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INTERNATIONALLY HARMONISED FUNCTIONAL, PRODUCT AND ARTICLE USE CATEGORIES

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INTERNATIONALLY HARMONISED FUNCTIONAL, PRODUCT AND ARTICLE USE CATEGORIES

IOMC

INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS

A cooperative agreement among FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD

Environment Directorate
ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT
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FOREWORD

The document includes updated internationally harmonized functional use categories, and product and article use categories for use in exposure assessments of chemicals.

This document was prepared and developed under the auspices of the Working Party on Exposure Assessment (Task Force on Exposure Assessment) under the leadership of the U.S. Environmental Protection Agency (EPA), based on review of available functional use and product categories, bilateral discussions with European Chemicals Agency (ECHA), and multiple reviews from Working Party members. The final draft version of the document was approved by the Working Party in March 2017.

This document is published under the responsibility of the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology of the OECD.

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EXECUTIVE SUMMARY

Approaches to categorize uses of chemical substances vary between countries, although a system for describing the uses of chemicals is an essential element in assessing exposure of humans and the environment to those chemicals during their use. To facilitate the exchange of information across countries, this document proposes harmonized functional use categories and product and article use categories.

The lists consist of 107 functional use categories, 91 product use categories and 69 article use categories. Each category is accompanied by a definition and examples of products, where appropriate, that should be reported under that category; the examples are intended to provide clarity in selection of a category thereby minimizing overlap and improving accuracy. Countries are encouraged to incorporate the updated codes in exposure assessments, exposure models and databases, and in reporting use information.

Additional work could also be envisaged, such as the development of generic formulations for products and articles, as these are basic inputs required for most exposure models. In addition, the development of guidance which could be used to link certain functional use categories with specific products or articles, and aspects of the lifecycle could be helpful in implementing the categories described in this document.

1 INTRODUCTION

1.1 Objectives

Many existing approaches to describe and categorize the uses of chemical substances are broad or general in nature. Most categorizations established to date are designed to meet the needs of a specific country, with less attention being given to the comparability of the information across different countries. These differences create obstacles to efforts to compare, aggregate and analyse the information on chemicals in products in assessing exposure to those chemicals during their use.

To facilitate the exchange of information, in 2012, the OECD released the document "Crosswalk of harmonized U.S. - Canada Industrial Function and Consumer and Commercial Product Categories with EU Chemical Product and Article Categories"(ENV/JM/MONO(2012)5), which compares harmonized U.S. and Canadian Industrial Function, and Consumer Product Use Codes with EU Chemical Product and Article Categories. To extend this work, in 2014, the OECD Task Force on Exposure Assessment (former Working Party on Exposure Assessment) adopted a proposal by the U.S. to incorporate additional categories and codes specific to the use of chemicals in products and articles, with the intent to enhance information with which to evaluate consumer use and exposures.

This document presents the expanded internationally harmonized functional and product use codes. The approach used to develop definitions of use descriptors, the proposed use categories for products and articles, and the next steps for implementing the internationally harmonized categories are presented in this document. Examples of potential application of the internationally harmonized use categories include incorporation into exposure assessments, exposure models and databases, and reporting of use information.

1.2 Methodologies

In considering definitions of use categories, it is important to consider how broadly or narrowly categories should be defined for the intended purpose, and the audience for the information. Clear definitions with examples are necessary in any effort to crosswalk and/or harmonize use categories at any level of granularity (broad or specific). Both approaches (broad and specific) have benefits and shortcomings.

Understanding which chemical substances are associated with these broad use categories is useful. Existing product and functional use categorization were developed in a broad manner. Broad categorization results in a greater number of chemicals covered by any given category. Narrow definitions of categories would group chemicals in a more refined way. However, a high level of granularity might limit the transferability of use between countries if use categories are too specific. It may also be more burdensome to report the information. Thus, it is important to balance the need for granularity with the burden of reporting the information.

1.3 Functional use category and product and article use category

The definitions of the functional use categories are based on the function that the chemical substance serves when used; examples are provided to assist with differentiating between similar categories. The

product and article use categories are intended to focus on the end-use application of chemicals within products and articles, rather than upstream manufacturing and processing. However, the functional use categories cover the lifecycle and describe the specific function that a chemical provides when used in the formulation of a product or article, or when used within an industrial process.

While the function of a chemical may be the same across its lifecycle, certain functions may only be appropriate for consideration in an industrial setting, while others may be relevant across the lifecycle. For example, in the U.S., companies reporting under the Chemical Data Reporting (CDR) rule indicate the type of industrial processing and use operation by selecting from a list of five codes: 1) Processing as a reactant; 2) Processing-incorporation in formulation, mixture, or reaction product; 3) Processing-incorporation into an article; 4) Processing-repacking; and 5) Non-incorporative activities. Similar distinctions could be used to identify the function of the chemical within the lifecycle.

There are differences in the legislations implemented by the OECD member countries, and the internationally harmonized use categories proposed in this document may be modified as appropriate in consideration of these differences. In addition, when OECD member countries incorporate the internationally harmonized use categories for reporting the information, an up-front question, with choices similar to this could be used to identify the functional, product or article category associated with a particular part of the lifecycle for a given chemical. As discussed within the document, additional distinctions may be added to further support exposure assessment, such as identification of whether the use occurs indoors or outdoors.

2 FUNCTIONAL USE CATEGORIES

2.1 Background

2.1.1 Data source

A review of existing data sources was undertaken to compile all functional use categories descriptor systems. There were several available systems, but only a select few included well documented definitions to accompany the use categories. To compile a list of functional use codes, with definitions the information listed in table 1 was reviewed.

Table 1. Data source and number of categories

Name	Date	Source	Number of Categories
U.S. EPA DfE Standard for Safer Products[1]	2011	US EPA	30
U.S. EPA Exposure Scenarios	1986	US EPA	99
U.S. EPA Function Codes	2012	US EPA	35
CSPA Functional Use Categories	2013	Consumer Specialty Products Association	100
Kirk Othmer and Ullmann's Functional Definitions	To date		34
SPIN: Substances in Products in Nordic Countries	2012	Nordic Council of Ministers, Chemical Group	62
ECHA: Descriptor list for Technical Functions	2015	Guidance on Information Requirements and Chemical Safety Assessment: R12: Use Description	121
U.S. EPA CHEMUSE Functional Use Database		U.S. EPA	198
Pritchard, G. Plastic Additives.	1997		37
Japan Use Categorization Codes[2]	To date	Japan METI and NITE	49

[1] http://www.epa.gov/dfe/pubs/projects/gfcp/standard-for-safer-products.pdf

[2]http://www.meti.go.jp/policy/chemical_management/english/cscl/files/publications/forimporters/use_category.pdf

2.1.2 Methodologies

More than 200 unique functional use categories were available across these data sources, which were condensed into a consolidated list of 107 categories.

These functional use categories and definitions have been improved and refined through careful review and revision to serve as internationally harmonized functional use categories. An overall goal was to balance the need for granularity with the burden of reporting the information. In particular, input was received and considered regarding whether:

- the existing categories cover the range of expected functional uses;
- the categories are most relevant to the incorporation of chemicals into formulated products, incorporation into formulated articles, used within industrial processes, or any combination of the these;
- additional categories are needed;
- existing categories should be further consolidated or further sub-categorized; and
- definitions are clear and accurate.

As a result of discussions between members of the Working Party on Exposure Assessment, and a review of additional sources, several functional use categories were removed from consideration because they did not reflect unique functions (e.g. paint and coating additives, wax additives). Other categories were combined because they were similar to each other. Certain categories such as impurities were removed from consideration since they are not functions. Several new categories were added which better reflect the diversity of functional uses within industrial processes and product and article formulations.

2.2 Functional Use Categories and Definitions

There are currently 107 functional use categories, including an “other” category, as outlined in Table 2.

Table 2. Functional Use Categories and Definitions

Category	Definition
Abrasive	Chemical substance used to abrade, smooth, or polish an object. Used to smooth, scour, scrub, clean, wear down, or polish surfaces by rubbing against the surface and removing imperfections from a surface. May be used in processes such as sputter etching and physical dry etching. Also referred to as a grinding agent; usually in the form of fine powders of hard substances; e.g., sandstones; pumice; quartz; silicates; aluminium oxides; and glass. See closely related: etching agent.
Absorbent	Chemical substance used to retain other substances by assimilation. Also referred to as an antisiccative. See closely related: adsorbent.
Adhesion/cohesion promoter	Chemical substance, either inorganic or organic, natural or synthetic, used to join opposite surfaces to each other; to promote bonding between other substances; to promote adhesion of surfaces; or to fasten other materials together. Generally applied from a solvent solution and allowed to dry on the two facing surfaces. Also referred to as glue; paste; coupling agent; gum; adhesive cement; bonding agent; inner coating; and anchor coating.
Adsorbent	Chemical substance used to retain other substances by accumulation on their surface; Exhibits a large surface area which can attract dissolved or finely dispersed substances from another medium. See closely related: absorbent; dehydrating agent.
Aerating and deaerating agents	Chemical substance that influences the amount of air or gases entrained in a material.
Alloying element	Chemical substances that are added to materials/metals to modify properties such as strength, hardness, or to facilitate treatment.
Anti-adhesive/cohesive	Chemical substance that prevents or reduces the adhesion of a material to itself or to another material; prevents bonding between other substances by discouraging surface attachment; functions as the antithesis of adhesive. Also referred to as a release agent; parting agent; anti-blocking agent; slip-aid; external lubricant; anti-setoff agent; de-dust oil; or dusting agent.
Anti-caking agent	Chemical substance that prevents granular or particulate materials from sticking or caking during transfer, storage, or use. See closely related: deflocculant.
Anti-condensation agent	Chemical substance or material that is used to avoid condensation on surfaces and in the atmosphere. Also referred to as an anti-dim agent or condensation remover.
Anti-freeze agent	Chemical substance added to fluids, especially water, to reduce the freezing point of the mixture; or applied to surfaces to melt or prevent the build-up of ice. Also referred to as a de-icing agent or de-icer; e.g., antifreeze liquids; windshield de-icers; aircraft de-icers; lock release agents; ice melting crystals; and rock salt.
Antioxidant	Chemical substance that retards oxidation, rancidity, deterioration, and gum formation. Used to maintain the quality, integrity, and safety of finished products

