's products.

- Chemicals used in consumer products.
- Chemicals detected in biomonitoring programs.

EPA indicated the candidate chemicals from Step 1 would then be screened in Step 2 using information from additional exposure and hazard data sources to further analyze the chemicals and select specific chemicals for further assessment, including possible risk assessment and risk management action.

Based on comments received through the discussion forum, the webinar, and the stakeholder meeting, EPA made some adjustments both to the Step 1 factors and to the data sources utilized in both Step 1 and Step 2. With regard to the factors considered in Step 1, EPA added neurotoxicity to the initial Step 1 selection criteria because of comments noting the importance of neurotoxic effects to children's health. The Agency further added respiratory sensitization to the human health factors it would consider in Step 2, based on public comments suggesting this endpoint as identifying possible contributors to childhood asthma. Several commenters also encouraged EPA to use environmental toxicity as a prioritization factor to populate the Step 1 group of candidate chemicals. While environmental toxicity is not being used as a Step 1 prioritization factor on its own, EPA notes that many of the PBT chemicals are classed as toxic on the basis of environmental toxicity data. The Agency has also specifically factored environmental toxicity into the Step 2 analysis.

Following public comment, EPA also adjusted the proposed data sources identified in the *Discussion Guide*, particularly for Step 2, to encompass additional sources suggested by commenters, including the European Chemical Substance Information System (ESIS) and the Organization for Economic Cooperation (OECD) eChem Portal (which includes U.S. databases). EPA also eliminated certain data sources, including NHATS, NHEXAS, and TEAM, on the basis of their age. Given the difficulty of comprehensively identifying chemicals in consumer products, particularly because the 2006 Inventory Update Reporting (IUR) system made no distinction between commercial and consumer products, EPA narrowed the focus of the Step 1 prioritization factor to chemicals identified as being in children's products either through IUR reporting or through the process used by Washington State to generate its list of children's product chemicals. EPA notes, however, that chemicals identified through the application of the prioritization factors in Step 1 were further scrutinized in Step 2 against additional databases including the Hazardous Substance Data Bank (HSDB) and the Household Product Database, among others, to identify potential consumer uses.

Derivation of the Step 1 Potential Candidate Chemicals

To generate the Step 1 chemicals meeting the Agency's prioritization factor criteria as potential candidates for review and assessment, the following sources were used:

- **Carcinogenicity:**
 - [IRIS](#): 1986 Class A, B1; 1996 Known or Probable; 1999 or 2005 Carcinogenic
 - [IARC](#) Carcinogens, Group 1, 2A
 - [NTP](#) Known Carcinogens
- **PBT:**
 - [TRI PBT Rule](#)
 - [Great Lakes Binational PBT](#)
 - [Canadian P, B, and T](#) (all three criteria met)
 - [LRTAP POPS](#)

- [Stockholm POPs](#)
- **Children's Health:**
 - [IRIS](#): Repro/Dev (RfD or RfC for repro or dev)
 - [NTP CERHR](#): Infants Any Effect or Pregnant Women Any Effect
 - [Cal Prop 65](#) Reproductive
- **Neurotoxicity:** [IRIS](#)
- **Children's Product Use:**
 - Reported in products intended for use by children in [2006 IUR](#)
 - [Washington State Children's List](#)
- **Biomonitoring** (both human and environmental indicative of potential human exposure):
 - [NHANES](#)
 - [Drinking Water Contaminants](#)
 - [Fish Tissue Studies](#)

These sources produced a combined total of 1,235 chemicals, each of which matched at least one criterion. The resulting chemicals were then screened both for quality control to eliminate duplicate listings (an artifact of differences in the way the various data sources defined and reported chemicals), and to exclude chemicals that would not be appropriate for designation as candidates for near-term review and action under TSCA, either because they did not meet the intent of the prioritization criteria, they were not subject to action under TSCA, or they were already the subject of TSCA action.

Chemicals were excluded from identification as potential candidates for any of the following reasons:

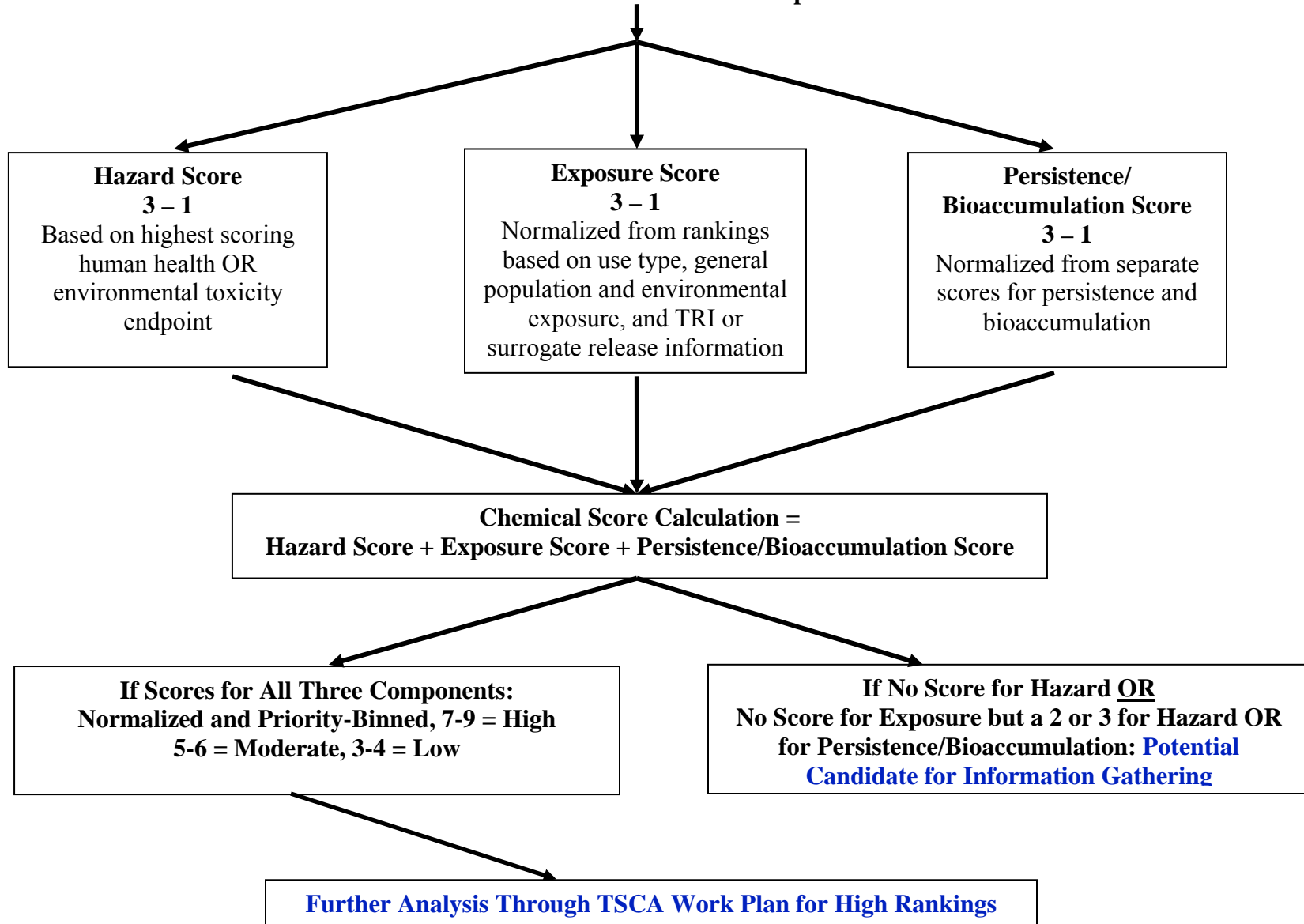
- **Pesticides:** Pesticides are excluded from regulation under TSCA because they are regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).
- **Drugs, hormones, and pharmacological chemicals:** Drugs are excluded from regulation under TSCA because they are regulated under the Federal Food, Drug, and Cosmetic Act (FFDCA). Hormones and pharmacological chemicals can be found in the environment when they are excreted or disposed of, but may not be amenable to management under TSCA.
- **Certain radioactive materials:** Radioactive chemicals are generally excluded from regulation under TSCA as source materials, special nuclear materials, or byproduct materials as defined in the Atomic Energy Act and subsequent regulations.
- **Complex process streams, byproducts not commercially produced:** Chemicals that are the reaction products of vague constituents, byproducts of complex streams, or complex mixtures are generally not readily definable in terms of their chemical identity and may vary considerably in both their composition and hazard from batch to batch, making them difficult to score consistently in this type of screening exercise. They were accordingly excluded.
- **Polymers:** Polymers typically have physical and chemical characteristics (high molecular weight, low absorbance, and low reactivity) that do not generally present significant health hazards. Some polymers that meet certain established criteria (49 FR 46066, November 21, 1984) have been specifically exempted from TSCA review under the new chemicals program because they “do not present an unreasonable risk of injury to human health or the environment.” Polymers were therefore excluded from the Work Plan.
- **Gases, common naturally occurring chemicals, combustion products:** Chemicals that exist in gaseous form at normal temperatures, predominantly occur naturally in the

environment, or are produced predominantly by combustion are generally not amenable to control or management under TSCA.

