Clean Production Action

Safer Cleaners & Degreasers for Electronics

WEBINAR

DECEMBER 15, 2021

Clean Production Action – solutions for a safer & healthier tomorrow

BIZNGO FOR SAFER CHEMICALS & SUSTAINABLE MATERIALS

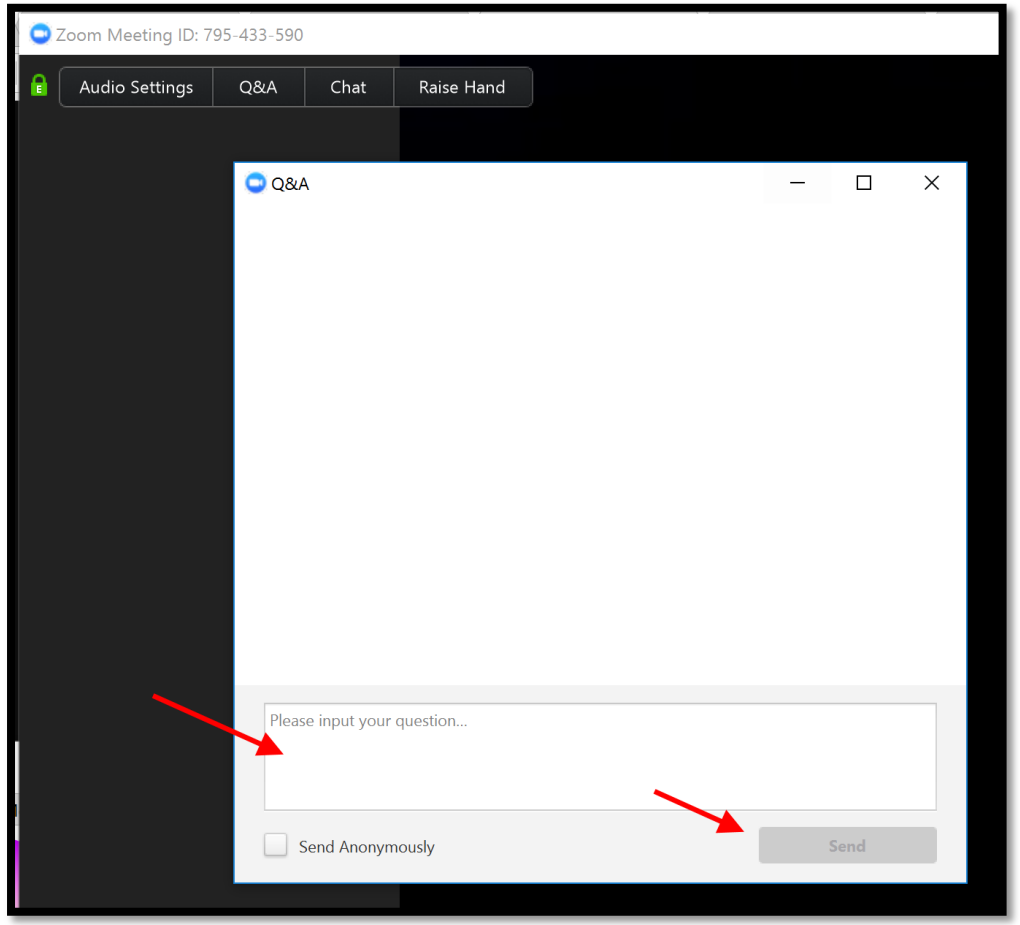
INVESTOR ENVIRONMENTAL HEALTH NETWORK

GREENSCREEN FOR SAFER CHEMICALS

CHEMICAL FOOTPRINT PROJECT

Clean Production Action

Webinar Questions



Post your question to the Q&A section of your Zoom Control Panel

Slides will be available at greenscreenchemicals.org

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Speakers

Shari Franjevic
GreenScreen Program Manager
Clean Production Action

AF

Art Fong
Smarter Chemistry Lead
Apple

Stephen Fuller
Senior Criteria Manager
TCO Development

Pamela Brody-Heine
Senior Director
Clean Electronics Production Network

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Outline

1. GreenScreen Certified™ Cleaners & Degreasers
2. Apple - Advancing Adoption of Safer Cleaners
3. TCO Certified Accepted Substances List
4. Clean Electronics Production Network Towards Zero Exposure
5. Q&A