Category	Definition
	by inhibiting the oxidative degradation of the ingredients in the formulation. Also referred to as an oxidation inhibitor; or anti-skinning agent.
Anti-redeposition agent	Chemical substance that prevents dirt and grease from resettling on a cleaned surface or that helps keep soils from re-depositing onto clothing in the wash water after they have been removed. Anti-redeposition agents are water-soluble and typically negatively charged.
Anti-scaling agent	Chemical substance added to products to prevent the build-up of inorganic oxide deposits. Prevents the build-up or removes lime scale and fouling. Also referred to as a descalers or descaling agent. Not corrosion inhibitor. The formation of scale can be caused by the deposition of salts or minerals and may not necessarily lead to surface corrosion.
Anti-slip agent	Chemical substance used to enhance friction between two objects. Also referred to as a friction agent.
Anti-stain agent	Chemical substance that provides stain blocking and soil resistance in soft surface cleaners and protectors. Also referred to as a soil release agent.
Anti-static agent	Chemical substance that prevents or reduces the tendency of a material to accumulate a static charge or alters the electrical properties of materials by reducing their tendency to acquire an electrical charge. Used in diesel fuel to prevent the build-up of static electricity. Also referred to as a charge stabilizer.
Anti-streaking agent	Chemical substance which serves to enhance evaporation or reduce film formation in order to prevent the formation of streaks on a surface during cleaning. Also referred to as a film reducer.
Binder	Chemical substances that are either synthetic/polymeric resins that further polymerize, provide structure and cohesiveness or are substances added to compounded dry powders to provide adhesive qualities during and after compression to make tablets or cakes. Also referred to as a binding agent or resin.
Biocide	Chemical substance that prevents, neutralizes, destroys, repels, or mitigates the effects of any pest or microorganism; including fungal cells; decreases the number of microorganisms present; Also referred to as a disinfectant; pesticide; insecticide, herbicide, rodenticide; antifungal agent; antimicrobial agent; horticultural spray oil; non‑agricultural pesticide; or plant protection active substance. Not embalming agent or preservative.
Bleaching agent	Chemical substance that lightens or whitens a substrate through chemical reaction. Usually involves oxidative or reductive processes that decolorizes or degrades colour systems. Can occur by destroying one or more of the double bonds in the conjugated chain; by cleaving the conjugated chain; or by oxidation of one of the other moieties in the conjugated chain. See closely related: brightener.

Category	Definition
Brightener	Chemical substance used to brighten, whiten, or enhance the appearance of colour of fabric and paper, usually by absorbing light in the ultraviolet and violet region (340-370 nm) of the electromagnetic spectrum, and re-emitting light in the blue region (420-470 nm). Causes a "whitening" effect by increasing the overall amount of blue light reflected. Optically colourless on the substrate and does not absorb in the visible part of the spectrum. Also referred to as a brightening agent; fluorescent whitening agent; optical brightener; or whitener. See closely related: bleaching agent; photosensitive agent.
Catalyst	Chemical substance that increases the rate of the intended chemical reaction but is in its original state at the completion of the reaction. See closely related: chemical reaction regulator.
Chain transfer agent	Chemical substance that terminates the growth of a molecular chain and forms a new radical that can act as the initiator for a new chain.
Chelating agent	Chemical substance that has the ability to complex with and inactivate metallic ions by forming two or more coordinate bonds with a single metal ion. After the first coordinate bond, each successive donor atom that binds creates a ring containing the metal ion; this cyclic structure is called a chelation complex or chelate. Used in wash solutions in regions where water is hard (to inactivate calcium and magnesium and soften water). Used to remove ions from solutions and soils by forming a type of coordination complex that can be removed without further interactions. Cleans oxide films from metals by stabilizing metal ions through complexing heterocyclic rings around each ion. Also referred to as a chelant; sequestrant; sequestering agent; complexing agent; chlorine scavenger; or builder.
Chemical reaction regulator	Chemical substance used to change the rate of a chemical reaction, start or stop the reaction, or otherwise influence the course of the reaction. May or may not be consumed or becomes a part of the reaction product. Also referred to as an accelerator; activator; inhibitor; cross linking agent; initiator; enzyme; exotherm modifier; lytic agent; foam catalyst; polymer cross linking agent; rubber accelerator activator; retarder; shortstops; or vulcanizing agent. See closely related: catalyst and terminators/blockers.
Cleaning agent	Chemical substance used to remove or breakdown soils, stains, or impurities from surfaces into smaller, more soluble pieces for removal; e.g., enzymes; other microbial cleaning agents; oxides; and sulfides. Not: abrasive; chelating agent; anti-scaling agent; detergent; foamant; solvent; soap; soap scum remover; surfactant; or brightener.
Cloud-point depressant	Chemical substance that depresses the temperature at which solids begin to separate from a liquid at a temperature lower than that normally allowed.
Coalescing agent	Chemical substance used in polymer emulsions that lower the glass-transition temperature (Tg) which results in the decrease in the minimum film-forming temperature (MFT) and upon evaporation, yields a hard film. Used in polishes;

Category	Definition
	e.g., glycol; ether; pyrrolidines; and benzoates. Also referred to as a minimum film-forming temperature (MFT) modifier.
Conductive agent	Chemical substance used to conduct electrical current. Also referred to as an electrolyte; or electrode material.
Corrosion inhibitor	Chemical substance used to prevent or retard corrosion on metallic materials. Used in many products packaged in metal containers (such as aerosol products). Used in lubricants and other metal treatment products to provide protection to the substrates or surfaces on which the lubricants are used. Also referred to as a corrosion‑inhibiting additive; rust preventative; anticorrosion agent; or antirust agent.
Crystal growth modifiers (nucleating agents)	Chemical substance used to reduce or increase crystal growth.
Deflocculant	Chemical substance used to fluidize concentrated slurries to reduce their bulk viscosity or stickiness in processing or handling. See closely related: anti-caking agent.
Defoamer	Chemical substance that controls foam; prevents foam from forming; breaks down any foam that does form; and reduces foaming from proteins, gases, or nitrogenous materials. Reduces the tendency of finished products to generate foam upon shaking or agitation. The ability of a material to act as antifoam depends on its tendency to concentrate on the surface of existing or forming bubbles and to disrupt the continuous films of liquid surrounding them. Used as a process aid to improve filtration, dewatering, washing, and drainage of many types of suspensions, mixtures, and slurries. Also referred to as an antifoaming agent.
Dehydrating agent (desiccant)	Chemical substance used to absorb and remove water from gases or liquids to induce or maintain a state of dryness. Substances are usually hygroscopic materials. See closely related: humectant; adsorbent.
Demulsifier	Chemical substance used to destroy an emulsion or prevent its formation.
Density modifier	Chemical substance that modifies the density of a material. Also referred to as density modifying agents. See closely related: viscosity modifier; thickening agent.
Deodorizer	Chemical substance that reduces or eliminates unpleasant odour and protects against the formation of malodour on body surfaces. Counteraction, sometimes referred to as neutralization, occurs when two odorous substances are mixed in a given ratio and the resulting odour of the mixture is less intense than that of the separate components. Also referred to as a deodorizing agent.
Diluent	Chemical substance typically in the form of a volatile liquid that serves primarily to reduce the concentration of the other ingredients in a formulation or to modify

Category	Definition
	the consistency or other properties. The term is most often used for liquid formulations, with the term filler used for solid or powder formulations. Also referred to as a thinner; or mineral spirits. See closely related: solvent.
Dispersing agent	Chemical substance added to a suspending medium or suspension to improve the separation of particles; to ensure proper dispersion; to prevent settling or clumping; to encourage uniform and maximum separation of individual, extremely fine solid particles or liquid droplets, often of colloidal size. Used in dispersal of dyes to ensure uniform coloration. Also referred to as an anti-settling agent; dispersant; solids separation agent; or suspending agent. Not: surfactant.
Drier	Chemical substance that speeds the drying of paint, ink, etc. Often organometallic compounds. Also referred to as a siccative. See closely related: adsorbent; dehydrating agent. Example: metal soaps which are used as drying agents that promote the hardening of coatings. Not: Hardener.
Dust Suppressant	Chemical substance used to control finely grained solid particles to reduce their discharge into the air. Also referred to as a dust binding agent.
Dusting agent	Chemical substance that is dusted on to the surface of a material (e.g., rubber) to reduce surface tack. Also referred to as a detackifier.
Dye	Chemical substance used to impart colour to other materials or mixtures. Added to a material for colour and generally requires some degree of solubility to allow it to dissolve or disperse in water or diffuse into the polymeric matrix. Molecularly dispersed within a liquid, transferred to a material, and bound to that material through intermolecular forces. Typically, organic substances, although exceptions do exist. Also referred to as a colorant. See closely related: pigment.
Elasticizer	Chemical substance that increases the elasticity of a material.
Embalming agent	Chemical substance used for the preservation of biological tissue; e.g., embalming fluid, arterial fluid, cavity fluid, surface embalming fluids. Not: biocide; preservative.
Emulsifier	Chemical substance used to ensure that a thick mixture of oil and water will maintain an even distribution of ingredients that will not separate. Without emulsifiers, the liquid will separate into two parts or phases. Emulsifiers are used to prepare emulsions, such as fabric softeners, creams, lotions and many food products. Emulsifiers have both lipophilic and hydrophilic components. Also referred to as emulsifying agent. See closely related: surfactant.
Energy releasers (explosives, motive propellant)	Chemical substance characterized by chemical stability, but may be induced to undergo rapid chemical change without an outside source of oxygen, rapidly producing a large quantity of energy and gas accompanied by a large increase in volume and an explosion, bursting, or expansion. Also referred to as a blasting agent; detonator; incendiary; or pyrotechnic.
Etching agent	Chemical substance that removes unprotected areas of metal or glass surfaces via

