



Best Practices for Additional Listings

Version: 2023-07-20

1. BACKGROUND ON THIS DOCUMENT

This document provides criteria and implementation details supporting HPD Open Standard Section 2.2.2.11: Additional Listings.

Additional Listings are non-hazard listings that are complementary to the hazard listings displayed on a Health Product Declaration (HPD). For example, Additional Listings may include lists indicating preferred chemicals, or lists indicating chemicals restricted under programs that are relevant to HPD users. Additional Listings provide a supplemental perspective for interpreting and hazard screening results and supporting decision-making for manufacturers developing products, and for building projects selecting products.

Emerging Best Practices is an official part of the HPD Open Standard, governed by the HPDC Technical Committee. Topics have been designated as Emerging Best Practices because they are evolving at a more rapid rate than may be accommodated by the regular revision cycle for the HPD Open Standard. Best Practices for Additional Listings, and other Emerging Best Practices documents are available as a controlled document on the HPD Collaborative website: <https://www.hpd-collaborative.org/emerging-best-practices>.

“Additional Listings” is a new section in the HPD Open Standard as of HPD version 2.3. HPDC has designated a Best Practices guide supporting this section so that it can review these criteria and add additional listings as needed to support HPD users.

2. CRITERIA FOR ADDITIONAL LISTINGS

“Additional Listings” are included in Emerging Best Practices based on an evaluation by the HPDC Technical Committee. The following are basic requirements:

1. The list has a public, published definition and its constituents are selected using a scientific basis. Note that this is not meant to imply that lists must always comply with a single scientific principle or an across-the-board standard of evidence. HPDC recognizes that by their nature all lists have methodological limitations.
2. There is a clear and transparent rationale for populating the list by CAS RN or other relevant identifier.
3. If applicable, the list has a clear and transparent updating process and regular update schedule.
4. The agency(ies) or organization(s) responsible for the definition, population, update schedule, and, if applicable, coordination with automators (see #5 below), is clearly identified, and can be confirmed as to relevant experience and organizational stability.
5. The list can be implemented consistently by multiple list screening “automators” that support HPD preparation in screening substances against various lists, i.e., Healthy Building Network’s Pharos tool, Toxnot, etc.



HPDC's Technical Committee further reviews lists against the following additional criteria. HPDC may reference one or more of the following criteria, at its discretion, in approving a list for inclusion.

1. Is inclusion of the list on the HPD helpful to HPD users? Are HPD users asking for this data?
2. Does the list provide data or insight that is complementary to other hazard data such as GreenScreen scores, hazard listings, and health information displayed on the HPD?
3. Does the list support improved understanding of a product's content inventory and health-related information? Given the potential for "information overload" on the HPD, does the list add value that offsets this?

3. ADDITIONAL LISTINGS

The following Additional Listings have been selected by HPDC's Technical Committee under this policy. Information on each listing and its selection process is described below.

Additional listings appear on the HPD in a three-column format:

1. Additional Listing – category of listing
2. Agency – the organization responsible for the list's definition and program, if applicable
3. Notification – title of listing and relevance to the HPD user

Each listing described below includes specifications for how it should be displayed in this format.

Living Building Challenge 4.0 – Red List of Materials & Chemicals

- Updated: Annually in January
- Additional Listing: Restricted List
- Agency: International Living Future Institute (ILFI)
- Notification: Living Building Challenge Red List of Materials & Chemicals 4.0

HPDC Technical Committee approval for addition to HPD: 2020-04-02

Note: ILFI plans an annual update for LBC Red List 4.0. HPDC will automatically adopt the most up-to-date version of the 4.0 Red List when it is published. HPDC will follow ILFI in denoting dated versions, i.e. "4.0-2021," etc.

Notes on criteria for inclusion:

The list meets all the required criteria above: it is published by ILFI, which also translates it to CAS RN definition. ILFI has a regular, published updating process, and works with automators such as Toxnot and Pharos. In addition, it is considered useful to users who use the HPD to screen products for the Living Building Challenge (LBC) criteria, and to manufacturers researching their products and publishing HPDs for LBC participation. For HPD users who are engaged with LBC, the Red List provides a focused set of chemicals for avoidance.