- **Common oils or fats, simple plant extracts:** Chemicals in these categories are generally not anticipated to be sufficiently toxic to give rise to concerns that would make them priorities.
- **Explosive, pyrophoric, or extremely reactive or corrosive chemicals:** Chemicals that explode, burn on contact with air or water, react quickly with other chemicals, or are extremely corrosive are unlikely to present opportunities for human or environmental exposures because their high physical hazard properties make them subject to stringent handling requirements intended to guard against accidental exposures or releases.
- **Metals principally identified as toxic to the environment:** Many metals – copper, for example – are generally toxic to the environment, but do not present health issues to humans under typical conditions of use. Those metals and related compounds were excluded from the Work Plan, while metals with specific human health concerns were retained.
- **Chemicals already the subject of Action Plans or significant regulation under TSCA:** [Polychlorinated biphenyls \(PCBs\)](#) were excluded from the Work Plan because they are already comprehensively regulated under TSCA, which bans their manufacture, processing, use and distribution in commerce. [Chemicals covered by Action Plans](#) or other currently ongoing regulatory activities under TSCA were also excluded because they had been recently reviewed and are already being addressed.

After these chemicals were excluded and the remaining metals and their related compounds were grouped together rather than being identified separately, 345 chemicals remained as potential candidates and entered into Step 2, which is described in the next section of this paper.

**Step 2 Process to Identify the TSCA Work Plan Chemicals
Candidate Chemicals from Step 1**



Explanation of Step 2 Process

The chemicals identified as potential candidates for review and assessment under TSCA based on the Step 1 prioritization factors were screened in Step 2. Chemicals were evaluated and received a score through the application of a numerical algorithm. This score was based on three characteristics: hazard, exposure, and potential for persistence and/or bioaccumulation. Using this system, chemicals were sorted into one of four bins. Chemicals able to be scored on all three characteristics were scored as High, Moderate, or Low based on their available information. Chemicals with High or Moderate hazard or persistence/bioaccumulation scores that could not be scored for exposure because of an absence of data, together with chemicals that could not be scored for hazard, were identified separately as potential candidates for information gathering.

This chemical candidate screening process is an interim evaluation only. It does not constitute a final Agency determination as to risk or as to whether sufficient data are available to characterize risk from specific chemicals on the TSCA Work Plan. Inclusion of a chemical on the Work Plan does not constitute any finding of risk under TSCA. This screening process is intended only to support initial decisions to determine the relative priority for further assessments and to identify potential data needs for individual chemicals or chemical groups.

Hazard Score:

The Hazard Score encompasses both human health and environmental toxicity concerns. The specific hazard classification criteria are based on the [Alternatives Assessment Criteria for Hazard Evaluation](#) developed by EPA's Design for the Environment Program (DfE). The DfE criteria for classifying the toxicity of specific chemicals were developed from authoritative sources including the United Nation's Globally Harmonized System (GHS) for Chemical Classification and Labeling and other EPA programs. The data determining the score for each chemical were obtained through the data sources identified in Appendix A. The hazard data reviews on each chemical were not exhaustive and do not rise to the level of assessments. Chemicals were scored on the basis of readily available data, and no judgment was made concerning gaps in or completeness of the available data set for a given chemical.

The Hazard Score was determined based on 3 hazard levels, and each hazard level had a corresponding hazard rank (High-3, Moderate-2, and Low-1). The concentration ranges or characteristics that correspond with each hazard level are listed in Table 1 below.

Candidate chemicals from Step 1 received a hazard rank score for each of the toxicity endpoints that were applicable based on the data readily available for each chemical. The highest hazard rank score a chemical received for any single human health or environmental toxicity endpoint became its Hazard Score. If the review on a chemical produced a High hazard score for any endpoint other than acute mammalian toxicity or acute or chronic aquatic toxicity, data on other endpoints were not sought because they would not impact the existing High score.

Table 1. Criteria for Determining Hazard Score

	High	Moderate	Low	Hazard Score
Ranking	3	2	1	
Chemical X				
Acute Mammalian Toxicity Oral LD50 (mg/kg) Dermal LD50 (mg/kg) Inhalation LC50 (gas/vapor) (mg/L) Inhalation LC50 (mist/dust) (mg/L/day)	≤ 50 - 300 ≤ 200 - 1000 ≤ 2 - 10 ≤ 0.5 – 1.0	>300 - 2000 >1000 - 2000 >10 - 20 >1.0 - 5	>2000 >2000 >20 >5	(Highest score from any toxicity category)
Carcinogenicity	GHS 1A, 1B, GHS2	Limited animal	Negative or SAR	
Mutagenicity/Genotoxicity	GHS 1A, 1B, GHS 2	Positive <i>in vivo</i> or <i>in vitro</i>	Negative	
Reproductive Toxicity Oral (mg/kg/day) Dermal (mg/kg/day) Inhalation (gas/vapor) (mg/L/day) Inhalation (mist/dust) (mg/L/day)	<50 <100 <1 <0.1	50-250 100-500 1-2.5 0.1-0.5	>250 >500 >2.5 >0.5	
Developmental Toxicity Oral (mg/kg/day) Dermal (mg/kg/day) Inhalation (gas/vapor) (mg/L/day) Inhalation (mist/dust) (mg/L/day)	<50 <100 <1.0 <0.1	50 – 250 100 – 500 1.0 – 2.5 0.1 – 0.5	>250 >500 >2.5 >0.5	
Neurotoxicity <i>Oral (mg/kg-bw/day) 90-day (13 weeks)</i> 40-50 days 28-days (4 weeks) <i>Dermal (mg/kg-bw/day) 90-day (13 weeks)</i> 40-50 days 28-days (4 weeks)	< 10 < 20 < 30 < 20 < 40 < 60	10 – 100 20 – 200 30 – 300 20 – 200 40 – 400 60 – 600	> 100 > 200 > 300 > 200 > 400 > 600	

	High	Moderate	Low	Hazard Score
Ranking	3	2	1	
Chronic Toxicity <i>Oral (mg/kg-bw/day)</i> 90-day (13 weeks) 40-50 days 28-days (4 weeks) <i>Dermal (mg/kg-bw/day)</i> 90-day (13 weeks) 40-50 days 28-days (4 weeks)	< 10 < 20 < 30 < 20 < 40 < 60	10 – 100 20 – 200 30 – 300 20 – 200 40 – 400 60 – 600	> 100 > 200 > 300 > 200 > 400 > 600	
Respiratory Sensitization	GHS 1A and 1B Occurrence of respiratory sensitization; Evidence supporting potential for respiratory sensitization		No evidence to support potential for respiratory sensitization	
Acute Aquatic Toxicity (LC50 or EC50) (mg/L)	< 1.0 – 10	> 10 - 100	> 100	
Chronic Aquatic Toxicity (NOEC or LOEC) (mg/L)	< 0.1 – 1	> 1 - 10	> 10	
				Hazard Score

Because the highest score from any individual endpoint was taken as the total Hazard Score, a chemical was ranked as either 3 (High), 2 (Moderate), or 1 (Low) for hazard.

For the toxicity endpoints Acute Mammalian Toxicity, Reproductive Toxicity, Developmental Toxicity, Neurotoxicity, and Chronic Toxicity a range of values for each Hazard Level was assigned. These values appear in the DfE *Alternatives Assessment Criteria*. In some cases DfE has 5 distinct hazard levels. For this analysis, the “Very High” and “High” levels from DfE were grouped together to represent High on this scale and DfE’s “Low” and “Very Low” levels were combined to form the criteria for a Low rank.

The hazard levels for Carcinogenicity were based on whether a chemical is a known, presumed, or suspected carcinogen (High); limited evidence of carcinogenicity (Moderate); or non-carcinogenic (Low). Note that the High score for carcinogenicity in Step 2 is broader than the criteria used in the Step 1 for carcinogenicity. The Step 1 factor specified that a chemical be classified as a known or probable carcinogen, equivalent to the GHS 1A or 1B classification, in order to be included in the screening program expressly on the basis of carcinogenicity. For the purpose of further evaluating the Agency’s potential concern for chemical hazard in Step 2 of this screening process, however, EPA included presumed, suspected, or likely human carcinogenicity classifications – the equivalent of GHS 2 – as also meriting a High hazard score.

