REACH24H CRAC2024

Clean Production Action

Safety Management Tools: Ensuring Safety from Chemical Substances to Products and Organizations

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Clean Production Action

16th Chemical Regulatory Annual Conference | CRAC China

REACH24H CRAC 2024 by REACH24H Consulting Group

Contents

1. Introduction to Clean Production Action and the GreenScreen Program

Clean Production Action

Solutions for a safer & healthier tomorrow

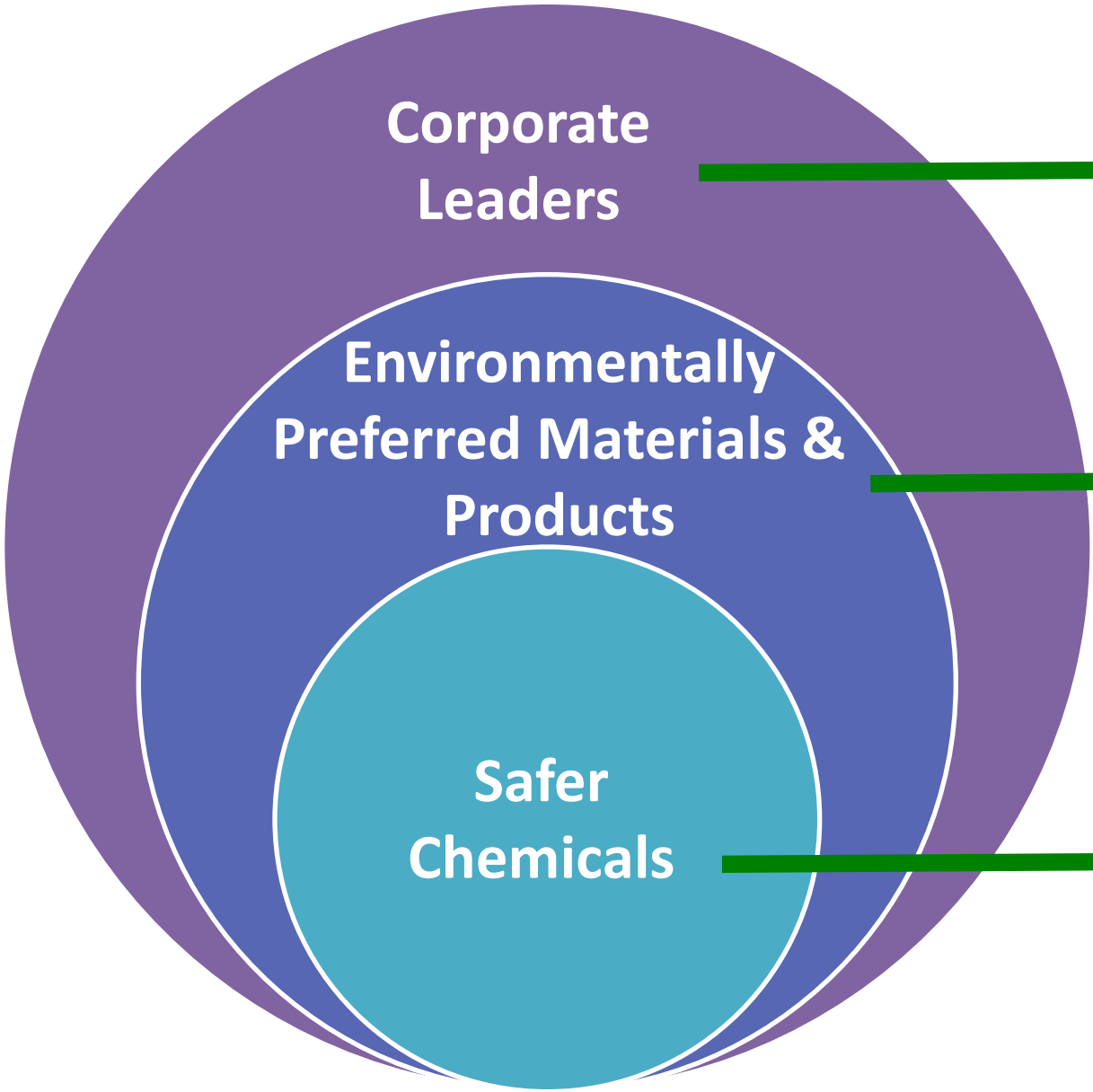
BIZNGO FOR
SAFER CHEMICALS &
SUSTAINABLE MATERIALS

INVESTOR
ENVIRONMENTAL
HEALTH NETWORK

GREENSCREEN
FOR SAFER
CHEMICALS

CHEMICAL
FOOTPRINT
PROJECT

Green Assessment Tools



Chemical Footprint Project

GREENSCREEN CERTIFIED®

GREENSCREEN® FOR SAFER CHEMICALS

Clean Production Action

Chemical hazard-based tools

Simplifying the complexity of chemical toxicity

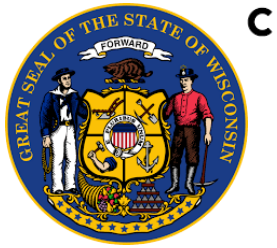