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GreenScreen Certified™ Standard for Cleaners & Degreasers in Manufacturing

SHARI FRANJEVIC

GREENSCREEN PROGRAM MANAGER

Workers interact with chemicals daily

- Products
- Process chemicals
- Equipment

Not all chemicals are created equal

- Some cause harm like cancer or birth defects
- Most not thoroughly evaluated for toxicity

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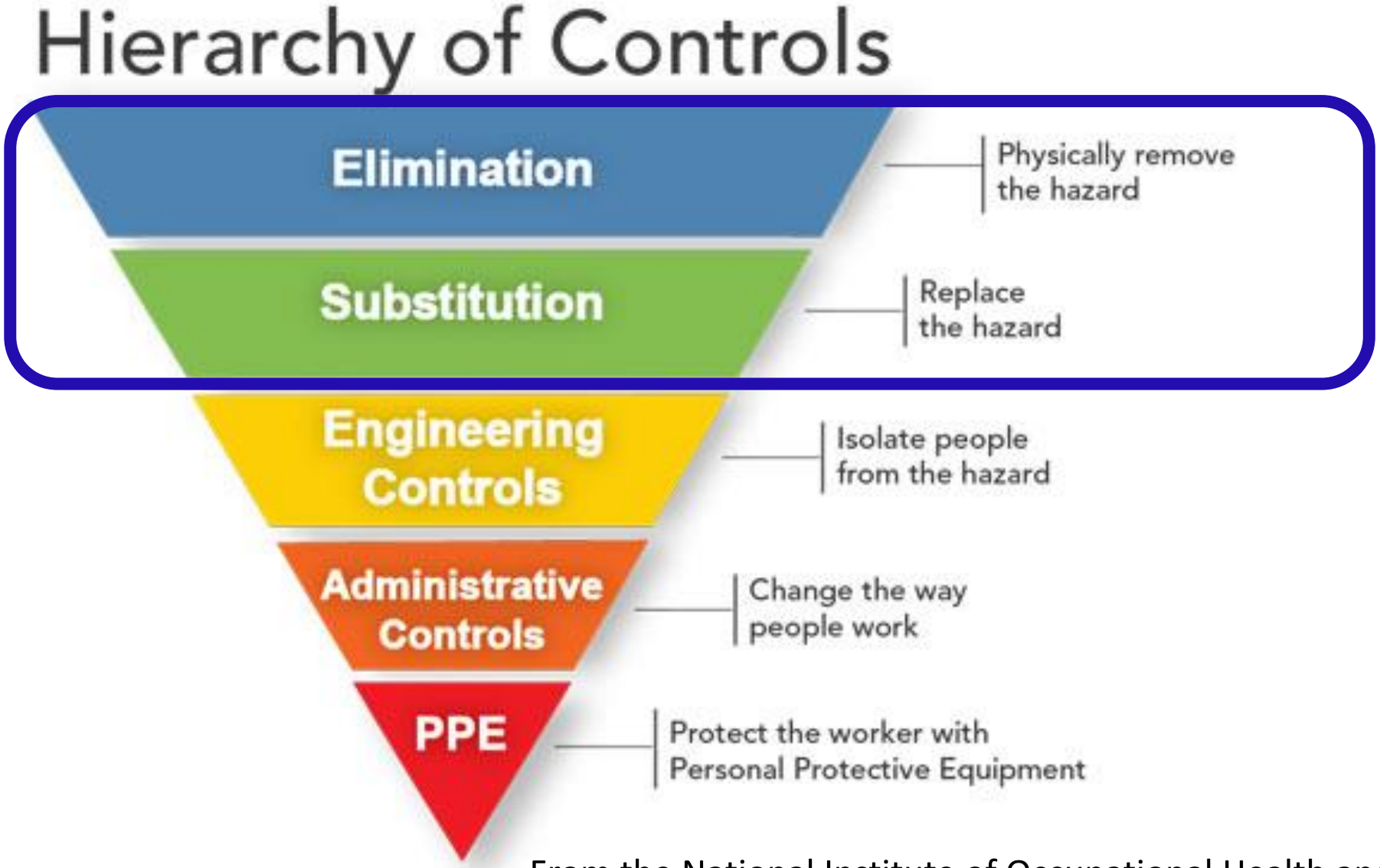
Most Effective Ways to Protect Workers



