

Best Practices for Additional Listings

Version: 2020-04-02

Effective date: Effective upon implementation of HPD Open Standard v2.3. This is estimate for late 2020 to early 2021. This document will be updated to reflect this date when available.

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

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

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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

- 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

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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.

Of GSPI’s Six Classes, HPDC determined, in concert with GSPI, that two lists, Organic Solvents and Antimicrobials are less-well-defined in terms of CAS RNs and were not proposed for inclusion at this time. HPDC may revisit this in the future.

U.S. EPA Safer Chemicals Ingredients List

- 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)

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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 3.1 - Banned List of Chemicals

- Additional Listing: Restricted List
- Agency: Cradle to Cradle Products Innovation Institute (C2CPPII)
- Notifications: one or more of the following as applicable:
 - Cradle to Cradle Certified v3.1 Banned List – Technical Nutrients
 - Cradle to Cradle Certified v3.1 Banned List – Biological Nutrients

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Notes on criteria for inclusion:

C2CPPII selected substances for inclusion on its Banned Lists due to their tendency to accumulate in the biosphere and lead to irreversible negative human health effects. In addition, several substances were selected due to hazardous characteristics associated with their manufacture, use, and disposal. It is public and published: <https://www.c2ccertified.org/resources/detail/cradle-to-cradle-certified-banned-list-of-chemicals>

C2CPPII has two Banned Lists: a banned list of chemicals for technical nutrients and a banned list of chemicals for biological nutrients. These are both populated by CAS RN and chemical classes consisting of multiple CAS RNs. C2CPPII works with automators such as Pharos to maintain fully searchable implementations of the list by CAS RN and other relevant identifiers.

C2CPPII has a public and transparent process for revising its standard. As part of the ongoing standard revision, a Draft v4 Basic Level Restricted Substances List (RSL) has been developed to replace the current Banned List of Chemicals. The draft RSL is published on the C2CPPII website has collected public comments on it and the entire Draft v4 Standard. All documents will be finalized based on the comments received in accordance with the revisions process. The Draft v4 RSL is based on transparently referenced, leading international chemical regulations. Prior to the completion of v4, and periodically thereafter, it will be updated to reflect additional restrictions that are added to the source regulations over time.

C2CPPII 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 C2CPPII which is governed by an independent board of directors.

The inclusion of the Banned List of Chemicals 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 Banned List on the HPD. The Cradle to Cradle Certified Banned List of Chemicals is used to identify substances that may disqualify a product from achieving Cradle to Cradle Certification. As such the intention is to restrict certain substances, rather than to identify specific hazards associated with them as done through the hazard listings incorporated elsewhere on the HPD.

Note: The Banned List of Chemicals is part of the Cradle to Cradle Products Standard Version 3.1. It will be replaced by the Basic Level Restricted Substances List (RSL) in Version 4.0 of the Cradle to Cradle standard. Once Version 4.0 of the Cradle to Cradle Products Standard is finalized, HPDC plans to review the v4 RSL as an Additional Listing to update v3.1.

REACH Exemption List

- 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

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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.

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>