GSPI Six Classes

- Updated: Annually in May
- Additional Listing: Chemical Class List
- Agency: Green Science Policy Institute (GSPI) – Six Classes of Problematic Chemicals



- Notification – one of the following, depending on the class of chemical:
 - Highly Fluorinated Chemicals
 - Certain Metals
 - Flame Retardants
 - Bisphenols & Phthalates
 - Organic Solvents
 - Antimicrobials.

HPDC Technical Committee approval for addition to HPD: 2022-08-18

Notes on criteria for inclusion:

GSPI itself defines the Six Classes at a conceptual level. It has collaborated with Healthy Building Network (HBN) to populate specific CAS RN-based lists. Those lists are published in HBN’s Pharos tool and are transparent in their criteria. HBN has a quarterly update process. The Six Classes framework has been adopted by HPD users who are using this approach to avoid “regrettable substitutions,” where chemicals with known hazards are substituted by product manufacturers with chemicals that may have been studied less by researchers but that are structurally or functionally similar, and thus provide cause for concern on a precautionary basis. This approach is complementary to the hazard screening approach used on the HPD, in that it identifies chemicals which may warrant concern but have been less-studied, and are less likely to appear on hazard listings.

U.S. EPA Safer Chemicals Ingredients List

- Updated: Quarterly
- Additional Listing: Preferred List
- Agency: U.S. EPA – Safer Chemicals Ingredients List (SCIL)
- Notification – one of the following, depending on the class of chemical:
 - Green Circle – Verified Low Concern (Functional Class – Chelant)
 - Green Circle – Verified Low Concern (Functional Class – Colorants)
 - Green Circle – Verified Low Concern (Functional Class – Preservatives)
 - Green Circle – Verified Low Concern (Functional Class – Enzymes and Enzyme Stabilizers)
 - Green Circle – Verified Low Concern (Functional Class – Oxidants and Oxidant Stabilizers)

HPDC Technical Committee approval for addition to HPD: 2020-04-02

Notes on criteria for inclusion:

The SCIL program is overseen by the U.S. Environmental Protection Agency (EPA), and chemicals are reviewed against U.S. EPA criteria by third party assessors. Chemicals classified with Green Circles are amongst the safest chemicals for the functional criteria they are evaluated against. Other SCIL classifications indicating higher health concern have not been included in this list by HPDC.

The HPDC listing selects only functional classes that have been evaluated for all SCIL endpoint criteria. (Under SCIL criteria, certain functional class criteria do not require all endpoints to be evaluated.) While SCIL criteria do not include all endpoints evaluated by programs such as GreenScreen and Cradle to



Cradle Certified (in particular, irritation—dermal, ocular, or respiratory), they include the majority of endpoints, including the carcinogenicity/mutagenicity/reproductive toxicity (CMR) endpoints. HPDC has also excluded SCIL-listed polymers due to the complexity of evaluating polymers and the need for further evaluation due to the potential presence of toxic residuals and impurities.

While there are numerous lists referenced by the HPD for chemicals of concern, there are few authoritative lists indicating preferred chemicals. HPDC chose to include SCIL as it is complementary to other information sources listed on the HPD. Although the program is focused on evaluating chemicals in consumer products, there is some overlap with chemicals used in building products.

Cradle to Cradle Certified Products Program v4.0 – Restricted Substances List

- Updated: Annually in July
- Additional Listing: Restricted List
- Agency: Cradle to Cradle Products Innovation Institute (C2CPII)
- Notifications: Cradle to Cradle (C2C) Certified® Restricted Substances List (RSL)

HPDC Technical Committee approval for addition to HPD: 2020-04-02

Notes on criteria for inclusion:

The C2C Certified® RSL applies to all products seeking C2C certification or a Material Health Certificate at any certification level under Version 4.0 of the C2C Certified® Product Standard. Unless noted otherwise, the applicable thresholds may not be exceeded for the listed restricted substances present in any homogeneous material subject to review in a certified product. It is public and published:
<https://www.c2ccertified.org/resources/detail/cradle-to-cradle-certified-restricted-substances-list-rsl> .