Category	Definition
	chemical action. Usually acids or bases. Used in processes such as chemical milling; industrial etching; electro etching; photochemical machining; photochemical milling; photo etching; acid etching; vapour phase etching; See closely related: abrasives.
Explosion inhibitor	Chemical substance used to reduce the explosion potential of flammable materials.
Filler	Chemical substance added to fill out a dry product formulation and to lower the concentration of other ingredients. A finely divided substance usually added to extend volume and sometimes to improve desired properties, such as whiteness, consistency, lubricity, density or tensile strength. Used to provide bulk, increase strength, increase hardness, or improve resistance to impact. Used to extend a material and to reduce its cost by minimizing the amount of more expensive substances used in the production of articles. Used to fill cavities or tighten joints. Relatively inert and normally non-fibrous. Also referred to as a bulking agent; pigment extender; inert filler; or impact modifier.
Film former	Chemical substance used in forming a thin continuous sheet on its substrate that acts as a barrier against the environment. Silicone is a good film-former in furniture polishes because of its ease of application, soil removal, and depth of glossiness. Polymers are the most commonly used film formers. Also referred to as a drying oil.
Fire extinguishing agent	Chemical substance that aids to slow down combustion once started; remove heat faster than it is released; separates the fuel and oxidizing agent; and/or dilutes the vapour phase concentration of the fuel and oxidizing agent below what is needed for combustion.
Fixing agent (mordant)	Chemical substance used to interact with a dye on fibres to improve fastness. Also referred to as a dye transfer inhibitor.
Flame retardant	Chemical substance that alters the normal degradation or combustion processes of plastics, rubbers, textiles, papers and woods, etc. Used on the surface of or incorporated into combustible materials to reduce or eliminate their tendency to ignite when exposed to heat or a flame for a short period of time. Used to raise the ignition point; and/or to slow down or prevent combustion.
Flavouring and nutrient	Chemical substance used in food, animal feedstuffs, and some non-food products to produce or alter taste or odour or nutritional value. Used to stimulate the human taste chemical senses or to enhance nutritional value. Also referred to as a flavouring agent or bittering agent (denaturant); vitamins or minerals.
Flocculating agent	Chemical substance that facilitates flocculation of suspended solids in liquid by acting on the surface of particles to reduce repulsive forces and increase attractive forces on a molecular level. Flocculating agents are chemical additives, which, at relatively low levels compared to the weight of the solid phase, increase the degree of flocculation of a suspension. Principally used to aid in making solid–liquid separations. Also referred to as a coagulant.

Category	Definition
Flotation agent	Chemical substance used to concentrate targeted substances or materials on the surface of a liquid mixture for subsequent separation. Used to obtain minerals from ores; to float suspended materials separated from the water column in water clarifiers, to remove ink in deinking processes. Also referred to as flotation oil or flotation depressant.
Flow promoter	Chemical substance that reduces drag in fluids in motion and between a fluid and a conduit surface.
Flux agent	Chemical substance used to promote the fusing of minerals or prevent oxide formation. Used for casting or joining materials. Also referred to as a welding agent or soldering agent.
Foamant	Chemical substance that promotes or enhances formation of a lather or foam (e.g. a dispersion of a gas in a liquid or solid). Used to form physically, by expansion of compressed gases or vaporization of liquid, or chemically, by decomposition evolving a gas, a foam or cellular structure in a plastic or rubber material. Also referred to as a foaming agent; blowing agent; expanding agent; frother; or foam booster.
Fragrance	Chemical substance used to control odours or impart pleasing odours. Fragrance compounds are molecules that stimulate the human olfactory chemical senses.
Freeze-thaw additive	Chemical substance used in synthetic resin emulsions or synthetic lattices to enable paints, coatings, and other products to retain original consistency and to resist coagulation when exposed to freezing and thawing prior to application.
Fuel	Chemical substance used to create mechanical or thermal energy through chemical reactions. Used to evolve energy in a controlled combustion reaction.
Fuel agents	Chemical substance added to a fuel for the purpose of improving combustion limiting the production of undesirable combustion products; e.g. combustion accelerators, cetane improvers, antiknock agents. Not: corrosion inhibition; lubrication; anti-oxidant; odorant; or detergency.
Hardener	Chemical substance used to increase the strength, hardness, and abrasion resistance of coatings, adhesives, sealants, elastomers, and other products. Also referred to as curative or curing agent.
Heat stabilizer	Chemical substances that protect substrates such as polymers from degrading effects of heat by dissipating heat through the process of erosion, melting, or vaporization. Also referred to as ablative.
Heat transferring agent	Chemical substance used to transmit or to remove heat from another material; e.g., cooling agent; heating agent; surface cooling agent; and coolants.
Humectant	Chemical substance used to retard moisture loss from the product during use. Generally performed by hygroscopic materials. Also used in personal care and

Category	Definition
	other products with skin exposure to prevent loss of moisture from the skin and retain natural moisture The efficacy of humectants depends to a large extent on the ambient relative humidity. See closely related: dehydrating agent (desiccant).
Hydraulic fluids	Chemical substance, typically liquid or gaseous, used for transmitting pressure and Extreme Pressure (EP)-additives; and to transfer power in hydraulic machinery. Also referred to as a pressure transfer agent; e.g., hydraulic/transmission fluid; brake fluid; power steering fluid; and shock absorbers.
Impregnation agent	Chemical substance used to admix with solid materials, which retain their original form. Also referred to as an entrainment aid.
Incandescent agent	Chemical substance that is used to emit electromagnetic radiation at high temperature.
Insulators	Chemical substance used to prevent or inhibit the flow of heat, electrical current, light, and the transmission of sound between two media. Acoustic, electrical, and thermal insulators; e.g., dielectric fluid; electric resistant materials; and encapsulant.
Intermediate	Chemical substance consumed in a reaction in order to manufacture other chemical substances at an industrial processing facility. Formed (directly or indirectly) from reactants and reacted further to create (either directly or indirectly) the products of a chemical reaction.
Ion exchange agent	Chemical substance, usually in the form of a solid matrix, used to selectively remove targeted ions from a solution by adsorbing ions of a given charge (either cations or anions) in solution and replacing/releasing equivalent quantities of other ions of the same charge into the solution.
Leaching agent	Chemical substance that, when added to a solvent, aids in the dissolution of a component of an insoluble solid mixture. Used to extract certain components from the solid phase into the liquid phase. See closely related: solubility enhancer.
Lubricating agent	Chemical substance introduced between two moving surfaces or adjacent solid surface to reduce the friction between them, improve efficiency, reduce wear, and reduce heat generation. Enhances the lubricity of other substances to shear easily by minimizing contact between the rubbing surfaces so that the frictional force opposing the rubbing motion is low.
Magnetic element	Chemical substance added into materials to make them magnetic.
Monomers	Chemical substance usually containing carbon and of a low molecular weight and simple structure which is capable of conversion to polymers, synthetic resins, or elastomers by repetitive combination with itself or other similar molecules.
Opacifer	Chemical substance that renders solutions opaque; reduces transparency or the ability of light to pass through solution; added to finished products to reduce their

Category	Definition
	clear or transparent appearance.
Oxidizing agent	Chemical substance that gains electrons during their reaction with a reducing agent. Oxidizing agents commonly contribute oxygen to other substances. Also referred to as an oxidant.
pH regulating agent	Chemical substance used to alter, stabilize, or control the pH (hydrogen ion concentration) within a desired range. Also referred to as a buffering agent; pH adjuster; pH regulating agent; or neutralizing agent.
Photosensitive agent	Chemical substance that emits visible radiation as a direct consequence of the absorption of photons, charged particles, or chemical (e.g., UV light) and that ceases to emit radiation when the stimulating radiation is discontinued. Also referred to as a luminescent agent; or fluorescent agent. See closely related: brightener.
Photosensitizers	Chemical substance that absorbs electromagnetic radiation and transfers energy to other materials making them susceptible to chemical change. e.g., activation of photographic emulsions; and photoresist.
Pigment	Chemical substance, usually in the form of a dry powder and with a positive colorant value, that imparts colour to another substance or mixture by attaching themselves to the surface of the substrate through binding or adhesion. May contribute towards opacity, durability, and corrosion resistance and may scatter and absorb light. Larger than molecular particle size and held in place by corresponding low mobility. Pigments differ from dyes in that they are insoluble in the vehicle and exist as dispersed compounds in paint rather than as a solute. See closely related: dye.
Plasticizer	Chemical substance that softens synthetic polymers. Added to a high polymer to facilitate processing and to increase flexibility, plasticity, fluidity and toughness of the final product by internal modification (solution) of the polymer molecule. May be added internally or externally. A rigid polymer can also be externally plasticized by addition of a plasticizer, which imparts the desired flexibility but is not chemically changed by reaction with the polymer
Plating agent	Chemical substance used as a source of metal or inorganic compound that is deposited on another surface or that aids in such a deposition. Used in processes such as electroplating; galvanization; coating; phosphate treatment; chromate treatment; black oxide coating; anodic oxidation; diffusion treatment; carburizing; nitriding; and carbon nitriding. Also referred to as electroplating agent; galvanization agent; or coating agent.
Polymerization promoter	Chemical substance that enables a reaction between two or more dissimilar polymers, allowing them to become more intimately mixed than before.
Preservative	Chemical substance used to eliminate or minimize the build-up of microbial growth to protect against decay, decomposition discoloration or spoilage and maintain product performance over full shelf-life; e.g., food preservative; wood