The hazard levels for Mutagenicity/Genotoxicity were based on evidence that heritable mutations are known to or may occur in human germ cells, or mutagenicity demonstrated *in vivo* and *in vitro* (High); evidence of mutagenicity supported by *in vivo* or *in vitro* somatic cells of humans and animals (Moderate); or no evidence of chromosomal aberrations and gene mutations in reported studies (Low).

Respiratory Sensitization was based on GHS classifications of respiratory sensitizers. Hazard levels were based on whether there is occurrence of respiratory sensitization in humans or supporting evidence based on other tests, including the presence of structural alerts (High); or no evidence to support the potential for respiratory sensitization (Low). This endpoint was added to the prioritization template proposed in the August 2011 *Discussion Guide* following stakeholder comment that respiratory sensitization is particularly of interest to children's health issues based on the increasing trends of childhood asthma and other illnesses.

Environmental toxicity information was limited primarily to aquatic toxicity studies. If information about environmental toxicity was available, it was analyzed in conjunction with human toxicity information.

Chemicals that were scored as High for hazard only on the basis of acute mammalian toxicity were further considered on the basis of their classification for other human health endpoints. Where data on other health endpoints were available, the overall hazard score for the chemical was adjusted accordingly to reflect the highest remaining health endpoint. This was done because chemicals with high acute mammalian toxicity are generally already regulated on the basis of that toxicity and are subject to handling and use controls intended to protect workers and others potentially coming into contact with the chemical from harmful acute exposures. Scoring those chemicals on the basis of their other toxic effects was intended to acknowledge that protection against effects from acute exposures would not necessarily protect against effects from other exposures. If acute mammalian toxicity was the only available data endpoint for a chemical, the acute score remained as the overall hazard score for the chemical.

Chemicals that scored as High for hazard only on the basis of acute or chronic aquatic toxicity but that did not present human health concerns were grouped separately as being of potential concern for the environment.

If no hazard data were available on a chemical to provide a hazard score, the chemical was placed in a parallel prioritization category. These chemicals were classified as "Potential Candidates for Information Gathering." (See page 16.) Creating a separate category ensured that chemicals with unknown toxicity would not be removed from further investigation because there was a lack of data.

Exposure Score:

The Exposure Score was based on a combination of chemical use, general population and environmental exposure, and release information. The Use Type score included consideration of consumer product applications as well as industrial and commercial uses that could result in widespread exposures. The General Population and Environmental Exposure score encompassed measured data on the presence of a chemical in biota and environmental media. The Release score was based on EPA's Toxics Release Inventory (TRI) data for chemicals subject to TRI reporting. For

non-TRI chemicals, the Release score was calculated using a method involving Inventory Update Reporting data (IUR, now called Chemical Data Reporting, or CDR), including production volume, number of sites, and type of use. Data used in the other two components of exposure scoring were obtained through the sources identified in Appendix B. The detailed description of how information from those sources was used to generate an exposure score appears in Appendix C.

Table 2. Exposure Score

		Score
I. Use Type		
Ranking	Criteria	Use Score
3	Consumer product widely used, high likelihood of exposure	
2	Consumer product narrow use, lower likelihood of exposure	
1	Commercial use, indicating some likelihood of exposure	
0	No reported commercial use, indicating little to no likelihood of general exposure from use	
II. General Population and Environmental Exposure		
Ranking	Criteria	+ General Population & Environmental Exposure
3	Present in biota (human, fish, animal or plant biomonitoring), OR measured in drinking water, indoor air, house dust	
2	Not in biota, but reported present in 2 or more environmental media	
1	Reported present in 1 environmental medium	
III. Release Score: Use III. A or III. B, As Appropriate		
III. A.	Release Score for TRI Chemicals*	+ TRI Release Score
Ranking	Criteria	
3	> 100,000 lbs/year	
2	5,000 – 100,000 lbs/year	
1	< 5,000 lbs/year	
OR		OR
III. B.	Release Score for Non-TRI Chemicals	+ Non-TRI Release Score

The III.B. Release Score for Non-TRI Chemicals was generated by normalizing the sum of the subset rankings for Production Volume, Number of Sites, Industrial Processing and Use, and Commercial/Consumer Use differentiating between uses with high, moderate, and low potential for widespread releases, as shown below and described in detail in Appendix C:			
	Subset 1: IUR Production Volume		PV
	Ranking	Criteria	
	3	≥ 1,000,000 lbs/year	
	2	≥ 500,000 - 999,999 lbs/year	
	1	< 500,000 lbs/year	
	Subset 2: IUR Number of Manufacturing, Processing, and Use Sites		+ Site #
	Ranking	Criteria	
	3	≥ 1,000	
	2	100 - 999	
	1	< 100	
	Subset 3: IUR Industrial Processing and Use (IPU)		+ Use1
	Ranking	Criteria	
	3	High potential for release	
	2	Moderate potential for release	
	1	Low potential for release	
	Subset 4: IUR Commercial Use (C)		+Use2
	Ranking	Criteria	
	3	High potential for release	
	2	Moderate potential for releases	
	1	Low potential for release	
	Subtotal Surrogate Score		=
Total			Exposure Score**

* TRI data included in the exposure calculation were limited to water, air, and non-contained land releases.

** Total Exposure Score is the sum of the individual scores for I, II, and III.A or III.B.

The criteria for exposure potential in the Use Types category were based on a chemical’s presence and characteristics of use in consumer, commercial, or industrial products as indicated in the data sources in Appendix B. Chemicals in consumer products judged widely used with a high potential for exposure received the highest rank. Chemicals that are present in consumer products but are more narrowly used and have lower likelihood of exposure were ranked as moderate. Chemicals that are not high or moderate but have commercial uses reported in IUR were ranked as low, acknowledging that such uses may present some potential for exposures not only to workers but also to the general population and the environment. Chemicals with no commercial use reported in IUR

received a rank of zero. Further information on this approach and examples of ranking by use type are provided in Appendix C.

The data supporting ranking in the General Population and Environmental Exposure category came from the databases and peer-reviewed studies included in the list presented in Appendix B. The highest rank was based on presence in biota, because chemicals measured in humans, fish, animals, or plants demonstrate clear evidence of exposure; and on measured presence in indoor air, house dust, or drinking water, because presence in those specific media provides a strong indication of exposure potential. Presence in two or more environmental media indicates a reasonable potential for environmental exposure, which was the criteria for a moderate exposure ranking. Measured presence in one environmental medium provides some indication of potential environmental exposure, and was given a low ranking.

The Release Score was determined in one of two ways. If the chemical was reported under TRI, the TRI data were used to infer potential for environmental and general population exposure. The breakdowns for the high, moderate and low ranks were based on a distribution of pounds released for the chemicals reported by industry in the database.

If no TRI data existed, a release score was calculated on the basis of IUR data using production volume, number of sites, and use codes classified according to how likely the uses were to result in releases. The description of how these non-TRI release scores were derived, along with examples of how IUR use codes were associated by EPA with high, moderate, or low potentials for release, appears in Appendix C. While a chemical's production volume, use type, and number of manufacturing, processing, and industrial use sites do not provide exposure data, they can be used as an indicator of potential releases and resulting potential exposures.

All Exposure category scores were added up and then normalized on an overall High-Moderate-Low scale. To prevent the prioritization process from being biased unduly either toward or against data-rich chemicals, the normalization process differed depending on how many of the three categories – Use Type, General Population & Environmental Exposure, and Releases – had sufficient data to provide a score for the category.

For chemicals with scores in all three categories, "9" was the highest possible score, and the normalization scoring structure was:

Total Exposure Score from Table 2	Overall Rank	Normalized Overall Exposure Score
8 - 9	High	3
5 - 7	Moderate	2
2 - 4	Low	1

For chemicals with scores in only two of the three categories, “6” was the highest possible score, and the normalization scoring structure was:

Total Exposure Score from Table 2	Overall Rank	Normalized Overall Exposure Score
5 - 6	High	3
3 - 4	Moderate	2
1-2	Low	1

In the absence of exposure data on chemicals sufficient to populate at least two of the exposure categories in Table 2 and produce a meaningful score, such chemicals receiving moderate or high hazard scores, or that also could not be scored for hazard because of an absence of hazard data, were placed in a parallel prioritization category. These chemicals were classified as “Potential Candidates for Information Gathering.” (See page 16.) EPA created this separate category to ensure that chemicals with unknown toxicity or with known potential human health or environmental toxicity implications would not be removed from further investigation simply because there was a lack of exposure information, an issue stakeholders identified during the webinar and discussion forum as being of concern.