The restrictions are grouped into a core list that applies to all homogeneous materials subject to review in all products, and six supplementary lists, which include additional restrictions specific to certain material or product types. Some substances are on multiple lists with differing thresholds or restriction conditions. In such cases, the most conservative applicable restriction must be met. With the exception of restrictions for certain classes of organohalogens on the core list, the restrictions for substances on the RSL are based on leading international chemical regulations. See “Background” tab of the official RSL for more information.

It is important to note that the RSL is populated by CAS RN and chemical classes consisting of multiple CAS RNs. C2CPII works with automators such as Pharos to maintain searchable implementations of the list by CAS RN and other relevant identifiers. Substance groups have been matched to groups of CASRN in Pharos where available. However, these substance groups as implemented in Pharos are not exhaustive. Thus it is possible that a search for a substance that is part of a group as defined on the official RSL will not generate a hit for the RSL implementation in Pharos. For more information, visit the C2C RSL listing page on Pharos: <https://pharosproject.net/hazard-lists/358#hazards-panel>

C2CPII has a public and transparent process for revising its standard. C2CPII requirements are developed through a public stakeholder process with input from technical experts, market leaders and the general public. The standard is owned and administered by the non-profit C2CPII which is governed by an independent board of directors. To reflect additional restrictions that are added to the source regulations over time, the RSL will be updated annually. With each revision of this reference document, current certification holders will be granted a transition period for their certified products to become certified under the newly released version.

The inclusion of the RSL adds value to the HPD, allowing manufacturers to prescreen their verified content inventory before moving on to certification. Other users such as architects may also prescreen or gain awareness of product contents by seeing the RSL on the HPD.

REACH Exemption List

- Updated: Annually in May
- Additional Listing: Preferred List
- Agency: European Union (EU) – REACH
- Notification: Either:
 - Annex IV: Exempt from registration due to intrinsic properties
 - Annex V: Exempt from registration – unnecessary HPD Technical

HPDC Technical Committee approval for addition to HPD: 2020-04-02.

Notes on criteria for inclusion:

European Union Commission [Regulation \(EC\) No 987/2008](#) of 8 October 2008 amended Regulation (EC) No 1907/2006 of the European Union Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulation as regards Annexes IV and V.

This regulation established that:

- Substances included in Annex IV are exempted REACH regulation as sufficient information is known about these substances that they are considered to cause minimum risk because of their intrinsic properties.
 - Annex IV lists 40 substances by CAS RN. Examples of substances include water, starch, lactose, fructose, and argon. HPD has adopted all of these into its listing—see below for more information.
- Substances covered by Annex V are exempted from REACH as registration is deemed inappropriate or unnecessary.
 - Annex V lists 13 categories of substances, without giving specific CAS RNs. In addition to the issue of matching these with specific CAS RNs, most of these categories are not applicable to the HPD Open Standard. For example, several categories, such as minerals and ores, are handled under HPD Special Conditions policies. Some categories, such as Category 5: By-products, are exempt from REACH more on procedural grounds, or scope (such as Category 12: Compost and biogas) than for health-related reasons relevant to the kinds of products under the scope of the HPD Open Standard. Therefore HPDC is not adopting Annex V substances into this listing, with the exception of Category 13: Hydrogen and oxygen.

Between Annex IV and Annex V, 42 substances are appropriate for incorporation into this policy. Of these 42 substances, two chemicals to date have been classified as LT-P1 by the GreenScreen List Translator™, while most others are LT-UNK, or have no GreenScreen score. For LT-UNK chemicals or those with no GreenScreen List Translator score, the REACH exemption listing complements the hazard listings by providing the HPD user with a preferred indicator, in the absence of other information.

The LT-P1 listings are:¹

- Mannitol (CAS #69-65-8), and
- Sucrose (CAS #57-50-1)

Mannitol is classified as an LT-P1 chemical based on its classification as a German FEA Class 2 Hazard to Waters. No data were provided in support of this classification.² Furthermore, no data were identified via literature search³ that indicated mannitol should be considered hazardous. Mannitol is a sugar alcohol found naturally in fruits and vegetables,⁴ and, therefore, it is unlikely that typical exposures to mannitol used in building materials exceed dietary exposures. There is a low likelihood of adverse effects on exposed populations from the use of mannitol in building materials.