Chemical hazard assessment tool to identify chemicals of concern & safer chemicals

Quick screening tool to identify chemicals of concern

Product certification to identify environmentally preferred materials & products

Clean Production Action

Globally Recognized & Used



2. Overview of GreenScreen for Safer Chemicals

GreenScreen List Translator Lists

42 Lists from Authoritative Scientific Bodies & NGO Screening Lists

- Intergovernmental Agencies / Internationally Recognized NGOs
  - United Nations – Stockholm Persistent Organic Pollutants
  - International Agency for the Research on Cancer (IARC)
- Government Agencies
  - EU REACH Substances of Very High Concern (SVHCs)
  - US EPA Priority PBT List
  - California Proposition 65 List of carcinogens & reproductive toxicants
- Screening Lists
  - ChemSec SIN List
  - TEDX Potential Endocrine Disruptors

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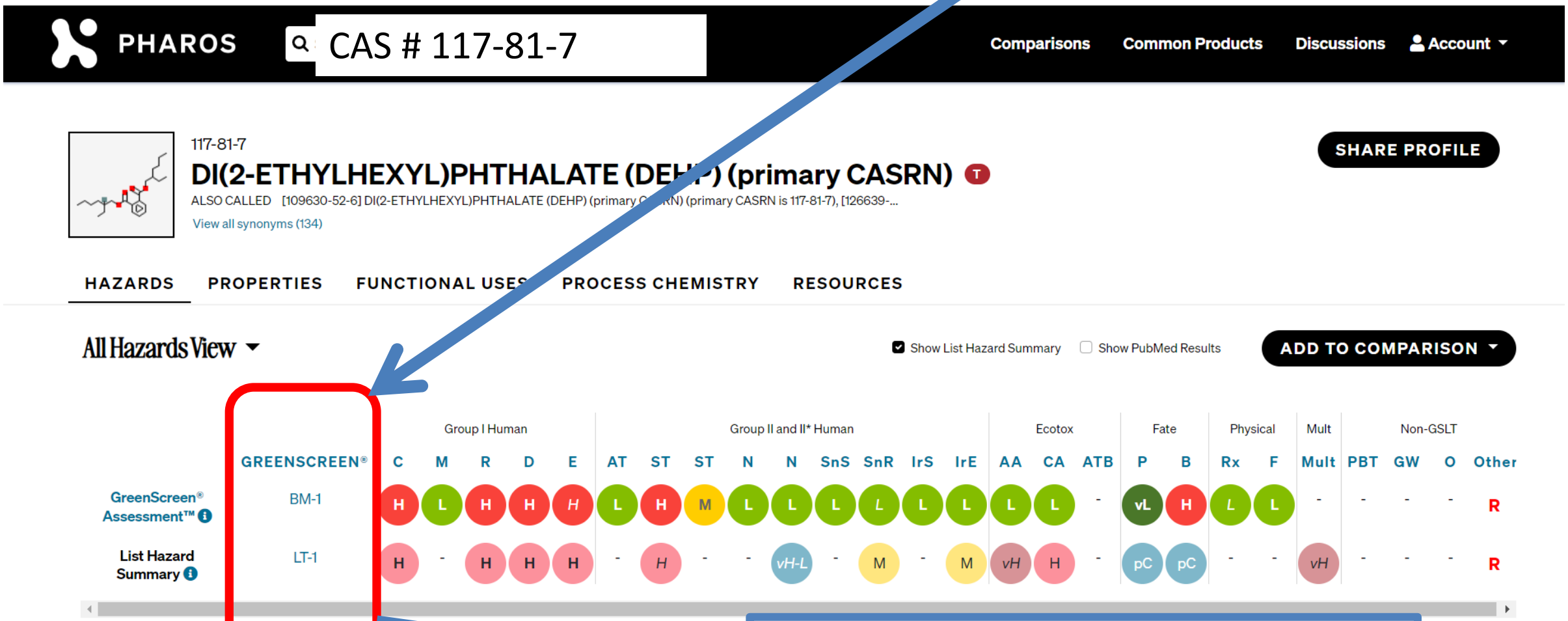
GreenScreen List Translator Scores



