Best Practices for Hazard Screening

Version: 2025-06-26

Introduction

These Best Practices supplement the information and requirements presented in the HPD Open Standard instructions. This document has been prepared collaboratively by the Health Product Declaration Collaborative (HPDC) and Clean Production Action (CPA) to ensure harmonization with CPA's GreenScreen® for Safer Chemicals Program. It has also been approved by HPDC's Technical Committee as part of the HPD Open Standard.

This "Best Practices for Hazard Screening" Emerging Best Practices guide includes:

1. Introduction
2. Background on Hazard Screening
3. Definitions
4. The Two Parts of Hazard Screening in the HPD Open Standard
5. GreenScreen Scores Reported on HPDs
6. Hazard Warnings Using HPD Priority Hazard Lists
7. Tools for Hazard Screening for the HPD
8. Harmonized Method for Hazard Screening

Background on Hazard Screening

The content inventory and the associated health information is the heart of a completed Health Product Declaration (HPD). The hazard screening method specified in HPD Open Standard principally utilizes GreenScreen. GreenScreen is a comprehensive hazard assessment method designed to identify chemicals of concern and safer alternatives and is a project of Clean Production Action (CPA). HPDC and CPA work on a collaborative basis to advance practices in hazard screening and assessment.

HPDC's goal is to remove obstacles and streamline the process for manufacturers and ingredient suppliers to complete HPD reports. With this goal in mind, the HPD Open Standard establishes the following practical boundaries related to reporting Hazard Screening information:

- The HPD Open Standard specifies a point in time for reporting a product's content inventory. For a manufactured product reported on a Product HPD, this point in time is "as delivered to the job site." For a product ingredient reported on a Supplier HPD, this point in time is "as delivered to the manufacturer." Hazard screening in the HPD is based on this point-in-time content inventory. Although logically the content inventory now has a relationship with health implications of the product during its use phase, the HPD Open Standard is not explicitly focused on the use phase of a product.
- The HPD Open Standard is not, itself, a *method* for Hazard Screening. The HPD Open Standard specifies how a manufacturer should *report* the results of Hazard Screening (and other health information associated with the product) conducted using specified methods.

- Hazard Screening is intended to provide “alerts” and warnings about potential human and environmental health hazards and is the first step in any further assessment or evaluation, including risk and exposure considerations. While hazard screening can identify contents that are known chemicals of concern, it does not provide a definitive judgment about health-related attributes of a product nor is it sufficient to identify contents of a product that are “safer” chemicals.

The purpose of including Hazard Screening data in the HPD Open Standard is to facilitate further analysis of environmental and health information about products and is available to all users of HPDs in a manner that is accurate, reliable and consistent across products and product categories.

Hazard Screening is an evolving discipline. By including the specific aspects of how Hazard Screening is implemented in the HPD Open Standard in our Emerging Best Practices section, HPDC acknowledges and supports the continued development of the methods in this field and the work of the community of practice to evolve a consensus around these methods. This consensus is what is reflected in the HPD Open Standard and in this guide.

Glossary

The following definitions provide important context and scope for this guide. They are not intended as highly technical “textbook” definitions.

Hazard: The potential for harm or an adverse effect on human and/or environmental health. “Hazard” is distinct from but related to “risk” and/or “exposure.”

Hazard Assessment: A comprehensive analysis of the hazards posed by a substance or a mixture of substances (as a material or product).

Hazard Endpoint: A specific human health or environmental factor with which a hazard may be associated as determined through a hazard assessment. Hazard endpoints may fall into various categories, or *hazard types*, ranging from human health effects, with endpoints such as cancer and reproductive toxicity; and ecological effects, with endpoints such as aquatic toxicity. Different hazard assessment methodologies may share hazard endpoints, and also reference distinct endpoints. Most are based on hazards specified by the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Hazard Level: A rating of concern for a hazard endpoint given by a hazard screening methodology. For example, the GreenScreen® for Safer Chemicals method contains criteria for classifying a chemical as Very High (vH), High (H), Moderate (M), Low (L), or Very Low (vL). These hazard levels incorporate potency and/or certainty of the science.