Category	Definition
	preservative; cosmetic preservative; and drug preservative. Not: biocide or embalming agent. However, some organizations consider preservatives as a subset of biocides.
Processing aids not otherwise specified	Chemical substance used to improve the processing characteristics or the operation of process equipment when added to a process or to a substance or mixture to be processed. Does not become a part of the reaction product nor has function in the reaction product. Not intended to affect the function of a substance or article created; e.g., mold release agent.
Propellants, non-motive (blowing agents)	Chemical substance that is used for expelling products from pressurized containers. Used to dissolve or suspend other substances and either to expel those substances from a container in the form of an aerosol or to impart a cellular structure. Provides the force necessary to expel the contents of aerosol containers upon discharge of the internal pressure through expansion of the liquefied or compressed gas. The formulated product in the pressurized container may be in solution, emulsion, or suspension.
Reducing agent	Chemical substance that during reactions with oxidizing agents lose electrons. Acts as an electron donor in chemical reactions by contributing hydrogen to other substances or removing oxygen.
Refrigerants	Chemical substances used within machines such as air conditioning units, refrigerators, and walk-in freezers to cool indoor air and reduce temperatures. Not sealants for coating material – see hardener.
Sealant (barrier)	Chemical substances used to fill up a space (e.g. joints, gaps or cavities between two substrates) and prevent seepage of moisture or air, e.g., mastic sealant. Not sealants for coating material – see hardener.
Semiconductor and photovoltaic agent	Chemical substance that has resistivity between that of insulators and metals. Usually changeable by light, heat or electrical or magnetic field. Generates electromotive force upon the incidence of radiant energy. Used in manufacturing of electrical components and electronic devices such as transistors and diodes; e.g., semiconductor materials; and liquid crystal materials.
Sizing agent	Chemical substance applied to substrates such as fabric, yarn, paper products, or plaster to increase abrasive resistance, stiffness, strength, smoothness, or reduce absorption.
Softener and conditioner	Substance used for softening materials to improve feel, to facilitate finishing process, or to impart flexibility or workability; used in textile finishing to impart superior “hand” to the fabric and facilitate mechanical processing; has the capability of imparting softness and pliability to washable textile fabrics. E.g., fabric softener; fabric conditioner; conditioning agent; and moisturizer.
Soil amendments	Chemical substance used to increase the productivity and quality of farm crops, plants, and forests. Added to soil to promote better plant growth. Includes fertilizers, nutrient additives, and soil conditioners.

Category	Definition
Solids separation (precipitating) agent, not otherwise specified	Chemical substance used to promote the separation of suspended solids from a liquid; e.g., dewatering aids; and drainage aids. Not: flocculating agent; or flotation agent.
Solubility enhancer	Chemical substance that prevents chemicals or materials from separating or falling out of solution and increases the concentration of the solute in the concentrated solution. Often used in concentrated formulations. See closely related: leaching agent.
Solvent	Chemical substance primarily used to dissolve another substance (solute) to form a uniformly dispersed mixture (solution) at the molecular or ionic size level; to suspend solid particles or colloidal materials to yield suspensions or gels, to provide dissolving capability required for a stable formulation; to dissolve certain components of the formulation to aid dispersion of components; to aid in oil cleansing power and control film drying rate; to solubilize soils on surfaces and facilitate removal. Used to dissolve, thin, and extract. Also referred to as a vehicle. See closely related: diluent.
Stabilizing agent	Chemical substance that tends to keep a compound, solution, or mixture from changing its form or chemical nature. Renders or maintains a solution, mixture, suspension, or state resistant to chemical change. Used to prevent or slow down spontaneous changes in and aging of materials.
Surface modifier	Chemical substance that may be added to other ingredients to adjust the optical properties associated with the surface of a material such as affect the lustre, increase gloss, and alter the reflectance exhibited by a surface. Also referred to as a levelling agent; polishing agent; refractive index modifier; surface coating agent; flatting agent; or gloss agent.
Surfactant (surface active agent)	Chemical substance which, when added to water, has surface active properties and is capable of reducing the surface tension of the water promoting the penetration of or spread over the surface of another material and reducing interfacial tension between two liquids, between a liquid and a solid, or between liquid and air. Closely related: emulsifier, wetting agent. Note, aqueous wetting agents that are added to water are included in this category. A new category for non-aqueous wetting agents was added as these are not added to water.
Swelling agent	Chemical substance added to a material to cause that material to increase in volume and become softer.
Tanning agents not otherwise specified	Chemical substances used for treating or pre-treating leather materials such as hides and skins and not covered by other function categories; e.g., leather oils, defatting agents, fat liquoring agents; and de-liming agents.
Terminator/blocker	Chemical substance that reacts with the end of a growing polymer chain, stopping further polymerization (terminator) or a substance used to protect a reactive moiety on a precursor during organic synthesis of a product that is subsequently

Category	Definition
	removed regenerating the reactive moiety (blocker). See closely related: chemical reaction regulator.
Thickening agent	Chemical substances, typically hydrophilic, used to form solid or semisolid dispersions of a mixture or increase the viscosity of liquid mixtures and solutions and to aid in maintaining stability by their emulsifying properties without changing their other properties. Four classifications are recognized: 1) Starches, gums, casein, gelatine and phycocolloids; 2) semisynthetic cellulose derivatives (e.g. carboxymethyl-cellulose); 3) polyvinyl alcohol and carboxy-vinylates (synthetic); and 4) bentonite, silicates, and colloidal silica. May also be hydrophobic at lower temperatures. Also referred to as a rheology modifier; viscosity index improver. See closely related: density modifier; and viscosity modifier.
Tracer	Chemical substance that possesses a readily detectable radioactive/isotopic label or chemical moiety which is added to biological/environmental media or chemical reactions to elucidate the transformation/transportation processes that are occurring.
UV stabilizer	Chemical substance that protects the product from chemical or physical deterioration induced by ultraviolet light. Absorbs UV radiation, thereby protecting products including varnishes, pigments, and certain polymers against UV degradation. Also referred to as a UV absorber or light stabilizer.
Vapor pressure modifiers	Chemical substance added to a liquid to modify its vapour pressure and to reduce evaporation.
Viscosity modifier	Chemical substance used to alter the viscosity of another substance. Used to decrease or increase the viscosity of finished products; to modify the flow characteristics of other substances, or mixtures to which they are added; to control the deformation or flow ability of a wax product. High molecular weight pre-polymer resins and reactive precursor resins generally lower viscosity while thickeners (e.g., gums and hydroxyethyl cellulose) increase viscosity. Thermoplastic resins soften when exposed to heat and return to original form at room temperature, and thermosetting resins solidify irreversibly due to cross-linking when heated. Also referred to as a viscosity adjuster; or viscosity controlling agent. See closely related: density modifier; gelling modifier, thickening agent.
Waterproofing agent	Chemical substance that lowers the surface energy to protect surfaces against water by forming water beads. Also referred to as a water-beading agent.
Wetting agent (non-aqueous)	Chemical substance that promotes coating of an organic liquid on a solid material by lowering the surface tension. Note, the chemical substance is not added to water. Wetting agents that are added to water (aqueous wetting agents) are covered under the Surfactant (surface active agent) category.
Wrinkle resisting agent	Chemical substance used to impart wrinkle-resistance in in textiles, paper and leather.

Category	Definition
X-Ray absorber	Chemical substance used to block or attenuate X-rays.
No specific technical function	Chemical substance with no pre-defined function. If no specific technical function is selected, the function should be written in. (e.g. case where a processing aid remains in the matrix of an article without fulfilling any technical function during Service life)
Other	Chemical substances contained in products intended for consumer, commercial, or industrial use that are not covered under another product category. Specify the function.

Table 3 provides a few examples of chemical classes and their potential functional uses. Note, this table is not an exhaustive list of chemical classes or their potential uses; instead, it provides a few example chemical classes and some of their most common functional uses.

Table 3. Example Chemical Classes and Potential Functional Use

Chemical Class	Potential Functional Use
Alcohols	Fuel
	Solvent
Ethers	Propellant, non-motive (blowing agent)
	Refrigerant
	Solvent
Organic Acids	Preservative
	pH regulating agent
Organic Alkalis	Cleaning agent
	Surfactant
	pH regulating agent
Phthalates	Plasticizer

3 PRODUCT AND ARTICLE USE CATEGORIES

3.1 Background

Existing harmonized product use categories were used as a starting point and compared to the names of scenarios used in existing exposure assessment models. Not all product use categories are likely to result in exposures, so categorizing or naming these categories may not provide added value for purposes of exposure assessment. There are many different approaches to categorizing product use, when compared to functional use. Rather than follow a similar approach for functional uses to gather available categorization systems and definitions, existing broad harmonized product use categories and existing consumer exposure models with defined exposure scenarios were used as the primary data sources.