Potential for Persistence/Bioaccumulation:

Chemicals received a separate score to rank their potential for persistence and/or bioaccumulation. Persistent and bioaccumulative chemicals present special issues because organisms can remain exposed to them for a very long time and organisms higher up the food chain may be exposed to larger quantities of the chemicals through their food supply. EPA considers it particularly important that these chemicals not be removed from consideration for further investigation simply because they may lack either hazard or exposure information, or both.

Persistence scoring consisted of the evaluation of the potential half-life in air, water, soil, and sediment while considering the expected partitioning characteristics of the chemicals and all potential removal pathways based on standard physical-chemical properties and environmental fate parameters. Data sources listed in Appendix B were searched to locate studies on biotic and abiotic transformation (e.g., biodegradation, hydrolysis, photolysis) in order to estimate half-lives for the chemicals in the environment.

Bioaccumulation scoring consisted of evaluation of bioaccumulation/bioconcentration (measured or estimated BAF/BCF) data. When BAF data were not available, bioconcentration data (measured or estimated) were used to evaluate the potential for a chemical to bioaccumulate in organisms in the environment.

In the absence of test data establishing the chemical’s measured persistence or bioaccumulation potential, EPA used [EPI Suite™ version 4.10](#) to derive a ranking for the chemical. Specifically, BIOWIN, HYDROWIN, AOPWIN, BCF/BAF and Level III fugacity models were used to assess biodegradation, hydrolysis, atmospheric oxidation, bioaccumulation/bioconcentration and environmental partitioning.

Table 5. Persistence/Bioaccumulation Potential

		Overall Persistence/ Bioaccumulation Score
I. Persistence		
Ranking	Criteria	Persistence
3	Half-life > 6 months	
2	Half-life \geq 2 months	
1	Half-life < 2 months	
II. Bioaccumulative Potential		
Ranking	Criteria	+ Bioaccumulation
3	BCF or BAF > 5000	
2	BCF or BAF \geq 1000	
1	< 1000	
Total		Persistence/ Bioaccumulation Score

These criteria for judging persistence and bioaccumulation are the ones used in EPA's New Chemicals program. The separate scores for persistence and bioaccumulation were added together to produce a total score, which was normalized as follows:

Persistence/Bioaccumulation Score	Ranking	Normalized P/B Score
5 - 6	High	3
3 - 4	Moderate	2
2	Low	1

Categorizing Candidates for Inclusion as TSCA Work Plan Chemicals

After the candidate chemicals in Step 1 received normalized scores for Hazard, Exposure, and Persistence/Bioaccumulation, those scores were totaled to roughly group the chemicals receiving scores in all three categories into High, Moderate, and Low groupings as follows:

Normalized Total Score	Ranking
7 - 9	High
4 - 6	Moderate
1 - 3	Low

Appendix D identifies the 83 candidate chemicals from Step 1 that received scores on all three ranking factors and ranked High on the basis of their total score, including human health hazard concerns, and provides a brief summary of the information that produced that ranking. This table also includes chemicals that may not have presented human health concerns, but met all the criteria for identification as persistent, bioaccumulative, and environmentally toxic chemicals. These are the TSCA Work Plan Chemicals, from which the Agency intends to select chemicals for near-term review and assessment.

EPA notes that some chemicals identified as High through this scoring system may not necessarily be practical candidates for assessment under TSCA when other information is factored into the process. For example, the particular risks presented by certain chemicals may already be addressed by significant regulation under other statutes. One such example is quartz, which presents a hazard only in the context of silicosis from the inhalation of very fine crystalline dust particles, which could generally occur only during such occupational activities as sandblasting or stone cutting; these potential exposures are specifically controlled under regulations issued by the Occupational Safety and Health Administration (OSHA).

Potential Candidates for Information Gathering

Chemicals that could not be scored for hazard, or that were scored as moderate or high for either hazard or for persistence/bioaccumulation but could not be scored for exposure, have been grouped separately. These chemicals may be potential candidates for information-gathering activities focused on producing sufficient information to determine where they would rank in the prioritization process. EPA may consider a variety of such information-gathering activities, including both voluntary data submission and regulations issued under Sections 4 and 8 of TSCA.

Identifying Work Plan Chemicals for Risk Assessment in 2012 and Beyond

In identifying a smaller set of chemicals for work in any given year, EPA considers a number of factors, including:

- Whether the chemical was identified as a “High” ranking chemical.
- Whether the chemical reflects more than one of the factors identified in Step 1 (for example, chemicals that were identified as a potential concern for children’s health and also were persistent, bioaccumulative, and toxic) and whether each of the factors was covered by the set of chemicals. These factors included health and environmental hazards, children’s health, use in consumer products and dispersive uses, persistence and bioaccumulation, and detection in biomonitoring and environmental monitoring.
- Whether certain chemicals, or groups of chemicals, would benefit from some preliminary work to assure that risk assessments are targeted and scoped appropriately, and therefore would best be addressed in an out year.
- Whether certain chemicals, or groups of chemicals, have previously been assessed and addressed by the Agency, so that risk assessment in later years may be more appropriate than in the earlier years of the work plan.
- Agency work load considerations, including scope and timing of work needed on specific chemicals, and existing commitments for assessment.

For 2012, EPA identified an initial group of seven chemicals, which can be found on the first page of the table in Appendix D. EPA will identify a group of chemicals each year for risk assessment, completing a number of risk assessments that year and initiating new assessments from

the remaining chemicals on the work plan in the coming years. This spring, the Agency plans to identify specific chemicals for which it plans to conduct risk assessment in 2013 and 2014.

APPENDIX A: Data Sources for Hazard Scoring

Data Sources for Hazard Scoring

Hazard Information (Data on all toxicological endpoints)	
Providers/ Data Source	Description
USEPA: IRIS	Integrated Risk Information System (IRIS): http://www.epa.gov/iris/index.html
USEPA: HPVIS	Hazard Characterizations prepared by EPA on chemicals in the High Production Volume Challenge Program (HPV): http://iaspub.epa.gov/opthpv/hpv_hc_characterization.get_report?doctype=2 Risk-Based or Hazard-Based Prioritizations prepared by EPA under the Chemical Assessment and Management Program (ChAMP): http://iaspub.epa.gov/opthpv/existchem_hpv_prioritizations.report
USEPA: ISIS	The Integrated Scientific Information System (ISIS) is a chemical relational database application originally developed by Molecular Design Limited (MDL) Information Systems and utilized by the EPA New Chemicals program; the EPA version of this database contains confidential information.
United Nations World Health Organization: IARC	International Agency for Research on Cancer (IARC): http://monographs.iarc.fr/ENG/Classification/index.php
National Toxicology Program	NTP Report on Carcinogens: http://ntp.niehs.nih.gov/?objectid=03C9AF75-E1BF-FF40-DBA9EC0928DF8B15 NTP/CERHR Monographs on Potential Reproductive and Developmental Effects: http://ntp.niehs.nih.gov/?objectid=974B2C24-030F-D308-60E11D088F83FADB
Organization for Economic Cooperation and Development (OECD): eChem Portal	http://www.echemportal.org/echemportal/substancesearch/page.action?pageID=0 The OECD eChemPortal allows simultaneous searching of reports and datasets by chemical name and number and by chemical property. Direct links to collections of chemical hazard and risk information prepared for government chemical review programs at national, regional and international levels are obtained. Classification results according to national/regional hazard classification schemes or to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) are provided when available. The list of participating databases can be accessed here: http://www.echemportal.org/echemportal/substancesearch/page.action;jsessionid=1AB4C820B2D854B7FB9381877022B9F6?pageID=2