Hazard List: List of chemicals and/or chemical groups published by an authoritative scientific body or regulatory agency associating the chemicals with one or more specific hazards based on a comprehensive scientific review. Hazard lists are issued by a wide variety of agencies and organizations worldwide, including U.S. government agencies at the federal, state, and local levels; government agencies in Canada, Germany, Australia, Japan, and other countries; international organizations, such as the European Union (EU) and European Commission (EC), International Agency for Research on Cancer (IARC), and United Nations Environment Programme (UNEP); and professional organizations such as the Association of Occupational and Environmental Clinics (AOEC). Hazard lists are gathered into groupings of designated lists such as the GreenScreen Specified Lists referenced by both the GreenScreen List Translator and by the HPD Open Standard.

Hazard Statement: describes the nature of a hazard, including, where appropriate, the degree of hazard[1]. These statements, often referred to as *warnings*, are issued as part of Hazard Lists, and include phrases such as "Likely carcinogen" or "Very toxic to aquatic life."

Hazard Type: categories of hazard endpoints. For example, human health effects is a hazard type that includes endpoints involving adverse effects on human tissues such as cancer and reproductive toxicity; ecological effects involve adverse effects on wildlife or ecosystems, such as aquatic toxicity.

Hazard Screening: A specified method for gathering key hazard-related data for substances and/or materials. The HPD Open Standard distinguishes hazard screening from *hazard assessment*, the latter being a more comprehensive review by a qualified professional.

The Two Parts of Hazard Screening in the HPD Open Standard

The HPD Open Standard utilizes two hazard screening methodologies:

1. GreenScreen for Safer Chemicals: The HPD publishes either a publicly available GreenScreen Benchmark score from a full GreenScreen assessment, or if one is not available, a GreenScreen® List Translator™ score.
2. Hazard Warnings using HPD Priority Hazard Lists: The HPD publishes specific hazard warnings for chemicals based on HPD Priority Hazard lists.

Both components are reported for each substance in the HPD content inventory. More information on each of these two components of Hazard Screening in the HPD Open Standard is presented in the sections that follow.

GreenScreen Scores Reported on HPDs[2]

GreenScreen for Safer Chemicals (GreenScreen) was developed by and is a program of Clean Production Action, a nonprofit organization that designs and delivers strategic solutions for green chemicals, sustainable materials and environmentally preferable products. The GreenScreen program includes GreenScreen and GreenScreen List Translator. GreenScreen is a comprehensive hazard assessment method designed to identify chemicals of concern and safer alternatives. GreenScreen List Translator is a streamlined screening-level assessment designed to identify known hazardous chemicals, as evaluated and listed by authoritative scientific bodies and regulatory agencies.

GreenScreen List Translator provides an effective way to screen out known hazardous chemicals. However, a more comprehensive GreenScreen assessment and Benchmark score is required to identify safer alternatives. Clean Production Action trains and licenses organizations and individuals to employ the GreenScreen method to determine GreenScreen List Translator scores and GreenScreen Benchmark scores.[3]

[1]

[2] This section was developed in collaboration with Clean Production Action; additional information on the GreenScreen for Safer Chemicals program, including GreenScreen List Translator and GreenScreen assessments can be found on CPA's website.

[3] https://www.greenscreenchemicals.org/assess/gs-professionals

GreenScreen Specified Lists

Many of the GreenScreen Specified Lists (hazard lists) used in the GreenScreen methods are dynamic. They change over time as more chemicals are evaluated by scientists and listed by the agencies and organizations that maintain those lists.

Clean Production Action, HPDC, Healthy Building Network, and 3E Exchange (Toxnot) collaborate on policies to ensure consistent, harmonized GreenScreen List Translator results for the same chemical. Clean Production Action has published two policies, one on *updating* GreenScreen Specified Lists in GreenScreen List Translator Automated Tools and another on *defining members of chemical groups*. This HPD Open Standard policy utilizes both. (See Harmonized Method for Hazard Screening, below, for more information.)