A distinction between products and articles is also important. Certain chemicals may only be added to articles, others only used to formulate products, and others could be used for both. For the purposes of exposure assessment, products and articles are treated differently. Formulations, anticipated use patterns, and available approaches to estimate exposure are different. For the purposes of this document, the following definitions are used:

- "Products" are consumable liquids, aerosols, semi-solids, or solids that are used a given number of times before they are depleted. Exposures are elevated for a shorter period of time during use(s), and lower when products are not being used. Product use is more likely to include direct contact and/or close proximity. Note, some products may be applied on the surface of articles for long-term use and exposures over time may not follow this general trend.

- "Articles" are generally solids, polymers, foams, metals, woods, which are always present within indoor environments for the duration of their useful life which may be several years. Migration of additive chemicals out of articles can result in exposure through ingestion of dust particles, mouthing of article surface, or skin contact. Volatile organic chemicals are more likely to be released as vapours from certain articles over time, while semi-volatile organic chemicals are more likely to be released through diffusion and partition to dust. For articles, it will also be important to collect information on which polymer type is used for plastic articles, perhaps the largest and most diverse article category.

Additional definitions of consumer products and articles are provided below.

- The U.S. Consumer Product Safety Act (15 U.S.C. §2080(a))[3] defines a consumer product as any article, or component part thereof, produced or distributed for sale to a consumer for use in or around a permanent or temporary household or residence, a school, in recreation, or otherwise,

[3] http://www.law.cornell.edu/uscode/text/15/2052

or for the personal use, consumption or enjoyment of a consumer in or around a permanent or temporary household or residence, a school, in recreation, or otherwise.

- The U.S. EPA's Chemical Data Reporting Rule[4] defines a consumer use as the use of a chemical substance or a mixture containing a chemical substance (including as part of an article) when sold to or made available to consumers for their use. Commercial use is defined as 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.

- The U.S. EPA (40 CFR 704.3)[5] defines an article as a manufactured item which is formed to a specific shape or design during manufacture, which has end use function(s) dependent in whole or in part upon its shape or design during end use, and which has either no change of chemical composition during its end use or only those changes of composition which have no commercial purpose separate from that of the article, and that result from a chemical reaction that occurs upon end use of other chemical substances, mixtures, or articles; except that fluids and particles are not considered articles regardless of shape or design.

- Article 3(3) of the REACH Regulation defines an article as "an object which during production is given a special shape, surface or design which determines its function to a greater degree than its chemical composition". An article is generally understood to be an object composed of one or more substances or mixtures given a specific shape, surface or design. It may be produced from natural materials, such as wood or wool, or from synthetic ones, such as polyvinyl chloride (PVC). It may be very simple, like a wooden chair but can also be very complex, like a laptop computer, consisting of many parts. Most of the commonly used objects in private households and industries are articles, e.g. furniture, clothes, vehicles, books, toys, kitchen equipment and electronic equipment. Buildings are not considered to be articles, so long as they remain fixed to the land on which they stand (Guidance on requirements for substances in articles Version 2, ECHA 2011[6])

Consideration should be given to the use of additional indicators to differentiate between products primarily used indoors versus outdoors. This distinction will improve exposure characterizations and models associated with the products as the frequency and duration of use may vary for indoor and outdoor uses.

3.2 Product use categories

The number of product use categories is 91, as listed in table 4.

[4] http://www.law.cornell.edu/cfr/text/40/711.3

[5] http://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol31/pdf/CFR-2011-title40-vol31-sec704-3.pdf

[6] http://webcache.googleusercontent.com/search?q=cache:http://echa.europa.eu/documents/10162/13632/articles_en.pdf&safe=on

Table 4. Number of product use categories

Categories	Number of sub-Categories
Adhesives and sealants	7
Agricultural products	3
Air care products	3
Arts, crafts and hobby materials	7
Anti-freeze and de-icing products	4
Apparel and footwear care products	6
Fabric, textile and leather products not covered elsewhere	6
Automotive care products	4
Cleaning and furnishing care products	8
Explosive materials	1
Fuels and related products	3
Ink, toner and colorant products	4
Laundry and dishwashing products	8
Lubricants and greases	4
Other Use	1
Personal care products	9
Paints and coatings	9
Photographic supplies, film and photochemicals	1
Water treatment products	3
Total	91

3.2.1 Adhesives and sealants:

Chemical substances used to fasten other materials together or prevent the passage of liquid or gas that are intended for consumer or commercial use should be reported under this code. Examples of adhesive and sealant products include glues, binders, adhesives, pastes, sealants, fillers, putties, and caulking compounds. Spray adhesives are covered under the arts and crafts category, but could also be moved into this category. See Section 3.2.4 for adhesives used in arts, crafts, and hobbies.

Table 5: Product use categories (adhesives and sealants)

sub-Category	Definition
Single component glues and adhesives	Adhesives (packaged less than 8 ounces per bottle and intended for small amount per use applications such as bookbinding) which are premixed with their final product formulation. Product use and exposure to light, humidity, or temperature initiates chemical reaction and cure. Examples include anaerobic, cyanoacrylates, heat-cure, moisture-cure, radiation-cure, and silicones.
Two-component glues and adhesives	Adhesives (packaged in containers smaller than 8 ounces per container and intended for small applications) which are stored in two separate containers, generally a resin and a hardener which are then mixed together to initiate chemical reaction and cure. Examples include epoxies, methyl methacrylates, silicon adhesives, and polyurethanes.
One component caulks	Caulks (sealants) which are premixed with their final product formulation. Examples include acrylic solvent-based, butyl solvent-based, latex water-based, silicone and polyurethane.
Two component caulks	Caulks (sealants) which are stored in two separate parts, generally a base and an activator. The activator is added to the base and mixed before application. Examples include epoxy-solvent based silicone and polyurethane.
Fillers and putties	Highly malleable materials used to repair, smooth over, or fill minor cracks and holes in building surfaces.
Solder	Metal alloys melted down to permanently bond metal parts together. Commonly used in electronics, plumbing and sheet metal work.
Hot-melt adhesives	Adhesives (supplied in solid cylindrical sticks and intended for small applications) designed to be melted and dispensed through an electric hot glue gun.

3.2.2 Agricultural products

Products containing substances used to increase the productivity and quality of plant, animal and forestry crops produced on a commercial scale should be reported under this code. Examples of agricultural products include fertilizers, additives (time release agents, adjuvants and surfactants which promote even distribution of herbicides and pesticides but are added separately), colorants (used to mark fields and improve the appearance of Christmas tress), application aids (defoamers and foamers), soil conditioners, and, seed coatings. They also include chemical or biological products such agricultural pesticides, plant protection products or used in agriculture to protect plant, animal and forestry crops.

Products contain substances used to care for or plants and trees, produced in lawns and gardens that are intended for consumer or commercial use should also be reported under this code. Examples of lawn and

garden products include fertilizers and nutrient mixtures, soil amendments, mulches, water retention beads, vermiculite, and perlite.

Note, biocides are included in this table. There are agricultural and non-agricultural applications of biocides as described in the table below.

Table 6: Product use categories (agricultural products)

Sub-Category	Definition
Agricultural non-pesticidal products	Products used to increase the productivity of crops, or aid in the harvesting of crops. Examples include fertilizers, colorants, and application aids, and soil amendments (e.g. products added to soil to adjust pH, retain water or alter other properties).
Biocides (non-agricultural applications)	Products that prevent, neutralize, destroy, repel, or mitigate the effects of any pest or microorganism; inhibits the growth, reproduction, and activity of organisms, including fungal cells; decreases the number of microorganisms present; deters microbial growth and degradation of other ingredients in the formulation in a non-agricultural setting. Examples include disinfectants, wood preservatives, in-can preservatives, antifouling agents used for shipping.
Biocide (Agricultural pesticide products)	Products which are distributed or sold in a particular form as agricultural pesticides, plant protection products or agricultural chemicals used in agriculture to protect plants, animals and forestry crops should be reported under this subcategory code. Examples include pesticides, herbicides, insecticides, rodenticides and fungicides added to crops to prevent and mitigate damage from microorganisms and pests.

3.2.3 Air care products

Chemical substances used to odorize or deodorize indoor air in homes, offices, motor vehicles, and enclosed spaces and intended for consumer or commercial use should be reported under this code. Examples of air care products include aerosol sprays, liquid/solid/gel diffusers, air fresheners, scented candles and incense.

Table 7: Product use categories (air care products)

Sub-Category	Definition
Instant action air fresheners	Aerosol spray and incense products that odorize or deodorize air in indoor environments.
Continuous action air fresheners	Liquid, solid, gel diffuser, solid incense products and scented candle products that odorize or deodorize air in indoor environments
Air fresheners for motor vehicles	Aerosol spray and continuous action air products used to odorize or deodorize motor vehicles

3.2.4 Arts, crafts, and hobby materials

Chemical substances used in arts, crafts, and hobbies that are intended for consumer or commercial use should be reported under this code. Examples of arts, crafts, and hobby materials include art/hobby paints, crafting glue, fixatives, and modelling clay. This definition previously included solids (glass, stone, and ceramics) used for activities such as jewellery making, but the article-based materials would move into the relevant article codes.