GreenScreen Benchmark-1 (BM-1) + GreenScreen List Translator-1 (LT-1) = chemicals of high concern

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List Translator Automated Tools

https://www.greenscreenchemicals.org/assess/list-translator

3E Exchange

formerly Toxnot

HBN Pharos

https://pharos.habitablefuture.org/

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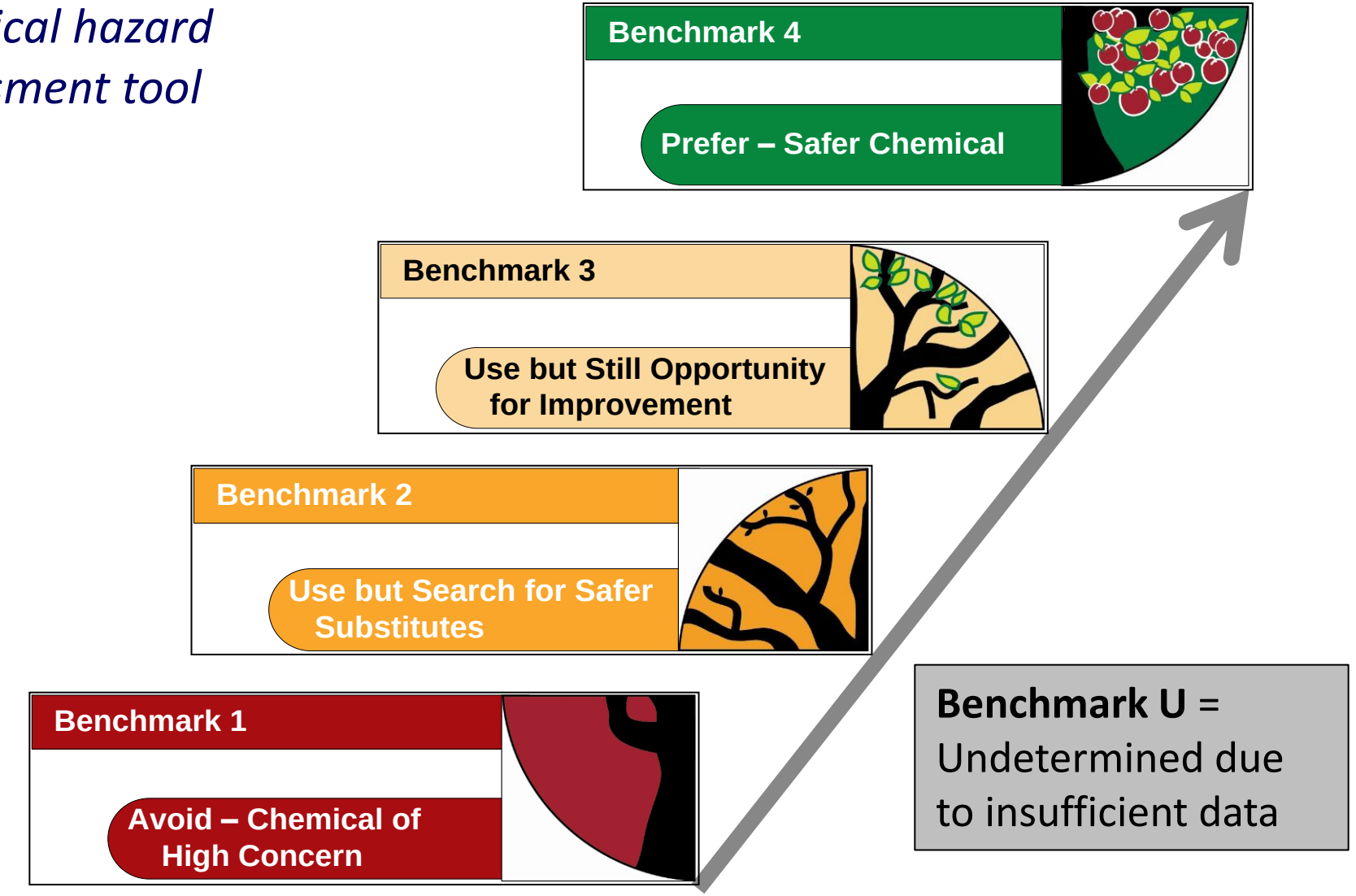
GreenScreen® for Safer Chemicals