GreenScreen Specified Lists includes two types of lists:

- Authoritative lists – Listing is based on a comprehensive expert review by a recognized authoritative body, and results in a classification with a higher level of confidence.
- Screening lists – Listing results in a classification with a lower level of confidence because at least one of the following is true:
  - The list was developed using a less comprehensive review.
  - The list was compiled by an organization that is not considered to be authoritative.
  - The list was developed using predominantly or exclusively estimated data.
  - The list was developed to identify chemicals for further review and/or testing.

Authoritative lists and screening lists are both further described as:

- A sub-list that translates to a single hazard classification for a single endpoint or only one possible List Translator Score
- B sub-lists, which are based on multiple endpoints or translate to a range of hazard classifications or address only a specific form of the substance or specific exposure route.

GreenScreen List Translator Method and List Translator Scores

List Translator Method: GreenScreen List Translator provides a “list of lists” evaluation of a chemical, to identify the likelihood that it is a chemical of high concern. It does this by evaluating the chemical against information from over 40 hazard lists developed by scientific bodies convened by international, national, and state government agencies, intergovernmental agencies, and NGOs. List Translator outputs include hazard levels for hazard endpoints appearing on one or more lists, and a List Translator score.

More information on the method for determining the score and the structure of the scores produced can be found on the GreenScreen website.

GreenScreen List Translator Scores: The List Translator score answers the question of whether a chemical is a known, listed chemical of high concern, but does not provide information on whether the chemical is a “safer” chemical. List Translator scores are:

- LT-1: Chemicals that meet the chemical of high concern scoring criteria based on high confidence data (presence on Authoritative A lists) are assigned a score of LT-1.
- LT-P1: Chemicals that possibly meet the chemical of high concern scoring criteria, but the data is less definitive or lower confidence, i.e., presence on an Authoritative B list or Screening List, are assigned a score of LT-P1.

- LT-UNK: Chemicals that appear on one or more of the GreenScreen Specified Lists but do not meet the chemical of high concern scoring criteria are assigned a score of LT-UNK.
- NoGSLT: Chemicals that do not appear on any of the GreenScreen Specified Lists are assigned a score of NoGSLT.

If a chemical receives a score of LT-UNK or NoGSLT, it should be treated as an unknown hazard and not as a safer chemical. Only a more comprehensive hazard assessment such as a GreenScreen for Safer Chemicals assessment and resulting Benchmark score, can identify safer chemicals.

GreenScreen Assessments and GreenScreen Benchmark Scores

GreenScreen Assessment Method: GreenScreen for Safer Chemicals is a comprehensive hazard assessment methodology developed by Clean Production Action to identify chemicals of concern and safer alternatives. Scientific expertise in fields such as toxicology, chemistry and epidemiology are required to conduct a GreenScreen Assessment. GreenScreen Assessments are performed by expert firms, approved by Clean Production Action, and known as Licensed GreenScreen Profilers. More information on the assessment method can be found on the GreenScreen website.

GreenScreen Benchmark Scores: There are five possible GreenScreen Benchmark scores.

- Benchmark-1 (BM-1): Avoid – Chemical of High Concern
- Benchmark-2 (BM-2): Use but Search for Safer Substitutes
- Benchmark-3 (BM-3): Use but Still Opportunity for Improvement
- Benchmark-4 (BM-4): Prefer – Safer Chemical
- Benchmark-U (BM-U): Unspecified Due to Insufficient Data

In addition, GreenScreen Benchmark scores may carry a subscript. These subscripts identify specific situations where the Benchmark score is assigned for reasons other than the hazards of the parent chemical. If there is a significant data gap in the assessment that has affected the score, the Benchmark score will carry a subscript DG, e.g., Benchmark-2_{DG}. If the score is assigned because of a feasible and relevant environmental transformation product of the parent chemical with a lower scoring, it may carry a subscript TP, e.g., Benchmark-1_{TP}. Finally, in the case of polymers, if one or more unreacted monomer(s) and/or catalyst(s) assessed are assigned a high hazard level for any one or more Group I Human Health hazard endpoints, the Benchmark score for they may receive a subscript “CoHC” for “Chemical of high concern,” e.g., Benchmark-1_{CoHC}.