Hazard Information (Data on all toxicological endpoints)					
Providers/ Data Source	Description				
National Library of Medicine Databases	<p>http://chem.sis.nlm.nih.gov/chemidplus/chemidheavy.jsp Accessed through ChemID Plus, searching on a chemical name or ID produces results that are linked to all NLM databases, including:</p> <table border="1"> <tr> <td>Registry of Toxic Effects of Chemical Substances (RTECS)</td> </tr> <tr> <td>ATSDR Public Health Statements</td> </tr> <tr> <td>ATSDR Toxicological Profiles</td> </tr> <tr> <td>ATSDR ToxFAQS</td> </tr> </table>	Registry of Toxic Effects of Chemical Substances (RTECS)	ATSDR Public Health Statements	ATSDR Toxicological Profiles	ATSDR ToxFAQS
Registry of Toxic Effects of Chemical Substances (RTECS)					
ATSDR Public Health Statements					
ATSDR Toxicological Profiles					
ATSDR ToxFAQS					
TSCATS	<p>The Toxic Substance Control Act Test Submission Database http://www.syrres.com/esc/tscats.htm</p>				
California Office of Environmental Health Hazard Assessment	<p>Risk assessment documents prepared by OEHHA on certain Proposition 65 chemicals can be accessed through the links provided in the spreadsheet at: http://oehha.ca.gov/prop65/prop65_list/files/P65list110411links.xlsx</p>				
USEPA - Ambient Water Quality Criteria Documents	<p>http://www.epa.gov/waterscience/criteria/wqcriteria.html</p>				
USEPA - Drinking Water Standards Health Effects Support Documents	<p>http://www.epa.gov/safewater/standards.html</p>				
USEPA - ECOTOX Database	<p>http://www.epa.gov/ecotox</p>				
IPCS Concise International Chemical Assessment Documents (CICADs)	<p>http://www.inchem.org/pages/cicads.html</p>				

APPENDIX B: Data Sources for Exposure Scoring

Data Sources for Exposure, Uses, and Environmental Fate (P and B) Scoring

Data Type	Data Source
Uses	Inventory Update Reporting and Chemical Data Reporting (IUR/CDR) Premanufacture Notice (PMN) Database (confidential) Design for the Environment chemicals database (confidential) High Production Volume (HPV) Challenge Submissions EPA Hazard Characterizations and Risk Based Prioritizations OECD Screening Information Assessment Profiles and Reports Screening Information Data Sets (SIDS) Documents National Institutes of Health (NIH) Household Product Database NLM Hazardous Substances Data Bank NLM- Hazmap-Occupational exposure to hazardous agents Source Ranking Database Chemical assessments by other governmental organizations Open literature
Environmental releases	Toxics Release Inventory (TRI) National Emission Inventory (NEI) Database U.S. EPA NIH Hazardous Substances Data Bank
General human exposures, including indoor air contaminants	National Report on Human Exposure to Environmental Chemicals (CDC NHANES) Report to the California Legislature Indoor Air Pollution in California. http://www.arb.ca.gov/research/indoor/ab1173/rpt0705.pdf German Environmental Survey- chemicals in indoor air http://www.umweltbundesamt.de/gesundheite/survey/index.htm NLM Hazardous Substances Data Bank Open Literature
Environmental exposures	National Air Quality System (AQS) U.S. EPA National Contaminant Occurrence Database (NCOD) U.S. EPA Current National Recommended Water Quality Criteria U.S. EPA National Water-Quality Assessment Program (USGS NAWQA) EPA Fish Tissue Studies Clean Air Act Hazardous Air Pollutants (HAPs) Clean Water Act Priority Pollutants Superfund Chemical Data Matrix EPA: Targeted National Sewage Sludge Survey Report Groundwater chemicals Desk reference Chemicals in Groundwater Desk reference 2007 EPA Drinking water Chemical contaminant lists New York State Ambient Air monitoring program California Air Resources Board (ambient air) Washington State Background Soil concentration study NLM Hazardous Substances Data Bank Open literature

Data Type	Data Source
Environmental Fate (Persistence and Bioaccumulation)	<p>USEPA: HPVIS Hazard Characterizations prepared by EPA on chemicals in the High Production Volume Challenge Program (HPV): http://iaspub.epa.gov/oppthpv/hpv_hc_characterization.get_report?doctype=2</p> <p>Risk-Based or Hazard-Based Prioritizations prepared by EPA under the Chemical Assessment and Management Program (ChAMP): http://iaspub.epa.gov/oppthpv/existchem_hpv_prioritizations.report</p> <p>Organization for Economic Cooperation and Development (OECD): eChem Portal http://www.echemportal.org/echemportal/substancesearch/page.action?pageID=0 http://www.echemportal.org/echemportal/substancesearch/page.action;jsessionid=1AB4C820B2D854B7FB9381877022B9F6?pageID=2</p> <p>SRC Environmental Fate Databases http://www.srcinc.com/what-we-do/efdb.aspx</p> <p>National Library of Medicine Hazardous Substances Databank http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB</p> <p>Japanese National Institute of Technology and Evaluation (NITE). Biodegradation and Bioconcentration of the Existing Chemical Substances under the Chemical Substances Control Law NITE http://www.safe.nite.go.jp/english/kizon/KIZON_start_hazkizon.html</p>

APPENDIX C: Derivation of Exposure Scores for Use Types and Release Scores for TRI and Non-TRI Chemicals

Criteria I: Use Type

A variety of use information was reviewed to determine whether chemicals were used for consumer, commercial, or industrial purposes. At least two data sources were used to confirm consumer uses. For example, a reported use in EPA's IUR alone was not deemed sufficient to identify a chemical as being in a consumer product. Also note that many chemicals are present in several different product use and functional use categories. All reported uses were considered, and the use with the highest exposure potential informed the prioritization ranking. See Appendix B for additional information on data sources.

Chemicals that were given a rank of three are believed to be present in consumer products and have high potential for exposure due to widespread uses. Chemicals that received a high score have higher potential for exposure due to high likelihood of releases from the product (off-gassing) and high potential for direct contact during application or use based on close proximity. Examples of product criteria that have an increased likelihood of exposure include: products that are not fully cured (chemical reaction is occurring on-site); products that are spray-applied or brush-applied; products that are liquids, gases, or otherwise have the potential to volatilize; products that have the potential to off-gas, degrade, or otherwise emit chemicals over time; and products that have the potential to be incorrectly applied or used also received a rank of three. Some organizations may identify higher exposure potential uses as being dispersive. Examples of product use categories that have this increased likelihood of exposure include: paints and coatings; adhesives, sealants, and elastomers; building materials such as insulation; soaps and detergents; hair care products; water treatment products; floor coverings; automotive care products; and arts, crafts, and hobby materials.

Chemicals that were given a rank of two had moderate exposure. Chemicals that received a moderate score have moderate potential for exposure because they may be present within a chemically stable matrix; have lower or slower likelihood of release from the product, and have more indirect or bystander exposure. There may be increased distance and time between product sources and individual receptors. These chemicals may slowly off-gas or partition to dust over time. Examples of product use categories include: plastic and rubber products, electronics products, furniture, and foam seating and bedding products.

Chemicals were given a rank of one if at least one commercial use for that chemical was reported in IUR.

Chemicals that were not reported in IUR or were reported in IUR with industrial uses but no commercial or consumer uses were given a rank of zero for the use type criterion of exposure.

Criteria II: General & Environmental Exposure

A variety of data sources were used to compile information on chemicals present within the environment: ambient air, surface water, groundwater, drinking water, soil, indoor environments (air or dust), and chemicals present within biota (humans, fish, animals, or plants). Only a small percentage of all chemicals are actually measured for in various media for reasons such as a lack of

adequate sampling and analytical methods and insufficient resources to collect data. Many of the chemicals identified were not able to be ranked for this criterion due to lack of data.

A summary of the number of chemicals identified in different media is provided below. Note that this compilation of chemicals is an initial effort based on readily available and publicly accessible data. It is not a complete or comprehensive assessment of number of chemicals present in any given environmental or biological media. Approximately two-thirds of these chemicals are on the TSCA inventory while the other one-third is not. Refer to Appendix B for additional information on data sources for each media.

Number of Chemicals Reported in Environmental Media

Occurrence of chemicals (by media)	Number of chemicals
Surface water	401
Ground water	407
Ambient air	409
Soil	270
Indoor environments	300
Drinking water	247
Biota	360
Total	1215

Criteria III: Release Score

III. A. Release Scores for TRI Chemicals

The release score for each chemical was determined using the aggregated releases from the TRI data fields listed in the following table. The 2008 TRI database was used for the chemical ranking scheme. A ranking of 3 was assigned for a sum of releases greater than 100,000 lb/yr, a ranking of 2 for a sum of releases greater than 5,000 lb but less than or equal to 100,000 lb/year, and a ranking of 1 for a sum of releases less than 5,000 lb/yr.