Chemical hazard assessment tool



Benchmark U = Undetermined due to insufficient data

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GreenScreen Hazard Endpoints

Human Health Group I	Human Health Group II and II*	Environmental Toxicity & Fate	Physical Hazards
Carcinogenicity	Acute Toxicity	Acute Aquatic Toxicity	Reactivity
Mutagenicity & Genotoxicity	Systemic Toxicity & Organ Effects	Chronic Aquatic Toxicity	Flammability
Reproductive Toxicity	Neurotoxicity	Other Ecotoxicity studies when available	
Developmental Toxicity	Skin Sensitization Respiratory Sensitization	Persistence	
Endocrine Activity	Skin Irritation Eye Irritation	Bioaccumulation	

Identifying Safer Chemicals to Methylene Chloride (CAS# 75-09-2)

		Group I Human					Group II & II Human								Ecotox		Fate		Physical	
Chemical Name	CASRN	C	M	R	D	E	AT	ST		N		SnS	SnR	IrS	IrE	AA	CA	P	B	RX	F
								Single	repeated	Single	repeated										
Methylene chloride	75-09-2																				
Benzyl alcohol	100-51-6																				
2-(2-butoxyethooxy) ethanol	112-34-5																				
Dimethyl sulfoxide	67-68-5																				
1,3-dioxolane	646-06-0																				
Estasol (dibasic esters mixture)	95481-62-2																				
d-Limonene	5989-27-5																				
Acetone	67-64-1																				
Methanol	67-56-1																				
Toluene	108-88-3																				
Formic acid	64-18-6																				
Caustic soda	1310-73-2																				

Identifying Safer Chemicals to Methylene Chloride (CAS# 75-09-2)

		Group I Human					Group II & II Human									Ecotox		Fate		Physical	
Chemical Name	CASRN	C	M	R	D	E	AT	ST		N		SnS	SnR	IrS	IrE	AA	CA	P	B	RX	F
								Single	repeated	Single	repeated										
Methylene chloride	75-09-2	H	NE	DG	DG	M	*M*	*vH*	H	*vH*	*vH*	L	DG	H	H	M	*L*	*vH*	vL	L	L
Benzyl alcohol	100-51-6																				
2-(2-butoxyethooxy) ethanol	112-34-5																				
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Identifying Safer Chemicals to Methylene Chloride (CAS# 75-09-2)

		Group I Human					Group II & II Human									Ecotox		Fate		Physical	
Chemical Name	CASRN	C	M	R	D	E	AT	ST		N		SnS	SnR	IrS	IrE	AA	CA	P	B	RX	F
								Single	repeated	Single	repeated										
Methylene chloride	75-09-2	H	NE	DG	DG	M	*M*	*vH*	H	*vH*	*vH*	L	DG	H	H	M	*L*	*vH*	vL	L	L
Benzyl alcohol	100-51-6	L	L	*L*	*M*	DG	M	L	L	*M*	*H*	H	*L*	L	H	L	L	vL	vL	*L*	L
2-(2-butoxyethooxy) ethanol	112-34-5	*L*	L	L	L	DG	L	L	H	DG	L	L	DG	*M*	H	L	L	vL	vL	*L*	M
Dimethyl sulfoxide	67-68-5	*L*	L	L	L	DG	L	L	L	L	L	L	L	*M*	*M*	L	*L*	*L*	vL	*L*	M
1,3-dioxolane	646-06-0	L	*M*	*M*	M	DG	L	M	M	M	L	L	DG	*M*	*H*	L	L	*M*	vL	*L*	H
Estasol (dibasic esters mixture)	95481-62-2	*L*	L	*L*	*M*	*M*	L	M	*M*	M	DG	L	DG	L	*M*	M	*L*	vL	vL	*M*	L
d-Limonene	5989-27-5	L	L	DG	L	DG	L	L	L	DG	DG	H	DG	H	*H*	vH	H	vL	M	*L*	M
Acetone	67-64-1	*L*	L	*M*	M	DG	L	*M*	M	M	*M*	L	DG	L	H	L	L	vL	vL	L	H
Methanol	67-56-1	NA	NA	NA	H	NA	H	vH	NA	NA	NA	NA	NA	NA	NA	L	*L*	vL	*vL*	NA	H
Toluene	108-88-3	DG	L	H	H	M	L	M	H	M	H	L	DG	H	L	H	*H*	*H*	vL	L	H
Formic acid	64-18-6	L	L	L	*L*	DG	H	vH	*H*	vH	DG	L	DG	vH	vH	M	M	vL	vL	L	M
Caustic soda	1310-73-2	*L*	L	*L*	*L*	*L*	H	vH	*L*	*L*	*L*	L	DG	vH	vH	M	DG	*L*	*vL*	*M*	L