Reporting of GreenScreen Benchmark Scores in the HPD Open Standard: A GreenScreen Assessment and resulting Benchmark scores is owned by the Licensed Profiler who conducted the assessment or the client who commissioned the assessment. In general, these assessments are not publicly available. However, some GreenScreen assessment reports have been made publicly available by their owners. These assessments—and their resulting scores—are “published for public use” as defined below in Requirements for Hazard Screening in HPDs. When available for a substance, the HPD Open Standard specifies that a public GreenScreen Benchmark score will be reported in lieu of a List Translator score. Benchmark scores from private GreenScreen assessments cannot be reported in lieu of the List Translator score. If a private GreenScreen assessment has been done for a reported substance, the existence of this assessment, and the Licensed GreenScreen Profiler who created the assessment, may be noted in the Substance Notes section. However, the reporting of the score or any other content of a private assessment is not permitted under terms of the license agreement between the assessor (GreenScreen Licensed Profiler) and their client. GreenScreen Terms of Use prevent scores from being published without transparent information to substantiate the score.

Reporting of "No GreenScreen" (NoGS) Score on the HPD: In addition to the official GreenScreen Benchmark scores and List Translator scores listed above, the HPD may display "NoGS." This is not an official GreenScreen score, but may appear on an HPD, and in databases such as the Pharos Chemical and Material Library. "NoGS" is used in the HPD to indicate the substance is not present on any GreenScreen Specified Lists, i.e., has received a GreenScreen List Translator score of NoGSLT, *and* does not have a freely and publicly available GreenScreen assessment and resulting Benchmark score.

Hazard Warnings Using HPD Priority Hazard Lists

The second component of Hazard Screening in an HPD is Hazard Warnings. For each substance included in the HPD content inventory, the HPD identifies:

- the applicable warnings,
- the hazard types they represent,
- and the agencies that issued the warnings for each substance listed on the HPD.

The purpose of the hazard warning information in the HPD is to provide a fuller picture of the known hazard associations for each reported substance, complementary to the GreenScreen List Translator or GreenScreen Benchmark score. As noted above, a "hazard warning" is a specific characterization of the hazard by a scientific body, such as "Likely carcinogen" or "Very toxic to aquatic life." Substances frequently have multiple hazard warnings.

Hazard warnings are generated by screening each substance against all HPD Priority Hazard Lists using requirements in the HPD Open Standard and Best Practices for Hazard Screening to determine if the substance has any associated warnings.

Current HPD Priority Hazard Lists

Throughout HPD version 3.0, the HPD Priority Hazard Lists have been based primarily on Clean Production Action's GreenScreen Specified Lists, as described earlier in this document. The specific designated lists have been named in the Appendices to the HPD Open Standard through HPD v3.0.

As of HPD v3.0, the *HPD Priority Hazard Lists are designated as corresponding solely to GreenScreen Specified Lists with use of the additional selection process described as follows*. Because GreenScreen Specified Lists are updated by Clean Production Action, any updates to those lists will take effect with HPD Priority Hazard Lists according to the effective date in GreenScreen. No new HPD version or update to this document will be made. This process change has been made to improve synchronization of these lists.

The hazard warnings shown on the HPD also correspond to the GreenScreen for Safer Chemicals hazard endpoints. (Prior to HPD v3.0, the HPD organized these warnings differently.)

Reporting only higher hazard levels is intended to enable users to focus on those that are of greatest concern and avoid "information overload." Additional selection of HPD Priority Hazard Lists is based on the following outputs from the GreenScreen List Translator:

- *All GreenScreen Specified sub-lists that result in a List Translator score of LT-1 or LT-P1*
- *All GreenScreen Specified sub-lists that, when evaluated with the GreenScreen Hazard Criteria, result in a hazard level or range as follows and a score of LT-UNK:*
    - High, or Moderate for GreenScreen Group 1 human health effects (Carcinogenicity, Mutagenicity/Genotoxicity, Reproductive Toxicity, Developmental Toxicity, Developmental Neurotoxicity, and Endocrine Activity).