Formulations of crafting glue, adhesives and paint may be similar to formulations of paints and adhesives in other categories. Other use patterns could be updated such as frequency, duration, and amount of use.

Table 8: Product use categories (arts, crafts, and hobby materials)

Sub-Category	Definition
Crafting glue	Used to adhere two substances to one another, see adhesives definitions
Adhesives applied at elevated temperatures	Used at elevated temperatures to melt and apply adhesive which when cooled, hardens and adheres the two substances to one another. Examples include solder and hot-melt adhesive, see adhesive definitions.
Crafting paint (applied to craft)	Used to add colour to crafting substances, see paints definitions
Crafting paint (applied to body)	Used to add colour to fingers, faces, or other body parts
Fixatives and finishing spray coatings	Fixatives, Shellacs, or other spray applied coatings intended to cover or hold other arts and crafts materials to a surface
Modelling clay	Used to mold or sculpt
Cement/concrete	Used to create and support structures and pathways

3.2.5 Anti-freeze and de-icing products

Chemical substances added to fluids, especially water, to reduce the freezing point of the mixture, or applied to surfaces to melt or prevent build-up of ice that are intended for consumer or commercial use should be reported under this code. Examples of products include antifreeze liquids, windshield de-icers, aircraft de-icers, lock release agents, ice melting crystals, and rock salt.

Table 9: Product use categories (anti-freeze and de-icing products)

Sub-Category	Definition
Anti-freeze liquids	Reduce the freezing point of surfaces
De-icing liquids	Reduce the freezing point of surfaces in order to remove ice.
De-icing solids	Ice melting crystals, rock salts
Lock de-icers/releasers	Applied within locks to remove ice so that doors can be opened

3.2.6 Apparel and footwear care products

Chemical substances used to care for apparel and footwear products intended for consumer and commercial use and that are applied pre and post-market should be reported under this code. Examples of apparel and footwear care products include footwear polishes/waxes, garment waterproofing sprays, and stain repellents.

Table 10: Product use categories (apparel and footwear care products)

Sub-Category	Definition
PRE-MARKET	
Apparel finishing, and impregnating/surface treatment products	Products applied to the surfaces of apparel to impart water or stain resistances, flame resistance, but not dyes.
Pre-market waxes, stains, and polishes applied to footwear	Waxes, stains, and polishes applied to footwear to impart water resistance, improve appearance and impart other desirable properties.
POST-MARKET	
Post-market waxes, and polishes applied to footwear (shoe polish)	Waxes and polishes applied to footwear.
Anti-static spray	Spray applied to eliminate or reduce static electricity on apparel.

Waterproofing and water resistant sprays	Spray applied to impart water resistance to apparel or footwear.
Insect repellent treatment	Product applied to clothing to repel insects.

3.2.7 Fabric, textile and leather products not covered elsewhere

Chemical substances used to impart colour and other desirable properties such as water/soil/stain repellence, wrinkle resistance, or flame resistance onto fabric, textiles, and leather products that are intended for consumer or commercial use should be reported under this code. Examples of products include textile dyes, textile finishing agents, leather tanning products, leather dyes, and leather finishing agents.

Formulations of pre and post-market products for fabric, textile and leather products not covered elsewhere may be similar to formulations for apparel and footwear care products (see Section 3.2.6). Other use patterns could be updated such as frequency, duration, and amount of use.

Table 11: Product use categories (fabric, textile and leather products not covered elsewhere)

Sub-Category	Definition
PRE-MARKET	
Textile (fabric) dyes	Products applied to impart colour(s) to textiles.
Textile finishing and impregnating/ surface treatment products	Products applied to the surfaces of textiles to impart water or stain resistances, flame resistance, but not dyes.
Leather tanning, dye, finishing, impregnation and care products	Products applied to the surfaces of leather articles to impart desirable properties.
POST-MARKET	
Leather conditioner	Products applied to leather surfaces to preserve and/or restore strength, appearance, and flexibility.
Textile (fabric) dyes	Products applied to impart colour(s) to textiles.
Textile finishing and impregnating/ surface treatment products	Products applied to the surfaces of textiles to impart water or stain resistances, flame resistance, but not dyes.

3.2.8 Automotive care products

Chemical substances used to clean and care for exterior and interior surfaces of automotive vehicles that are intended for consumer or commercial use should be reported under this code. Examples of automotive care products include car waxes, polishes, waterproofing products for windshield or automotive window glass, cleaners, and sealers; car wash solutions; vinyl/rubber/plastic protectants; automotive carpet and upholstery cleaners; wheel and tire care products; exterior trim protectants; and touch-up paint products.

This code does not include antifreeze, de-icing products, or lubricants. Chemical formulations may be similar to products used in Cleaning and Furniture Care Products (see Section 3.2.9)

Table 12: Product use categories (automotive care products)

Sub-Category	Definition
Exterior car waxes, polishes, and coatings	Used to increase the shine, add UV protection and scratch resistance to automotive paints, or provide waterproofing/resistant properties to windshields and automotive window glass
Exterior car washes and soaps	Cleaning agents used to remove dirt and grime
Interior car care	Cleaning agents used to remove stains from interior carpets and textiles, rubber, vinyl, or plastic
Touch up auto paint	Used to paint over scratches or cover up dent marks on automotive paints

3.2.9 Cleaning and Furniture Care Products

Chemical substances used to remove dirt, grease, stains, and foreign matter from furniture and furnishings, or to cleanse, sanitize, bleach, scour, polish, protect, or improve the appearance of surfaces and intended for consumer or commercial use should be reported under this code. Examples of cleaning and furnishing care products include cleaners used on glass, floors, tub and tile, ovens and drains; scouring powders; dusting products; waxes; polishes; and stain repellent sprays.

This code does not include laundry and dish washing products, or automotive care products. However, it should be noted where chemicals/products are used both for automotive interior cleaning and cleaning of furniture or surfaces inside buildings.

Table 13: Product use categories (cleaning and furniture care products)

Sub-Category	Definition
All-purpose liquid spray cleaner	Liquids that are spray applied to surfaces such as countertops, tables, windows, and surfaces of appliances.
All-purpose foam spray cleaner	Foams that are spray applied to surfaces such as countertops, tables, windows, and surfaces of appliances.
All-purpose liquid cleaner/polish	Liquids that are not spray applied and are applied to surfaces of furniture, silverware, sinks, tubs, carpeted floors, and hard-surface floors. Note: distinguish between "neat" and "dilute" products.
All-purpose waxes and polishes	Waxes and other semi-solids that are not spray applied and are applied to the surfaces of furniture (generally wooden furniture) to improve shine and/or impart stain resistance.
Powder cleaners (floors)	Powders that are applied to carpets and rugs to clean or deodorize.
Appliance cleaners	Cleaners that are applied to the interior of appliances such as dishwashers, washing machines, electronic appliances, disposals, and ovens)
Drain and toilet cleaners (liquid)	Liquids applied to toilets and/or drains that may remain in the sewer line for a time but ultimately go down the drain.
Powder cleaners (porcelain)	Powders applied to sinks, showers, and tubs to remove dirt, soap scum, and mold

3.2.10 Explosive materials

Chemical substances capable producing a sudden expansion usually accompanied by the production of heat and large changes in pressure upon initiation, that are intended for consumer or commercial use should be reported under this code.

Table 14: Product use categories (explosive materials)

Sub-Category	Definition
Explosive materials	Chemical substances capable producing a sudden expansion usually accompanied by the production of heat and large changes in pressure upon initiation, that are intended for consumer or commercial use. Examples include pyrotechnics, high explosives and propellants, igniter, primer, initiatory, illuminants, smoke and decoy flares, and, incendiaries.

3.2.11 Fuels and related products

Chemical substances burned to produce heat, light or power, or fuel additives used to inhibit corrosion, provide lubrication, increase efficiency of use, or decrease production of undesirable by-products that are intended for consumer or commercial use should be reported under this code. Examples of fuels and fuel additives include gasoline, diesel fuels, propane, butane, kerosene, lamp oils, white gas (naphtha), natural gas, stabilizers, anti-knock agents, corrosion inhibitors, detergents, fuel dyes, oxygenates, antioxidants, odour agents, non-scented candles, lighter fluids, and, matches. Candles and matches used to light them are covered under air-care products. Source characterization should be considered between scented and non-scented candles with the most likely difference the absence of a fragrance(s) compound(s).

Table 15: Product use categories (fuels and related products)

Sub-Category	Definition
Cooking and heating fuels	Pressurized liquid fuels generally contained within metal containers and released directly into an appliance in a controlled way to prevent direct release.
Vehicular or appliance fuels	Liquid fuels stored in containers and refilled into vehicles or appliances as needed
Fuel additives	Added to fuels to improve properties such as stability, corrosion, oxygenation, and octane rating

3.2.12 Ink, toner, and colorant products

Chemical substances used for writing, printing, creating an image on paper and other substrates, or applied to substrates to change their colour or hide images that are intended for consumer or commercial use should be reported under this code. Examples of products include black or coloured powders used in copy machines and printers to produce xerographic images; pigmented liquids contained in cartridges, bottles, or other dispensers used for writing or printing; and, correction fluids and tapes.

This code does not include pigments or colorants added to paints and coatings which should be reported under the paints and coatings code.