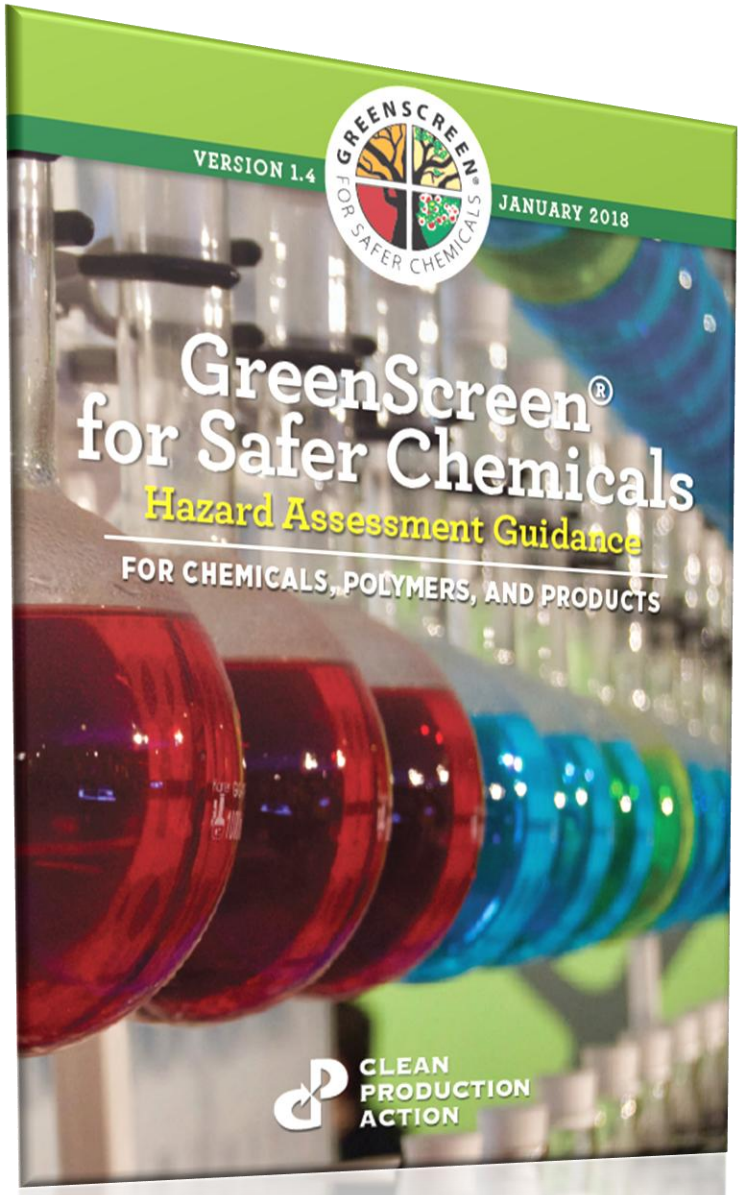
Example: Identify Safer Alternatives to Methylene Chloride

Chemical	CASRN	Benchmark Score
Methylene chloride	75-09-2	1

GreenScreen Evaluation of Methylene Chloride and Alternatives

Chemical	CASRN	Benchmark Score
Methylene chloride	75-09-2	1
Benzyl alcohol	100-51-6	2
2-(2-butoxyethoxy) ethanol	112-34-5	2
Dimethyl sulfoxide (DMSO)	67-68-5	3
1,3-dioxolane	646-06-0	2
Estasol (dibasic esters mixture)l	95481-62-2	2
d-Limonene	5989-27-5	2
Acetone	67-64-1	2
Methanol	67-56-1	1
Toluene	108-88-3	1
Formic acid	64-18-6	2
Caustic soda	1310-73-2	2