- Very High or High for all other human health effects (Systemic Toxicity/ Organ Effects including Immune System effects, Neurotoxicity, Respiratory Sensitization, and Skin Sensitization) plus Ecotoxicity, Flammability, and Reactivity.

Through HPD v3.0, HPDC Priority Hazard Lists included some additional lists to address human and environmental health issues not presently covered by the GreenScreen Specified Lists. These issues include ozone depletion, global warming, and other priorities. As of HPD v3.0, HPDC's Technical Committee has discontinued including these additional lists, as those lists were outdated, and/or those topics are being addressed through other policy developments, including updates to GreenScreen Specified Lists. That decision will be revisited as needed and any additional lists will be noted in the most up-to-date version of this Best Practices guide.

Process for Updating HPD Priority Hazard Lists

HPD Priority Hazard Lists are selected by the HPDC Technical Committee, and the lists become part of the HPD Open Standard. HPDC reviews the Priority Hazard Lists and revises them, as appropriate.

Through HPD v3.0, these revisions have been made via each revision of the HPD Open Standard. As of HPD v3.0, any revisions to those lists are made in this guide and may be updated between HPD Open Standard revisions.

The HPDC Technical Committee has established a standing Hazards Technical Sub-Group (Hazards TSG) to review current lists and identify changes, and/or additional lists if needed. This Technical Sub-Group also reviews Hazard Screening procedures and recommends clarifications and revisions as needed. The Hazards TSG is composed of experts in hazard lists and sources; Hazard Screening methods, data sources, and issues, e.g., chemical classes; fields of materials science, toxicology, industrial hygiene, chemistry and/or others relevant to Hazard Screening; and/ or hazard screening and assessment tools.

As of the current edition of this document, HPD Priority Hazard Lists align fully with GreenScreen Specified Lists, as discussed in the previous sub-section.

Tools for Hazard Screening for the HPD

As of June 2025, in connection with the implementation of HPD Open Standard v3.0, hazard screening for a published HPD must be completed through an automated tool.

This requirement for automation will ensure compliance with the hazard screening requirements of the HPD Open Standard, including compliance with the Harmonized Method for Hazard Screening. Experience has demonstrated that accurate hazard screening is not practical to do manually. Automation will assist HPDC with reviewing reports, improve quality checking and content verification.

The determination of GreenScreen List Translator scores and Benchmark scores can only be done by organizations or individuals trained and licensed by Clean Production Action, as discussed earlier.

There are several approaches for performing Hazard Screening for an HPD using available automated tools:

- The HPD Builder online tool utilizes an automated Hazard Screening tool, Pharos, that is fully compliant with the requirements of the HPD Open Standard. After the creator of an HPD enters the name and identifier of each substance in the HPD Builder, the Builder tool automatically performs hazard screening through a query to the Pharos database.
- As of the publication of this guide, HPDC also has one authorized data exchange partner, 3E Exchange (Toxnot). Content inventory data for an HPD entered in 3E Exchange (Toxnot) may be screened in that tool, which is compliant with this guide and the HPD Open Standard. If the manufacturer wishes to publish an HPD based on this data, the data is transferred for publishing to the HPD Builder using the authorized data exchange method (API).

If the HPD is created using any automated method not listed above, the creator of the HPD must ensure that the method meets all HPD Open Standard requirements for the current revision level, including compliance with the Harmonized Method for Hazard Screening (this document). Publishing of such HPDs is governed by the HPD Quality Control Protocol. Any organizations wishing to create or publish HPDs in this manner are recommended to contact HPDC in advance (support@hpd-collaborative.org) to completely understand the requirements of these processes.

Harmonized Method for Hazard Screening

The Harmonized Method for Hazard Screening ("Harmonized Method") is a joint effort of Clean Production Action, HPDC, Healthy Building Network, and 3E Exchange (Toxnot). Use of the Harmonized Method is required for all hazard screenings conducted in accordance with the HPD Open Standard.