Sucrose is classified as an LT-P1 chemical based on its classification as a TEDX potential endocrine disruptor.⁵ The specific data provided in support of this classification is a study by Cao et al. (2007)⁶ in which transgenic mice provided sucrose-sweetened water developed glucose intolerance, hyperinsulinemia (increased blood insulin levels), and hypercholesterolemia (increased blood cholesterol levels). While changes to insulin levels could be considered an endocrine effect since insulin is a hormone, this effect is typical of what is detected following consumption of excess sugars and carbohydrates. As sucrose is a disaccharide naturally present in human diets⁷, it is likely that typical exposures to sucrose used in building materials are less than dietary exposures. Therefore, there is a low likelihood of endocrine effects (i.e. changes to insulin levels) developing following exposure to sucrose in building materials.

Especially when they are used in building materials, there are no hazards of concern for the chemicals classified as LT-P1. Their inclusion in HPDC's Additional Listing provides a complementary perspective to their hazard warnings and GreenScreen List Translator scores.

Perkins&Will Precautionary List

- Updated: Annually in July
- Additional Listing: Restricted List
- Agency: Perkins&Will
- Notification: Perkins&Will Precautionary List

HPDC Technical Committee approval for addition to HPD: 2021-10-07

Notes on criteria for inclusion:

Perkins&Will offers a public listing of toxic chemicals the firm recommends avoiding, with rationale for inclusion and product-category relevance. Architects at Perkins&Will, as well as other HPD users, reference it to avoid chemicals of concern. The list was created by Perkins&Will in consultation with organizations such as Healthy Building Network (HBN) and Clean Production Action (CPA). The list references authoritative sources of hazard data on substances, with special attention to substances common in building products. Additionally, Perkins&Will's list focuses on chemicals for which alternatives are available. Appearance on the list means a chemical has been flagged for concern and precautionary avoidance. It does not address severity of hazards. The HPD implementation of this list is based on CAS RN, not on context.

¹ The following research was performed by Dr. Zach Guerrette of ToxServices LLC during February 2020, and approved by HPDC's Hazards TSG, of which he is a member.

² <https://webrigoletto.uba.de/rigoletto/public/searchDetail.do?kennummer=8299>

³ The literature search consisted of searching the ECHA information on chemicals database

(<https://echa.europa.eu/information-on-chemicals>), ChemIDplus and related U.S. National Library of Medicine databases (<https://chem.nlm.nih.gov/chemidplus/rn/69-65-8>), and the National Toxicology Program (NTP) database (<https://ntp.niehs.nih.gov/>).

⁴ <https://pubchem.ncbi.nlm.nih.gov/compound/FBPFZTCFMRRESA-KVTDHHQDSA-N>

⁵ <https://endocrinedisruption.org/interactive-tools/tedx-list-of-potential-endocrine-disruptors/search-the-tedx-list>

⁶ <https://www.ncbi.nlm.nih.gov/pubmed/17942401>

⁷ <https://pubchem.ncbi.nlm.nih.gov/compound/5988>







ChemFORWARD

- Updated: Daily
- Additional Listing: Chemical Hazard Assessment
- Agency: ChemFORWARD
- Notification: Harmonized Hazard Band (A, B, C, F, U, ?)

HPDC Technical Committee approval for addition to HPD: 2023-02-16

Notes on criteria for inclusion:

ChemFORWARD provides broad access to chemical hazard data and illuminating safer alternatives. By partnering with industry, ChemFORWARD looks to end toxic chemical exposure and advance human and environmental equity. Utilizes underlying GHS classification like many other lists like Safer Choice, GreenScreen, and Cradle to Cradle but provides one Harmonized Hazard Band that indicates high risk hazards and safer alternatives.

Harmonized Hazard Band	Implications
	Low hazard and low risk
	Some moderate hazards, low risk
	Moderate to high hazards and moderate risk; or uncertainty that could result in moderate risk
	High hazards and high risk in most scenarios
	CHA completed with excessive data gaps, rating is not possible
	Request a CHA to inform a decision



Version Control

DATE	CHANGE
7/11/22	Initial upload for HPD v2.3
7/20/23	Reflects the updates for the HPD Open Standard v2.3 update. ChemFORWARD added. New revision log added.