2008 TRI Data Fields for Release Score

TRI Data Field	
Total Fugitive Air Emissions	Wastewater Treatment (Excluding POTWs)
Total Stack Air Emissions	Landfills/Disposal Surface Impoundments
Total Surface Water Discharge	Surface Impoundment
Total Other On-Site Land Releases (Other Landfills)	Other Landfills
Total Land Treatment	Land Treatment
Total Surface Impoundments	Other Land Disposal
Total Other Disposal	Unknown
POTWs - Total Transfers - Metals Only	RCRA Subtitle C Surface Impoundments (M66)
Transfers To POTWs (Non-Metals)	Other Surface Impoundments (M67)
Transfers To POTWs (Metals And Metal Compounds)	

III. B. Release Scores for Non-TRI Chemicals

For chemicals not reported to TRI, 2006 IUR data were used to rank chemicals for potential to be released to the environment. The release ranking was derived based on at least three of the following four factors: (1) IUR Production Volume Ranking; (2) IUR Number of Manufacturing, Processing, and Use Sites Ranking; (3) IUR Industrial and Downstream Processing and Use Ranking; and (4) IUR Commercial/Consumer Use Rankings.

Production Volume and Number of Sites Rankings

For the production volume ranking, data from the non-CBI public IUR database were used to rank chemicals using the following cut-offs: greater than or equal to 1,000,000 lb/year for a high ranking of 3; less than 1,000,000 and greater than or equal to 500,000 lb/year for a medium ranking of 2; and less than 500,000 lb/year for a low ranking of 1.

The number of industrial sites ranking, data on manufacturing, processing, and use sites in non-CBI public IUR database were used to rank chemicals using the following cut-offs: greater than or equal to 1,000 sites for a high ranking of 3; less than 1,000 and greater than or equal to 99 sites for a medium ranking of 2; and less than 100 sites for a low ranking of 1.

Industrial Processing and Use (IPU) Ranking

For the industrial processing and use ranking, EPA examined the following codes reported under IUR for each chemicals (see the table of sample categories, below): North American Industrial Classification System (NAICS) code, Process or Use code, and the Industrial Function Category. Each 3-code combination was assigned a ranking (high/moderate/low) based on the potential to be released during the industrial processing/use and downstream use. The Agency ranked each 3-code combination using expert judgment, generic scenarios, and past experience with new and existing chemical assessment. The 3-code combination with highest ranking was used as the score for the IPU ranking for the chemical.

The resulting industrial rankings were modified based on whether the chemical was reported as site-limited by all IUR submitters of that chemical or whether industrial uses may have been required to be reported in IUR. Site-limited chemicals were given an IPU Ranking of 1.

Under the IUR, reporters had an option to indicate if industrial processing and use (IPU) information was not applicable to their chemical; if all reporters of a chemical indicated that the industrial processing and use information was not applicable, EPA assumed there was no such use and assigned a low ranking of 1. For chemicals with an IPU ranking of 1 or 2 that had one or more IPUs reported as "NRO," the rankings were developed based solely on reported IPUs. No ranking was developed for chemicals with all IPUs reported as "NRO." EPA assigned a high ranking of 3 for chemicals with at least one reported IPU code with a high potential for widespread releases.

Sample of 2006 IUR Industrial Processing and Use Reporting Categories		
Industrial Function Categories	Industrial Processing or Use	Small Sample of NAICS
Adsorbents and absorbents	Processing as a reactant	Petrochemical manufacturing
Adhesives and binding agents	Processing – incorporation into formulation, mixture or reaction product	Synthetic dye and pigment manufacturing
Aerosol propellants	Processing – incorporation into article	Other basic inorganic chemical manufacturing
Agricultural chemicals (non-pesticide)	Processing – repackaging	Resin and synthetic rubber manufacturing
Anti-adhesive agents	Use - non-incorporative activities	Fertilizer manufacturing
Bleaching agents		Paint and coating manufacturing
Coloring agents, dyes		Printing ink manufacturing
Coloring agents, pigments		Plastics bottle manufacturing
Corrosion inhibitors and anti-scaling agents		Tire manufacturing
Fillers		Cement manufacturing
Fixing agents		Abrasive product manufacturing
Flame retardants		Ferrous metal foundries
Flotation agents		Electric power generation
Fuels		
Functional fluids		
Intermediates		
Lubricants		
Odor agents		
Oxidizing agents		
pH-regulating agents		
Photosensitive chemicals		
Plating agents and metal surface treating agents		
Processing aid, not otherwise listed		
Process regulators, used in vulcanization or polymerization processes		
Process regulators, other than polymerization or vulcanization processes		
Reducing agents		
Solvents (for cleaning or degreasing)		
Solvents (which become part of product formulation or mixture)		
Solvents (for chemical manufacture and processing and are not part of product at greater than one percent by weight)		
Stabilizers		
Surface active agents		
Viscosity adjustors		
Other		

Commercial Use (C) Release Ranking

For the commercial use ranking, EPA examined each IUR Commercial Use Code reported for the chemicals and assigned a ranking based on their potential to be released during use. For the purpose of this screening exercise, it was assumed that all the “C” use codes in the 2006 IUR included commercial uses. The Agency used past experience in new and existing chemical assessments of similar chemicals and exposure scenarios, coupled with expert judgment, to examine each use to place the chemical in a high, moderate, or low ranking. The use code with the highest ranking was used as the score for the commercial use ranking for the chemical.

The following table lists samples of rankings associated with certain uses. Commercial uses considered likely to result in air and/or water releases were assigned a high ranking score of 3. Uses with low or no potential for releases were given a low score of 1. The rest of the uses were given a score of 2.

Under the IUR, reporters had an option to indicate if commercial/consumer information was not applicable to their chemical. If all reporters of a chemical indicated that the commercial/consumer information was not applicable, EPA assumed there was no commercial use of the chemical, resulting in a low ranking (i.e., score of 1). For chemicals with a ranking of 1 or 2 that had one or more commercial/consumer uses reported as “not readily obtainable” (NRO) or “Others,” rankings were developed based solely on the remaining reported uses. No ranking was developed for chemicals with all commercial/consumer uses reported as “NRO” Or “Others.” EPA assigned a High ranking of 3 for chemicals with at least one reported C code with a high potential for widespread releases. If multiple uses were reported, EPA referred to the use code that resulted in the highest ranking.

2006 IUR Commercial Use Categories

2006 IUR Commercial Use
C01 Adhesives and sealants
C02 Agricultural products (non-pesticide)
C03 Artists' supplies
C04 Automotive care products
C05 Electrical and electronic products
C06 Fabrics, textiles and apparel
C07 Glass and ceramic products
C08 Lawn and garden products (non-pesticide)
C09 Leather products
C10 Lubricants, greases and fuel additives
C11 Metal products
C12 Paints and coatings
C13 Paper products
C14 Photographic supplies
C15 Polishes and sanitation goods
C16 Rubber and plastic products
C17 Soaps and detergents
C18 Transportation products
C19 Wood and wood furniture

Scoring Releases for Non-TRI Chemicals

The four ranking scores described above – Production Volume (PV), Number of Sites, Industrial Processing and Use (IPU) ranking, and Commercial Use (C) ranking – were added to develop the release score for non-TRI chemicals. When either IPU or C could not be scored, but all the other factors could be scored, the release score was derived based on the remaining three ranking scores. If neither the IPU nor the C codes could be scored, no release score was assigned to the chemical.

When all four sub-scores were available, the possible total score ranged from 4 to 12, and the non-TRI Release scores were ranked as follows:

High (3) = 9 - 12

Moderate (2) = 7 - 8

Low (1) = 4 - 6

When only three out of the four sub-scores were available (if either IPU or C could not be scored), the possible total score ranged from 3 to 9, and the non-TRI Release scores were ranked as follows:

High (3) = 7 - 9

Moderate (2) = 5 - 6

Low (1) = 3 - 4

The Non-TRI Release score for each chemical was added to the other exposure component scores to derive the Total Exposure Score, as described in the body of this paper.

APPENDIX D: The TSCA Work Plan Chemicals

TSCA Work Plan Chemicals

The TSCA Work Plan Chemicals Methods Document (39 pp., 264 KB) explains the hazard, exposure, and persistence/bioaccumulation criteria, the data sources used, and how chemicals were scored.