Table 16: Product use categories (ink, toner, and colorant products)

Sub-Category	Definition
Inks in writing equipment (liquid)	Liquids used in pens, markers, or other writing instruments
Inks used for stamps	Inks incorporated into stamp or ink pads used to apply ink to paper and other substrates
Toner/printer cartridge	Pigmented liquids, toners or powders contained in cartridges, bottles, or other dispensers used in printers and copy machines. This category includes printing inks for commercial applications.
Correction fluid/tape	Fluids used to cover up permanent ink so that corrections can be made

3.2.13 Laundry and dishwashing products

Chemical substances used in liquid, granular, gel and unit dose packets/tablets to remove food residue from dishes, remove dirt from textiles, enhance properties of textiles or remove stains from textiles that are intended for consumer or commercial use should be reported under this code. Examples of laundry and dishwashing products include detergents, fabric softeners, pre-soaks and pre-treats to remove soil and stains, dryer sheets, bleach, rinse aids, and film, lime and rust removers.

Table 17: Product use categories (laundry and dishwashing products)

Sub-Category	Definition
Laundry detergent (liquid)	Liquid cleaners added to washing machines to remove dirt from clothing and other textiles
Laundry detergent (unit-dose/granule)	Powder or powder/liquid tablet cleaners added to washing machines to remove dirt from clothing and other textiles
Dishwashing detergent (liquid/gel)	Liquid cleaners added to dishwashing machines to remove food residue from dishes
Dishwashing detergent (unit dose/granule)	Powder or powder/liquid tablet cleaners added to dishwashing machines to remove food residue from dishes
Dishwashing detergent liquid (hand-wash)	Liquid cleaners added to sinks and combined with water to remove food residue from dishes
Stain removers	Applied to clothing before addition to laundry machine to remove stains (can be gels, liquids, or spray applications)
Fabric enhancers	Products which enhance fabrics. Examples include liquid products added to

	washing machines or sheets added to driers, bleach, film, lime and rust removers.
Dry cleaning and associated products	Products used to remove dirt from clothing and other textiles in non-aqueous cleaning processes

3.2.14 Lubricants and greases

Chemical substances used to reduce friction, heat generation and wear between solid surfaces that are intended for consumer or commercial use should be reported under this code. Examples of lubricants and greases include engine oils; transmission, brake and hydraulic fluids; gear oils; and, calcium, sodium, lithium, and silicone-based greases.

Table 18: Product use categories (lubricants and greases)

Sub-Category	Definition
Liquid lubricants and greases	Liquids that reduce friction, heat generation and wear between surfaces.
Paste lubricants and greases	Pastes that reduce friction, heat generation and wear between surfaces.
Spray lubricants and greases	Sprays that reduce friction, heat generation and wear between surfaces.
Degreasers	Product that remove greases or oils from hard surfaces, machinery, or tools.

3.2.15 Personal care products

Chemical substances used for cleansing/grooming/improving or altering skin/hair/or teeth, and intended for consumer or commercial use should be reported under this code. Examples of personal care products include bath and shower products; make-up products; hair, nail, oral and skin care products; sunscreen and suntan products; deodorants; and perfumes.

Table 19: Product use categories (personal care products)

Sub-Category	Definition
Solid bar soap	Solid soap used for washing hands and body.
Liquid hand soap	Liquid soap used for washing hands.
Liquid body soap	Liquid soap used for washing entire body.
Perfumes and body	Spray applications to impart fragrance to the body. Examples include perfume,

sprays	body spray, and eau de toilette.
Oral care products	Liquid and semi-solid products used to clean teeth. Examples include toothpaste and mouthwash.
Hair care products (liquid)	Liquid products used to wash, treat, or dye hair. Examples include shampoo, conditioner, mousse, dye.
Hair care products (spray)	Spray products used to change stiffness or hold of hair.
Nail care products	Liquid products intended to apply or remove colour from nails. Examples include nail polish and nail polish remover.
Skin applied products (non-soap)	Semi-solid products, liquids or gels that are poured or sprayed and used to improve moisture retention, improve UV protection, or change appearance of the skin. Examples include moisturizer, sunscreen, blush, lipstick, eyeliner, eye shadow.

3.2.16 Paints and coatings

Chemical substances used to paint or coat substrates that are intended for consumer or commercial use should be reported under this code. Examples of paint and coating products include decorative coatings, auto OEM coatings, transportation coatings, wood finishes, powder coatings, coil coatings, packaging finishes, general industrial coatings, automotive refinish, industrial maintenance and protective coatings, marine coatings, thinners, and removers. See Section 3.2.4 for paints and coatings used in arts, crafts, and hobbies.

Table 20: Product use categories (paints and coatings)

Sub-Category	Definition
Aerosol spray paints	Pressurized one-component paint released with a propellant and spray applied as a fine mist
Paint strippers/removers	Liquid product applied to surfaces to remove paint, coatings and other finishes and also to clean the underlying surface.
Lacquers, stains, varnishes and floor finishes	Liquids applied to surfaces such as floors, countertops, appliances, furnishings, decking, and patios to impart colouring or resistance to fade, scuffing, marking, or wear
Water-based paint	Paints that have been formulated to have water as the main vehicle
Solvent-based paint	Paints that have been formulated to have a solvent as the vehicle
Adhesive/caulk removers	Products applied to surfaces to unbind substances or remove sealants and to

	clean the underlying surface by softening adhesives, caulks and other glues so they can be removed.
Thinners	Liquids to dilute paints and coatings to obtain suitable viscosity for paint application
Powder coatings	Dry powder coating that does not contain solvents and is cured under heat to create a coating film
Radiation curable coatings	Coatings designed to cure onto surface when exposed to radiation such as ultraviolet or electron beam radiation.

3.2.17 Photographic supplies

Chemical substances used to take photographic images, develop and process film, and make photographic prints that are intended for consumer or commercial use should be reported under this code. Examples of products include processing solutions (for developing, stopping, and fixing photos), slide and negative film, and, glossy and matte photographic paper.

Table 21: Product use categories (photographic supplies)

Sub-Category	Definition
Liquid photographic processing solutions	Chemicals used in the stop bath, fixing bath, hardener, or stabilizer to develop photographs

3.2.18 Water treatment products

Chemical substances designed to disinfect, reduce contaminants or other undesirable constituents, and condition and/or improve aesthetics of water and intended for consumer or commercial use should be reported under this code. Examples of water treatment products include pH adjusters, filter media, water treatment tablets/drops, and point of use/point of entry ion exchangers.

Table 22: Product use categories (water treatment products)

Sub-Category	Definition
Solid/powder water treatment products	pH adjusters, filter media, water treatment tablets
Liquid water treatment products	Water treatment drops
Ion exchangers	Point of use filters which may be used by consumers in homes (e.g., refrigerator filters or pitcher filters) or in commercial and industrial settings to treat water for use in these processes.

3.2.19 Other

Chemical substances contained in products intended for consumer or commercial use that are not covered under another product category should be reported under this code. Examples of products with uses not covered elsewhere include food or drink for humans or animals; food additives; products intended for use in the dia gnosis, cure, mitigation, treatment, or prevention of disease in humans or animals (e.g., drugs); substances intended to be applied to the human body other than soap (many personal care products); any radioactive source material, special nuclear material, or byproduct material; pistols, revolvers, fire arms, or ammunition; fire extinguishers; laboratory chemicals; and tobacco or tobacco products.

Table 23: Product use categories (Other)

Sub-Category	Definition
Other:	Specify based on exposure scenario of interest. NOTE – this will be specified by the person reporting the information.

3.3 Article Categories

The document presents seven article categories as listed below.

1. Construction and Building Materials covering large surface areas
2. Toys intended for children's use (and child dedicated articles)
3. Packaging (excluding food packaging)
4. Articles intended for food contact
5. Furniture and furnishings

6. Other articles with routine direct contact during normal use, specify

7. Other materials made of the material not expected to have routine contact, specify

3.3.1 Factors for further categorization

The categories present an intermediate level of detail for articles. Source characterization of articles for exposure assessment will require sufficient information on materials to inform whether diffusion coefficient, material-air partition coefficient, and mass-transfer coefficients vary, for use in estimating exposure using some predictive models. These parameters vary by chemical additive, but are also influenced by material type. The document presents nine material types as listed below.

1. Stone, plaster, cement, glass, and ceramic articles

2. Fabrics, textiles, and apparel articles

3. Leather articles

4. Metal articles

5. Paper articles

6. Rubber articles

7. Wood articles

8. Plastic articles (hard)

9. Plastic articles (soft)

It should be noted that articles are defined as the base material and any additives used in the manufacturing of the article. In addition to material, consideration should be given to the use of an additional indicator to differentiate between articles primarily used indoors versus outdoors. This distinction will improve exposure characterizations and models associated with the articles as the frequency and duration of use may vary for indoor and outdoor uses.

To provide a sufficient level of detail, the parameters of density and hardness are presented as the organizing approach. These are commonly measured properties that, when combined together, cover a very diverse range of plastic and rubber material/article categories. There are different metrics and units that can be considered.

- As a starting point, the shore hardness scale[7] provides three scales: shore 00, shore A, and shore D to characterize hardness. Numerical scales can be related to categorical levels of hardness. Soft

[7] http://www.smooth-on.com/pdf/durometer_with_logo.pdf

materials are characterized as extra soft, soft, and medium soft while hard materials are characterized as medium hard, hard, and extra hard.

- Density is generally defined as mass/volume (e.g. lb/ft3, kg/m3) and is a useful metric for source characterization. There are many ways to define density depending on life-cycle stage (e.g. pre-post melt), so a useful metric for purposes of exposure assessment is the kg/m3 density of the material/article during its use in residential or commercial building environments. Low density materials could be generally classified as <50 kg/m3 while high-density materials could be generally classified as materials >50 kg/m3, however different thresholds or ranges could be considered in the future.