The purpose of the Harmonized Method is to specify requirements that ensure consistent results of GreenScreen List Translator, GreenScreen assessments, and HPD Priority Warning Lists. The Harmonized Method is updated as needed. Ongoing lack of compliance may result in the removal of the tool as an approved hazard screening automator (see above: Tools for Hazard Screening for the HPD).

HPDC monitors the results of automated hazard screening tools to ensure ongoing consistency with the Harmonized Method. Any discrepancies in results are immediately reviewed and HPDC requires systems to be corrected as needed.

The Harmonized Method references the following documents (with the most up-to-date versions linked as of the publish date of this guide linked below). In addition, any derivation or use of GreenScreen List Translator scores must be derived in compliance with CPA's List Translator methodology. Method and requirements can be found on the GreenScreen website:

- *GreenScreen List Translator Map* – The GreenScreen List Translator methodology is published in Section IV of the GreenScreen for Safer Chemicals Hazard Assessment Guidance v1.4 (January 2018). Annex 11 contains the GreenScreen Specified Lists™ and Annex 12 contains the GreenScreen List Translator™ Map. The GreenScreen List Translator map translates each hazard warning on each GreenScreen Specified lists to hazard endpoint(s), hazard level(s) or range(s) using GreenScreen Hazard Criteria, and a List Translator score using the List Translator Scoring Algorithm.

- *GreenScreen List Translator® Automator List Update Policy* – This policy establishes a schedule for required updating of GreenScreen List Translator Specified Lists and HPD Priority Warning Lists.
- *Resolving Challenges with Chemical Groups in Automation of List Translator* – This policy establishes a method for addressing chemical groups that are found on some GreenScreen List Translator Specified Lists and HPD Priority Hazard Lists.
- *GreenScreen® for Safer Chemicals Chemical Group Policy* – This policy defines the chemical groups, their associations with GreenScreen Specified Lists and their members.

Version Control

DATE	CHANGE
07/18/18	Initial Upload for HPD v2.2
7/11/22	Reflects updates to HPD v2.3 which includes the removal of Appendixes in the HPD standard, full alignment with GreenScreen Specified List, and the ability to update these lists as needed between HPD Standard changes through the HPDC Technical Committee.
7/20/23	Reflects updates to HPD v2.3 update. Added a new version control table.
6/26/25	Revised document against version 3.0 updates

HPD Priority Hazard Types

HPD Abbreviation	HPD Hazard Category	GreenScreen Hazard Category	GreenScreen Group
AQU	Aquatic Toxicity	Acute Aquatic Toxicity	Ecotoxicity
		Chronic Aquatic Toxicity	Ecotoxicity
CAN	Cancer	Carcinogenicity	Group I Human
DEV	Development	Developmental Toxicity incl. developmental neurotoxicity	Group I Human
END	Endocrine	Endocrine Activity	Group I Human
EYE	Eye	Eye Irritation/Corrosivity	Group II Human
GEN	Gene Mutation	Mutagenicity/Genotoxicity	Group I Human
LAN	Land Toxicity	Terrestrial Ecotoxicity	Ecotoxicity
MAM	Mammal	Acute Mammalian Toxicity	Group II Human
	Mammal	Systemic Toxicity/Organ Effects incl. immunotoxicity – Repeated Exposure	Group II* Human
	Mammal	Systemic Toxicity/organ Effects-Single Exposure	Group II Human
MUL	Multiple	Used for warning lists that cover multiple hazards	
NEU	Neurotoxicity	Neurotoxicity – any exposure	Group II* Human
		Neurotoxicity – Single exposure	Group II Human
		Neurotoxicity – Repeated exposure	Group II* Human
PBT	PBT	Bioaccumulation	Environmental Fate
		Persistence	Environmental Fate
		PBT (Persistence, Bioaccumulation & Toxicity)	Environmental Fate – Multiple
PHY	Physical Hazard	Flammability	Physical Hazards
		Reactivity	Physical Hazards
REP	Reproductive	Reproductive Toxicity	Group I Human
RES	Respiratory	Respiratory Sensitization	Group II* Human
SKI	Skin	Skin Irritation/Corrosivity	Group II Human
		Skin Sensitization	Group II* Human