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
2012 Work Plan Chemicals								
Antimony & Antimony Compounds	Possible human carcinogen Developmental and reproductive toxicity Acute and chronic toxicity from inhalation exposures	3	Widely used in consumer products Present in biomonitoring, drinking water, surface water, ambient air and soil High reported releases to the environment	3	High environmental persistence Moderate bioaccumulation potential	3	Consumer Industrial	Category
1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8,-hexamethylcyclopenta [g]-2-benzopyran (HHCB)	Developmental toxicity	2	Widely used in consumer products Present in biomonitoring Estimated to have high releases to the environment	3	Moderate environmental persistence Moderate bioaccumulation potential	2	Consumer Dispersive	1222-05-5
Long-chain chlorinated paraffins (C18-20)	Chronic toxicity to target organs including the liver, kidneys and thyroid Aquatic toxicity	2	Used in commercial/industrial products Present in biomonitoring, surface water and soil	2	High environmental persistence High bioaccumulation potential	3	Industrial Dispersive	Category
Medium-chain chlorinated paraffins (C14-17)	Chronic toxicity to target organs including the liver, kidneys and thyroid Aquatic toxicity	2	Used in consumer products Estimated to have high releases to the environment	2	High environmental persistence High bioaccumulation potential	3	Consumer Dispersive Industrial	Category
Methylene chloride	Probable human carcinogen	3	Widely used in consumer products Present in drinking water, indoor environments, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	75-09-2
N-Methylpyrrolidone	Reproductive toxicity	3	Widely used in consumer products Present in drinking water and indoor environments High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	872-50-4
Trichloroethylene (TCE)	Probable human carcinogen	3	Widely used in consumer products Present in drinking water, indoor environments, surface water, ambient air, groundwater and soil	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	79-01-6

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
Additional Work Plan Chemicals (alphabetical order)								
Acetaldehyde	Possible human carcinogen	3	Used in consumer products Present in drinking water, indoor environments, ambient air and groundwater High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	75-07-0
Acrylonitrile	Probable human carcinogen	3	Widely used in consumer products Present in indoor environments, surface water, ambient air and groundwater High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Dispersive Industrial	107-13-1
tert-Amyl methyl ether	Chronic toxicity Central nervous system effects Potential carcinogenicity to specific target organs	2	Widely used in consumer products Present in drinking water, surface water and ambient air Estimated to have moderate releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	994-05-8
Anthra[2,1,9-def:6,5,10-d'e'f] diisoquinoline-1,3,8,10(2H,9H)-tetrone (Pigment Violet 29)	Aquatic toxicity	3*	Widely used in consumer products Estimated to have moderate releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	81-33-4
Arsenic & Arsenic Compounds	Known human carcinogen Neurotoxicity Central nervous system effects Acute and chronic toxicity from inhalation exposures	3	Widely used in consumer products Present in biomonitoring, drinking water, surface water, ambient air and soil High reported releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	Category
Asbestos & Asbestos-like Fibers	Known human carcinogen Acute and chronic toxicity from inhalation exposures	3	Widely used in consumer products Present in indoor environments	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	Category
Benzenamine	Probable human carcinogen	3	Used in consumer products Present in ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	62-53-3

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
Benzene	Known human carcinogen	3	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Dispersive Industrial	71-43-2
Benzo[a]pyrene	Known human carcinogen	3	Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil	2	High environmental persistence Moderate bioaccumulation potential	3	Dispersive Industrial	50-32-8
Benzo(a)anthracene	Probable human carcinogen	3	Present in biomonitoring, indoor environments, surface water, ambient air, groundwater and soil	2	High environmental persistence Moderate bioaccumulation potential	3	Dispersive Industrial	56-55-3
1-Bromopropane	Possible human carcinogen	3	Widely used in consumer products Present in drinking water, indoor environments, surface water, ambient air, groundwater and soil Estimated to have high releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Dispersive Industrial	106-94-5
Butanamide, 2,2'-[(3,3'-dichloro[1,1'-biphenyl]-4,4'-diyl)bis(azo)]bis[N-(4-chloro-2,5-dimethoxyphenyl)-3-oxo- (Pigment Yellow 83)	Acute toxicity	2	Used in consumer products Estimated to have high releases to the environment	3	High environmental persistence High bioaccumulation potential	3	Consumer Industrial	5567-15-7
Butanamide, 2-[(4-methoxy-2-nitrophenyl) azo]-N-(2-methoxyphenyl)-3-oxo- (Pigment Yellow 65)	Aquatic toxicity	3*	Widely used in consumer products Estimated to have high releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer	6528-34-3
4-sec-Butyl-2,6-di-tert-butylphenol	Chronic toxicity	2	Widely used in consumer products Estimated to have moderate releases to the environment	3	Moderate environmental persistence Moderate bioaccumulation potential	2	Consumer Industrial	17540-75-9
Cadmium & Cadmium Compounds	Known human carcinogen Chronic cardiovascular, renal and musculoskeletal effects Acute and chronic toxicity from inhalation exposures	3	Widely used in consumer products Present in biomonitoring, drinking water, surface water, ambient air and soil High reported releases to the environment	3	High environmental persistence Moderate bioaccumulation potential	3	Consumer Industrial	Category

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
Carbon tetrachloride	Probable human carcinogen	3	Used in commercial/industrial products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	2	High environmental persistence Low bioaccumulation potential	2	Industrial	56-23-5
p-Chloro-o-toluidine	Probable human carcinogen	3	Present in biomonitoring, surface water and soil	2	Moderate environmental persistence Low bioaccumulation potential	2	Industrial	95-69-2
Chromium & Chromium Compounds	Known human carcinogen Reproductive toxicity Developmental toxicity Acute and chronic toxicity from inhalation exposures	3	Used in commercial/industrial products Present in ambient air High reported releases to the environment	2	High environmental persistence Moderate bioaccumulation potential	3	Industrial	Category
Cobalt & Cobalt Compounds	Cardiovascular and central nervous system effects Acute and chronic toxicity from inhalation exposures	3	Used in consumer products Present in biomonitoring, surface water, ambient air and soil High reported releases to the environment	3	High environmental persistence Moderate bioaccumulation potential	3	Industrial	Category
Creosotes	Probable human carcinogen	3	Widely used in consumer products Present in groundwater and soil High reported releases to the environment	3	Moderate environmental persistence Moderate bioaccumulation potential	2	Industrial	8001-58-9
Cyanide Compounds (Limited to dissociable compounds)	Neurotoxicity Reproductive toxicity Central nervous system effects	3	Widely used in consumer products Present in drinking water, surface water and soil High reported releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	Category
Dibenz(a,h)anthracene	Probable human carcinogen	3	Present in indoor environments, surface water, ambient air, groundwater and soil	2	Moderate environmental persistence Moderate bioaccumulation potential	2	Dispersive	53-70-3
Dibromochloromethane	Possible human carcinogen	3	Present in biomonitoring, surface water, ambient air and soil	2	Moderate environmental persistence Low bioaccumulation potential	2	Industrial	124-48-1

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
3,3'-Dichlorobenzidine dihydrochloride	Probable human carcinogen	3	Used in consumer products Relatively small reported releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	612-83-9
1,1-Dichloroethane	Mutagenicity	2	Used in consumer products Present in biomonitoring, drinking water, surface water, ambient air, groundwater and soil Moderate reported releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	75-34-3
1,2-Dichloroethane	Possible human carcinogen	3	Used in commercial/industrial products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	107-06-2
1,2-Dichloropropane	Acute mammalian toxicity	2	Used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	78-87-5
trans-1,2-Dichloroethylene	Chronic toxicity	2	Widely used in consumer products Present in biomonitoring, drinking water, surface water, ambient air, groundwater and soil	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	156-60-5
p-Dichlorobenzene	Possible human carcinogen	3	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, ambient air, surface water, groundwater and soil Moderate reported releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	106-46-7

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
o-Dichlorobenzene	Chronic toxicity	2	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air and groundwater Moderate reported releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Dispersive Industrial	95-50-1
Dichloroacetic acid	Possible human carcinogen	3	Used in consumer products Present in drinking water	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	79-43-6
1,2-Dimethoxyethane (<i>Monoglyme</i>)	Reproductive toxicity Developmental toxicity Chronic toxicity	3	Widely used in consumer products Estimated to have high releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	110-71-4
1,4-Dioxane	Possible human carcinogen	3	Widely used in consumer products Present in groundwater, ambient air and indoor environments High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Dispersive Industrial	123-91-1
Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)-	Aquatic toxicity	3*	Widely used in consumer products Estimated to have high releases to the environment	3	Moderate environmental persistence High bioaccumulation potential	3	Consumer Industrial	54464-57-2
Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-naphthalenyl)-	Aquatic toxicity	3*	Widely used in consumer products Estimated to have high releases to the environment	3	Moderate environmental persistence High bioaccumulation potential	3	Consumer Industrial	54464-59-4
Ethanone, 1-(1,2,3,5,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)-	Aquatic toxicity	3*	Widely used in consumer products Estimated to have high releases to the environment	3	Moderate environmental persistence Moderate bioaccumulation potential	2	Consumer Industrial	68155-66-8
Ethanone, 1-(1,2,3,4,6,7,8,8a-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)-	Aquatic toxicity	3*	Widely used in consumer products Estimated to have high releases to the environment	3	Moderate environmental persistence Moderate bioaccumulation potential	2	Consumer Industrial	68155-67-9