Clean Production Action



GreenScreen® for Safer Chemicals: Hazard Assessment Guidance

Freely available at:

https://www.greenscreenchemicals.org/learn/guidance-and-method-documents-downloads

Clean Production Action

3. Overview of GreenScreen Certified

Environmentally Preferable Products with GreenScreen Certified®

Facilitating product chemistry communication across the value chain

Clean Production Action

GreenScreen Certified®

- Provides easy to understand product recognition
- Restricted substances list (RSL) includes chemical classes, for example, PFAS
- Requires comprehensive chemical information
- Protects confidential business information
- Creates a roadmap to most environmentally preferred products

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Chemical Inventory

All **chemicals** present in all materials must be disclosed (under confidentiality) if:

- Intentionally added and present at or above 1 part per million (ppm) in material
- Impurity or residual and present at or above 100 ppm in material

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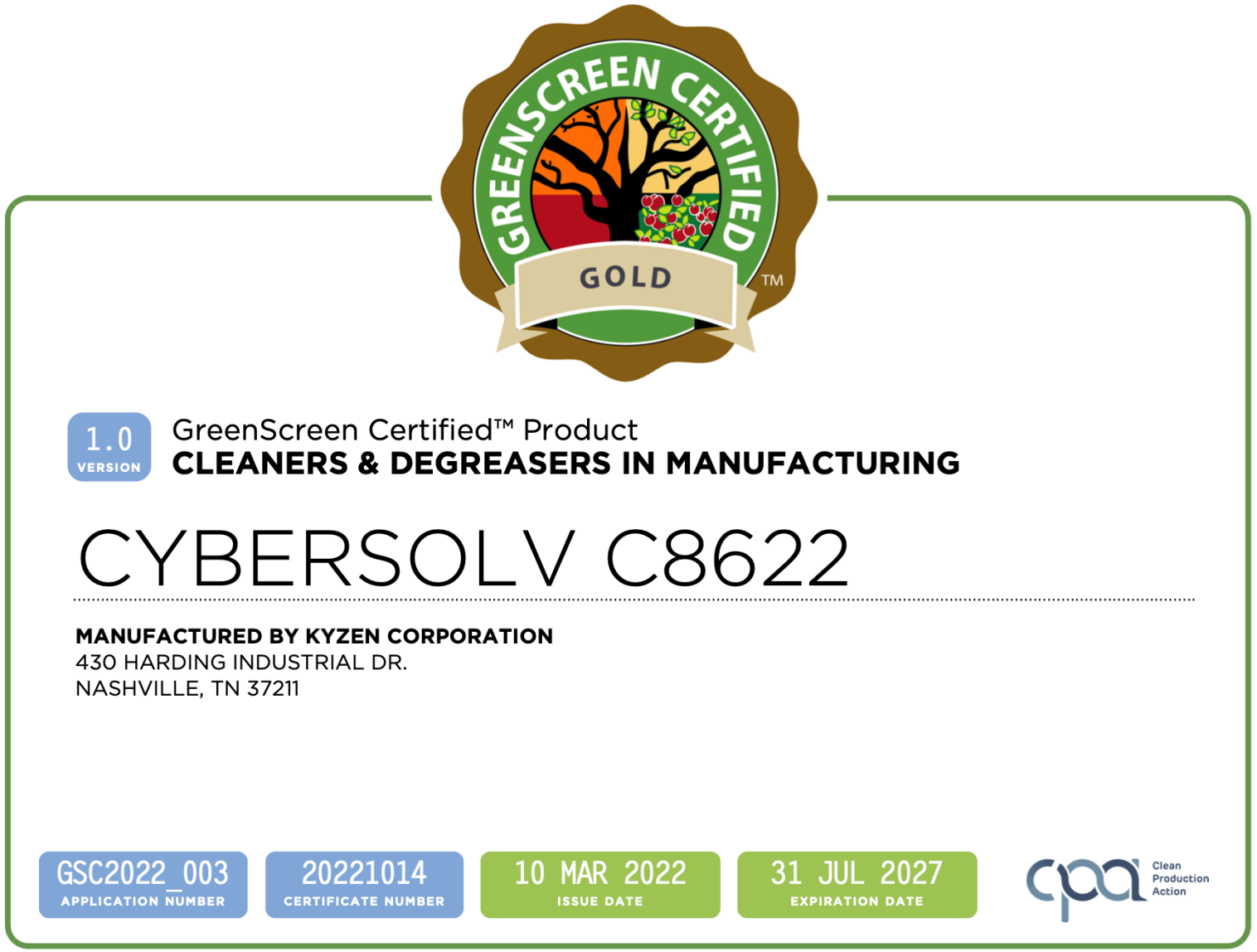
5. Chemical Hazard Evaluation