In the document, a distinction between hard and soft is retained for plastic articles, which comprises the most diverse material category. For all material types and especially for both plastic and rubber materials, it is recommended that measured or estimated density is provided for the specific chemical, material, use combination of interest in the exposure scenario. Organizing chemicals into categories may be useful for better informing exposure assessment to articles, as follows:

- Hard, high-density plastics
- Soft, high-density plastics
- Hard, low-density plastics
- Soft, low-density plastics
- Hard, high-density rubbers
- Soft, high-density rubbers
- Hard, low-density rubbers
- Soft, low-density rubbers

In addition, complex article categories are generally comprised of more than one material and there are a limited number of article categories in this broad category.

3.3.2 Article use categories

The number of potential article categories is 69, although possible combination of article/material combinations is likely lower.

Table 24. Article use categories

Code	Material	Article Category	examples
AC1a	Complex articles	Road Vehicles for passengers and goods	Cars, trucks, vans
AC1b		Other vehicles/mass transit vehicles	Planes, trains, boats
AC2a		Machinery, mechanical appliances, electrical/electronic articles	Refrigerators, washing machines, vacuum cleaners, computers, telephones, drills, saws, smoke detectors, thermostats, radiators
AC2b		Other machinery, mechanical appliances, electronic/electronic articles	large-scale stationary industrial tools
AC3		Electrical batteries and accumulators	Batteries
AC4a	Stone, plaster, cement, glass and ceramic articles	Construction and building materials covering large surface areas	Cement flooring, Cement flooring, stone tile, mirrors, sinks, bathtubs
AC4b		Toys intended for children's use (and child dedicated articles)	Arts and crafts materials (plaster of Paris, ceramic tiles, etc.).
AC4c		Packaging (excluding food packaging)	
AC4d		Articles intended for food contact	dinner ware, drinking glasses, pots, pans, food storage containers
AC4e		Furniture & furnishings	Tables, chairs, benches
AC4f		Other articles with routine direct contact during normal use	Jewellery
AC4g		Other articles made of stone, plaster, cement, glass or ceramic that are not expected to routinely be in contact with people	Stone pavers
AC5a	Fabrics, textiles, and apparel	Construction and building Materials covering large surface areas	Outdoor patio furniture Flooring or wall materials, carpets, rugs, tapestries
AC5b		Toys intended for children's use (and child dedicated articles)	stuffed toys, blankets, comfort objects
AC5c		Packaging (excluding food packaging)	Cloth packaging
AC5d		Articles intended for food contact	Cloth napkins, placemats
AC5e		Furniture & furnishings, including furniture coverings	e.g. sofa cover, car seat cover, fabric chair, hammock
AC5f		Other articles with routine direct contact during normal use	Shirts, pants, shorts, blankets, sheets
AC5g		Other articles made of fabrics, textiles and apparel that are not expected to routinely be in contact with people	Table umbrella mesh fabric,

AC6a	Leather articles	Construction and building materials covering large surface areas	Leather panels
AC6b		Toys intended for children's use (and child dedicated articles)	Leather dolls
AC6c		Packaging (excluding food packaging)	Unlikely
AC6d		Articles intended for food contact	Unlikely
AC6e		Furniture & furnishings, including furniture coverings	Couches, sofas
AC6f		Other articles with routine direct contact during normal use	Clothing, jackets, shoes, gloves
AC6g		Other articles made of leather that are not expected to routinely be in contact with people	e.g. domestic articles such as decoration articles, leather boxes
AC7a	Metal articles	Construction and building materials covering large surface areas	Roof sheets, Drinking water Pipes, Sewer pipes
AC7b		Toys intended for children's use (and child dedicated articles)	Metal toy cars, purses, tin soldiers
AC7c		Packaging (excluding food packaging)	Unlikely
AC7d		Articles intended for food contact	packaging containers, metal tins, knifes, cooking pots
AC7e		Furniture & furnishings, including furniture coverings	outdoor furniture, benches, tables
AC7f		Other articles with routine direct contact during normal use	handles, jewelery
AC7g		Other articles made of metal that are not expected to routinely be in contact with people	
AC8a	Paper articles	Construction and building materials covering large surface areas	Construction and building materials e.g. insulation panels, wall papers
AC8b		Toys intended for children's use (and child dedicated articles)	Paper dolls, construction paper, puzzles, card-games
AC8c		Packaging (excluding food packaging)	Paper packaging
AC8d		Articles intended for food contact	Paper plates
AC8e		Furniture & furnishings, including furniture coverings	
AC8f		Other Articles with routine direct contact during normal use	nappies, feminine hygiene products, adult incontinence products, tissues, towels, toilet paper, newspapers, books, magazines, photographic paper and negatives
AC8g		Other articles made of paper that are not expected to routinely be in contact with people	lampshades, paper lanterns
AC10a	Rubber articles	Construction and building materials covering large surface areas	Track surface, playground surface, Flooring

AC10b		Toys intended for children's use (and child dedicated articles)	Baby bottle nipples, soothers
AC10c		Packaging (excluding food packaging)	Phone covers, personal tablet covers
AC10d		Articles intended for food contact	Plates, utensils
AC10e		Furniture & furnishings, including furniture coverings	Furniture feet, chairs
AC10f		Other articles with routine direct contact during normal use	Gloves, boots, clothing, rubber handles, gear lever, steering wheels
AC10g		Other articles made of paper that are not expected to routinely be in contact with people	
AC11a	Wood articles	Construction and building materials covering large surface areas	Floor decking, claddings, toys outdoor equipment, Walls, flooring
AC11b		Toys intended for children's use (and child dedicated articles)	Small toys
AC11c		Packaging (excluding food packaging)	Wooden crates
AC11d		Articles intended for food contact	Wooden plates, salad tools
AC11e		Furniture & furnishings, including furniture coverings	Tables, chairs
AC11f		Other articles with routine direct contact during normal use	handles, pencils
AC11g		Other articles made of wood that are not expected to routinely be in contact with people	
AC13a	Plastic articles (hard)	Construction and building materials covering large surface areas	Outdoor play equipment, Insulation (reacted off-site-, structural insulation panels) Insulation applied on-site, spray polyurethane foam), flooring
AC13b		Toys intended for children's use (and child dedicated articles)	Toys (dolls, car, animals, teething rings)
AC 13c		Packaging (excluding food packaging)	Styrofoam packaging,
AC13d		Articles intended for food contact	Plastic dinner ware, food storage
AC13e		Furniture & furnishings, including furniture coverings	Computer casing,
AC13f		Other articles with routine direct contact during normal use	Handles, pencils, handheld device casing
AC13g		Other articles made of plastic that are not expected to routinely be in contact with people	
AC14a	Plastic articles (soft)	Construction and building materials covering large surface areas	Blown or sprayed building insulation
AC14b		Toys intended for children's use (and child dedicated articles)	Toys (dolls, car, animals,
AC14c		Packaging (excluding food packaging)	Bubble wrap
AC14d		Articles intended for food contact	Plastic Wrap

AC14e		Furniture & furnishings, including furniture coverings	Foam armchair, couch/sofa, mattress adult, mattress infant, mattress child, sleeping bag, beanbag chair
AC14f		Other articles with routine direct contact during normal use	Foam blocks used in foam block pits,
AC14g		Other articles made of plastic that are not expected to routinely be in contact with people	
AC0	Other	Other	

3.3.3 Application to exposure assessment

Reporting the presence of a chemical in a broad material category (example plastic and rubber articles) may be less informative than specific user defined scenarios to aid with estimating exposures (e.g. pacifier, teething ring, foam toy, vinyl flooring, tents, mattresses, foam furniture, foam insulation, rubber bath toy, plastic jewellery) all of which have different characteristics which in turn inform exposure estimates.

To further support exposure assessment, in lieu of more specific categories, it may be helpful to provide more specific information in screening-level exposure models on defaults associated with example articles which enable consideration of a many to one relationship between example articles and material-based article categories. Other parameters that may be important, depending on the exposure scenario and chemical of interest (in addition to density and hardness), include typical exposure duration for articles with contact time, whether oral and/or dermal exposure is expected based on contact with article, exposed surface area(s) of the article, material thickness, porosity, and typical temperatures to which the article is exposed.

The broad US Chemical Data Reporting (CDR) categories that relate to articles are paper products, batteries, foam seating and bedding products, floor coverings, fabric, textile, and leather products not covered elsewhere, metal products not covered elsewhere, building/construction materials-wood and engineering wood products, building/construction materials not covered elsewhere, electrical and electronic products, plastic and rubber products not covered elsewhere, and toys, playground and sporting equipment.

4 POTENTIAL FOLLOW-ON ACTIVITIES

Consideration could be given to any or all of the following actions:

- Identification of the combination of functional uses needed to formulate various product/article use categories (prioritization can be done over time);
- Identification of examples of commonly used chemical substances or chemical categories that can be used in a given functional use and product use category combination:
- Development of generic formulation estimates for each product/article use category (point estimates or ranges). For exposure assessment, the amount/percent of a chemical substance present in a product, its weight fraction, is a basic input required for most exposure models:
- Consideration on how to group related functional use categories together, consider whether functional use categories are specific to one or more lifecycle stages (e.g. manufacturing, processing, end-use/application, disposal), and crosswalk functional uses to product uses and chemical categories; and
- Crosswalk article codes and consumer product codes with those in existing consumer exposure models and update/harmonize exposure scenarios within those models over time.