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
Ethylbenzene	Possible human carcinogen	3	Used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	100-41-4
Ethylene dibromide	Probable human carcinogen	3	Used in commercial/industrial products Present in drinking water, indoor environments, surface water, ambient air, groundwater and soil Relatively small reported releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	106-93-4
bis(2-Ethylhexyl) adipate	Possible human carcinogen	3	Widely used in consumer products Present in drinking water and indoor environments Estimated to have high releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	103-23-1
bis(2-Ethylhexyl) -3,4,5,6-tetrabromophthalate (TBPH)	Developmental toxicity Acute and chronic aquatic toxicity	2	Used in consumer products Present in indoor environments Estimated to have moderate releases to the environment	3	Moderate environmental persistence Moderate bioaccumulation potential	2	Consumer Industrial	26040-51-7
2-Ethylhexyl-2,3,4,5-tetrabromobenzoate (TBB)	Developmental toxicity Acute and chronic aquatic toxicity	2	Used in consumer products Present in indoor environments and soil	3	Moderate environmental persistence Moderate bioaccumulation potential	2	Consumer Industrial	183658-27-7
Formaldehyde	Known human carcinogen	3	Used in consumer products Present in indoor environments, drinking water, ambient air and groundwater High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	50-00-0
Hexabromobiphenyl	Possible human carcinogen	3	Used in consumer products Present in ambient air and soil	2	High environmental persistence High bioaccumulation potential	3	Industrial	36355-01-8
Hexachlorobutadiene	Possible human carcinogen	3	Present in indoor environments, surface water, ambient air, groundwater and soil Relatively small reported releases to the environment	1	High environmental persistence High bioaccumulation potential	3	Industrial	87-68-3

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
Hexachlorocyclohexane	Possible human carcinogen	3	Present in biomonitoring and surface water	2	High environmental persistence Moderate bioaccumulation potential	3	Industrial	608-73-1
1-Hexadecanol	Chronic toxicity	2	Widely used in consumer products Present in surface water, ambient air and soil Estimated to have high releases to the environment	3	Low environmental persistence Moderate bioaccumulation potential	2	Consumer Dispersive Industrial	36653-82-4
Lead & Lead Compounds	Neurotoxicity Developmental toxicity Reproductive toxicity	3	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air and soil High reported releases to the environment	3	High environmental persistence Moderate bioaccumulation potential	3	Consumer Industrial	Category
Mercury & Mercury Compounds	Neurotoxicity Developmental toxicity Chronic nervous system and hepatic effects	3	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air and soil High reported releases to the environment	3	High environmental persistence Moderate bioaccumulation potential	3	Consumer Industrial	Category
4,4'-Methylene bis(2-chloroaniline)	Known human carcinogen	3	Widely used in consumer products Present in ambient air Relatively small reported releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	101-14-4
Naphthalene	Possible human carcinogen	3	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	91-20-3
2-Naphthalenecarboxylic acid, 4-[(4-chloro-5-methyl-2-sulphophenyl) azo]-3-hydroxy-, calcium salt (1:1) (Pigment Red 52)	Aquatic toxicity	3*	Widely used in consumer products Estimated to have moderate releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	17852-99-2

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
Nickel & Nickel Compounds	Known human carcinogen Acute and chronic toxicity from inhalation exposures	3	Used in consumer products Present in ambient air High reported releases to the environment	2	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	Category
N-Nitrosodiethylamine	Probable human carcinogen	3	Present in biomonitoring, surface water, and ambient air, groundwater and soil Relatively small reported releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Industrial	55-18-5
N-Nitrosodimethylamine	Probable human carcinogen	3	Widely used in consumer products Present in drinking water, surface water, ambient air, groundwater and soil	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Dispersive Industrial	62-75-9
N-Nitrosodiphenylamine	Probable human carcinogen	3	Used in consumer products Present in surface water, groundwater and soil Relatively small reported releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	86-30-6
Octamethylcyclotetrasiloxane	Reproductive toxicity	2	Used in consumer products Present in biomonitoring, drinking water, indoor environments and surface water Estimated to have high releases to the environment	3	Moderate environmental persistence High bioaccumulation potential	3	Consumer Dispersive Industrial	556-67-2
4-tert-Octylphenol <i>4-(1,1,3,3-Tetramethylbutyl)-phenol</i>	Aquatic toxicity	3*	Used in consumer products Present in biomonitoring and drinking water Estimated to have moderate releases to the environment	3	High environmental persistence Moderate bioaccumulation potential	2	Consumer Industrial	140-66-9
p,p'-Oxybis(benzenesulfonyl hydrazide)	Reproductive toxicity Mutagenicity	3	Used in consumer products Estimated to have moderate releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Consumer	80-51-3
Pentabromophenol	Acute toxicity	3	Used in consumer products Present in surface water and soil	2	High environmental persistence Low bioaccumulation potential	2	Industrial	608-71-9
Phthalic anhydride	Respiratory sensitizer	3	Widely used in consumer products Present in groundwater and ambient air High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	85-44-9

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
Polychlorinated naphthalenes	Acute dermal toxicity Chronic liver effects	1	Widely used in consumer products Present in biomonitoring	3	High environmental persistence High bioaccumulation potential	3	Industrial	Category
Quartz (Respirable forms only)	Probable human carcinogen	3	Widely used in consumer products Present in drinking water Estimated to have high releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	14808-60-7
Styrene	Possible human carcinogen Central nervous system effects	3	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	100-42-5
1,2,4,5-Tetrachlorobenzene	Chronic toxicity	3	Present in ground water and soil	1	Moderate environmental persistence High bioaccumulation potential	3	Industrial	95-94-3
Tetrachloroethylene (PERC)	Probable human carcinogen	3	Widely used in consumer products Present in biomonitoring, drinking water, indoor environments, ambient air, groundwater and soil High reported releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer Dispersive Industrial	127-18-4
Tribromomethane (Bromoform)	Probable human carcinogen	3	Used in consumer products Present in biomonitoring, drinking water, surface water, ambient air and groundwater Moderate reported releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	75-25-2
1,1,2-Trichloroethane	Possible human carcinogen	3	Widely used in consumer products Present in biomonitoring, drinking water, surface water, ambient air, and groundwater and soil Moderate reported releases to the environment	3	High environmental persistence Low bioaccumulation potential	2	Consumer Industrial	79-00-5
Triglycidyl isocyanurate	Reproductive toxicity Mutagenicity Acute toxicity from inhalation exposures	3	Widely used in consumer products Estimated to have high releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	1	Consumer Industrial	2451-62-9

Chemical Name	Hazard Criteria Met	Hazard Score	Exposure Criteria Met	Exposure Score	Persistence & Bioaccumulation Criteria Met	Persistence & Bioaccumulation Score	Use	CASRN
2,4,6-Tri-tert-butylphenol	Chronic toxicity and liver effects	2	Widely used in consumer products Present in indoor environments Estimated to have moderate releases to the environment	3	Moderate environmental persistence High bioaccumulation potential	3	Consumer Industrial	732-26-3
Tris(2-chloroethyl) phosphate (TCEP)	Mutagenicity Limited evidence of carcinogenicity	2	Widely used in consumer products Present in drinking water and indoor environments Estimated to have moderate releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	115-96-8
Tris(2,3-dibromopropyl) phosphate (TBP)	Probable human carcinogen	3	Widely used in consumer products Relatively small reported releases to the environment	2	Moderate environmental persistence Low bioaccumulation potential	2	Consumer	126-72-7
Vinyl chloride	Known human carcinogen	3	Used in consumer products Present in drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Moderate environmental persistence Low bioaccumulation potential	2	Consumer Industrial	75-01-4
m-Xylene	Reproductive toxicity Developmental toxicity	3	Widely used in consumer products Present in biomonitoring, drinking water, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	108-38-3
o-Xylene	Chronic toxicity	3	Used in consumer products Present in biomonitoring, drinking water, indoor environments, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	95-47-6
p-Xylene	Reproductive toxicity	3	Widely used in consumer products Present in biomonitoring, drinking water, surface water, ambient air, groundwater and soil High reported releases to the environment	3	Low environmental persistence Low bioaccumulation potential	1	Consumer Industrial	106-42-3

Note: An asterisk (*) in the Hazard Score column indicates the score is based solely on aquatic (environmental) toxicity.