From the National Institute of Occupational Health and Safety

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Lack of Transparency

SDS example

3. Composition/information on Ingredients

3.1. Mixture

The following component(s) in this product are considered hazardous under applicable OSHA(USA)

Chemical name	CAS No	weight-%
2-Methyl-2,4-pentanediol	107-41-5	5 - 10
Proprietary Hydrocarbon Surfactants	Proprietary	5 - 10
Proprietary Hydrocarbon Surfactants	Proprietary	3 - 7
Proprietary Hydrocarbon Surfactant	Proprietary	1 - 5
Propan-2-ol	67-63-0	1 - 5
3-Butoxy-2-propanol	5131-66-8	1 - 5

58 - 85 wt. % UNKNOWN

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GreenScreen Certified for Cleaners & Degreasers

2021

Cleaners & Degreasers in Manufacturing

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Technical Peer Reviewers

Xu Lu, Program Manager, Environment & Supply Chain Innovation (ESCI), Apple, Inc.

Art Fong, PhD, Environmental Technologies Smarter Chemistry Lead, Apple, Inc.

Jason Marshall, ScD, Director for TURI Cleaning Laboratory, University of Massachusetts-Lowell

Akos Kokai, PhD, Department of Environmental Science, Policy, and Management, University of California Berkeley

Michael Wilson, PhD, National Director for Occupational and Environmental Health, BlueGreen Alliance

Andrew Zhu, Senior Product EHS Engineer, 3M

Joachim Becht, PhD, Global Head R&D, Dr. Wack Holding GmbH

Terry Price, PhD, R&D Scientist, Zestron Americas

Christopher Teaf, PhD, Director, Center for Biomedical & Toxicological Research at Florida State University

Doug Covert, Senior Environmental Scientist, Hazardous Substance & Waste Management Research, Inc. (HSWMR)

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Simplifying the Complexity of Chemical Hazard

To support informed, proactive, and precautionary decision-making

Chemicals

Products

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GreenScreen: Globally Recognized & Used

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Why GreenScreen Certified?

- Independent, non-profit organizations
- Comprehensive and detailed evaluation
- Easy to understand accreditation
- Avoids regrettable substitutes
- Creates a roadmap

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Facilitates Communication

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Chemicals Disclosed under Confidentiality

CONFIDENTIAL DISCLOSURE AGREEMENT

All **additives** present in the product at any level must be disclosed under confidentiality.

- E.g., surfactant

All **chemicals** present in all additives must be disclosed if:

- Intentionally added and present at any level in the product
- Impurity or residual and present at or above 100 ppm in the product

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Chemicals of High Concern are Prohibited

- **CMRs** =
  - Carcinogens,
  - Mutagens, or
  - Reproductive / Developmental Toxicants
- **PBTs** =
  - Persistent, and
  - Bioaccumulative, and
  - Toxic
- **Equivalent Concern =**
  - Endocrine Disruptors

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Products Tested

Chemical or Group	Detection Limit	Requirement
Chlorinated organic compounds	≤ 50 ppm	None Detected
Brominated Organic Compounds		
Benzene	≤ 5 ppm	
N-Hexane		
Toluene		
N-methylpyrolidone (NMP)		

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Restricted Substances List

- Chlorinated Organic Compounds
- Brominated Organic Compounds
- Solvents: Benzene, N-Hexane, Toluene, NMP, Methanol
- Per- and Polyfluoroalkyl Substances
- Ozone Depleting Substances
- Alkylphenols & Alkylphenol Ethoxylates
- Cyclic Volatile Methyl Siloxanes: D4, D5, D6