GreenScreen
List Translator

GreenScreen
Hazard
Assessment

Clean Production Action

Product certification example



cpa Clean Production Action

GreenScreen Certified for Cleaners & Degreasers

*"**Apple has used the GreenScreen tool**, as well as the EPA Safer Choice criteria, **to assess and promote safer chemicals in our supply chain, leading to the transition of 100 percent of our supplier final assembly sites to safer alternatives** for cleaners and degreasers."*

https://www.apple.com/supplier-responsibility/pdf/Apple_SR_2022_Progress_Report.pdf

Clean Production Action

PFAS-free & Environmentally Preferred Products

over 250 products / over 30 manufacturers

- **Food Service Ware:** 117 products / 3 manufacturers
- **Furniture & Fabrics:** 51 products / 4 manufacturers
- **Firefighting Foam:** 45 products / 15 manufacturers
- **Textile Chemicals:** 26 products / 4 manufacturers
- **Cleaners & Degreasers in Manufacturing:** 18 products / 6 manufacturers

https://www.greenscreenchemicals.org/certified

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4. Chemical Footprint Project

Chemical Footprint Project Corporate Survey

CHEMICAL INVENTORY (I)
30 points

#	Topic	Points
I 1	Restricted Substances List (RSL) / Manufacturing RSL	5
I 2	RSL/MRSL Compliance	5
I 3	Data collection	5
I 4	Full chemical ingredient information	5
I 5	Data management	5
I 6	Supplier conformance	5

MANAGEMENT STRATEGY (M)
20 points

#	Topic	Points
M 1	Chemicals policy	8
M 2	Business strategy	4
M 3	External engagement	4
M 4	Accountability	4

FOOTPRINT MEASUREMENT (F)
33 points

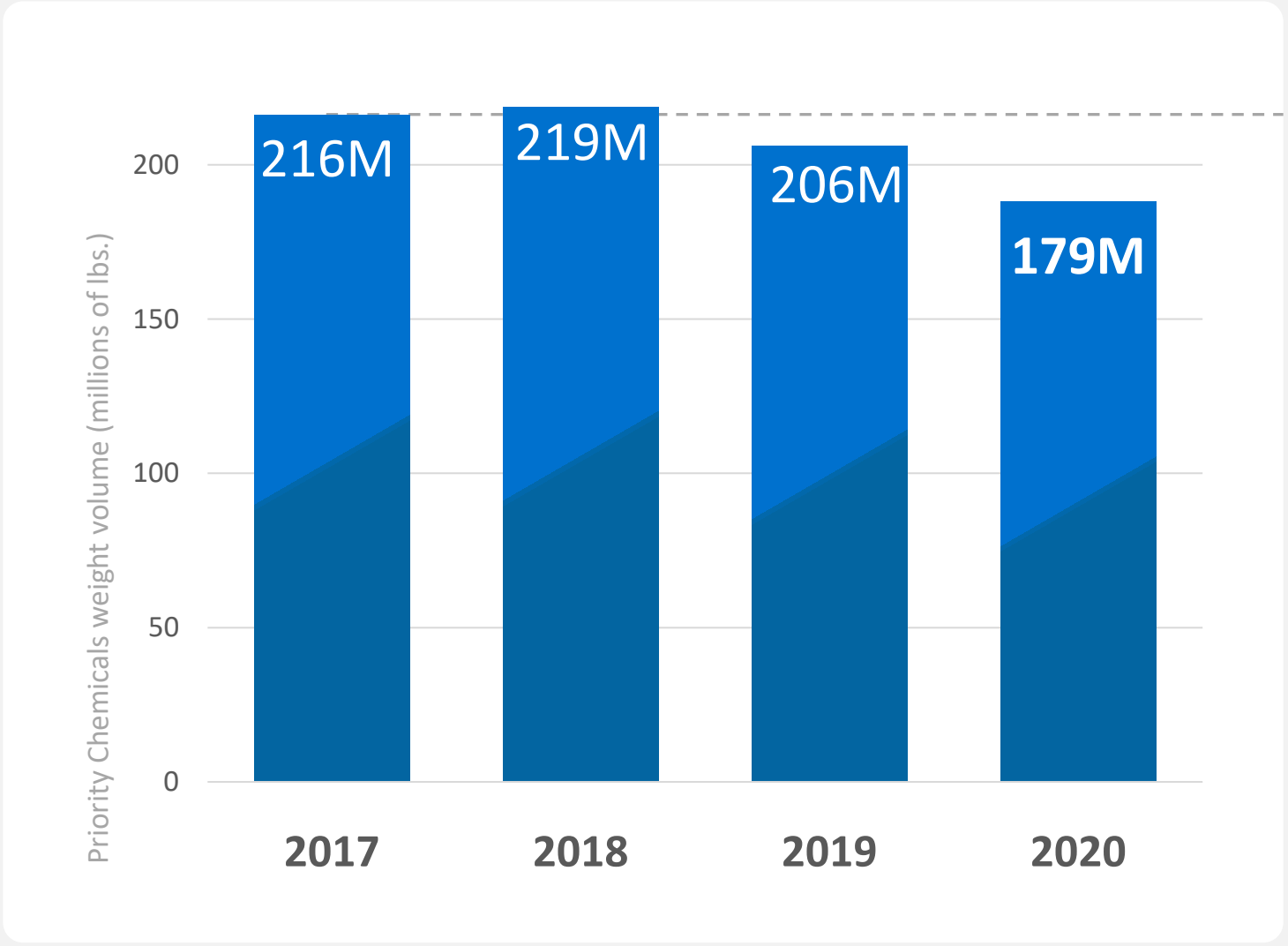
#	Topic	Points
F 1	Footprint reduction goal	6
F 2	Footprint measurement	8
F 3	Footprint change	10
F 4	Hazard assessment	3
F 5	Safer alternatives	6

DISCLOSURE & VERIFICATION (D)
20 points

#	Topic	Points
D 1	Chemical ingredients	8
D 2	CFP responses	3
D 3	CFP score	5
D 4	Verification	4

https://chemicalfootprint.org/results

Priority Chemicals by weight



17% reduction*
in weight (volume) of in-scope Priority Chemicals in products sold in 2020

Lbs. of reduction goal Priority Chemicals

*Compared to baseline year

https://www.chemicalfootprint.org/resources/entry/6th-cfp-report

THE CHEMICAL FOOTPRINT PROJECT
cfp
FRONTRUNNER AWARD

hp
reckitt
Insignem
HermanMiller
BEAUTYCOUNTER
Case Medical
naturepedic

Thank you!

Chris Helt, PhD

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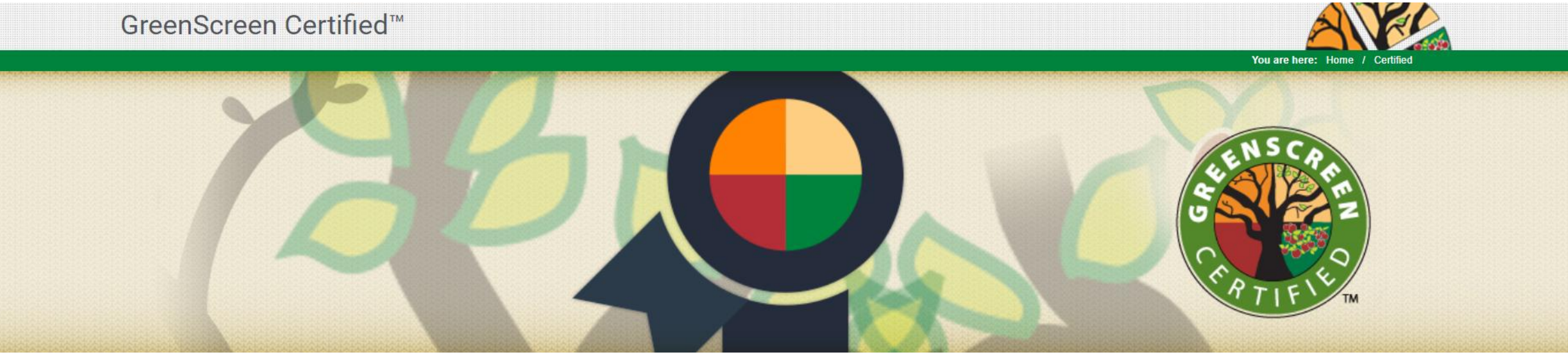

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Thanks !