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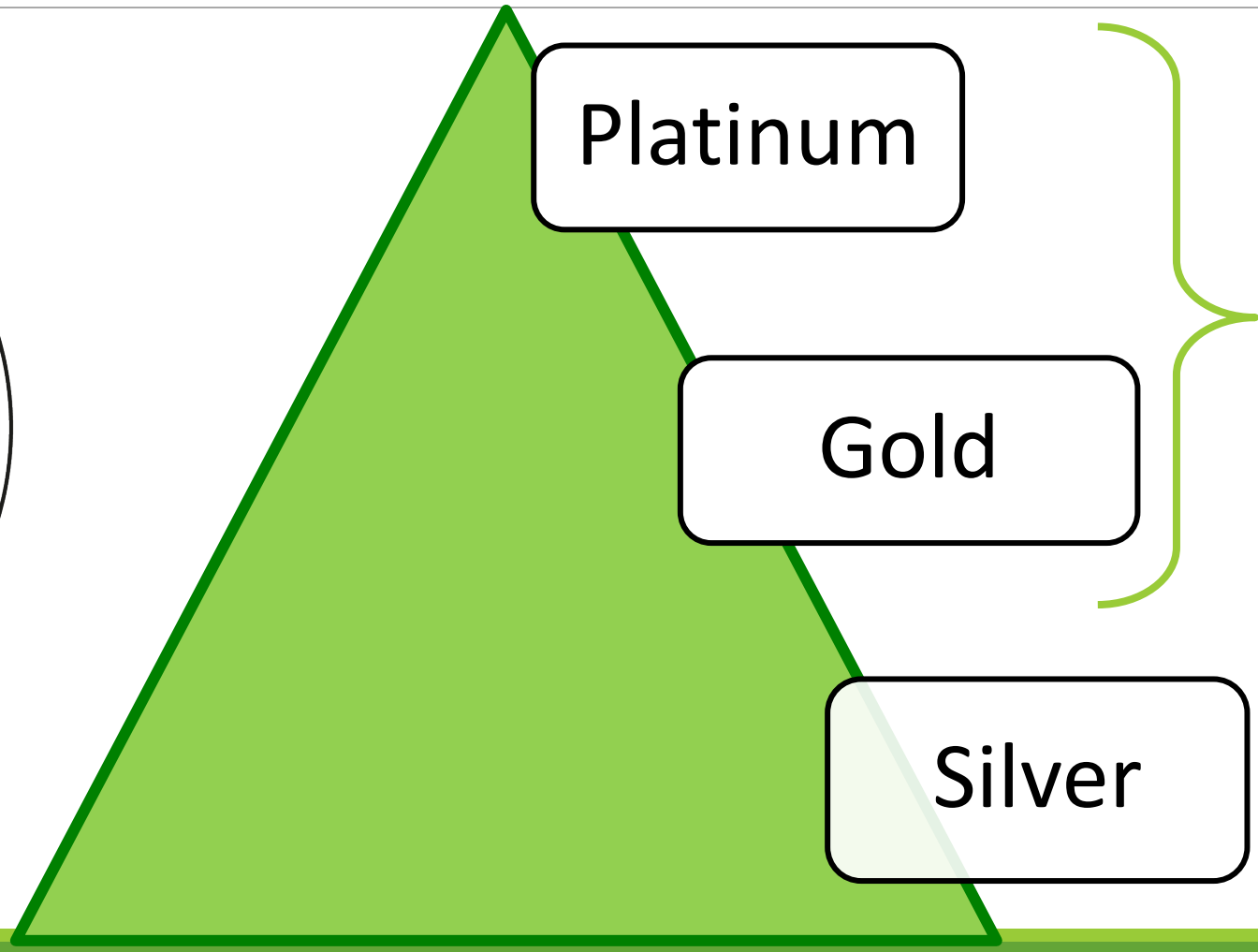
Each chemical evaluated with GreenScreen



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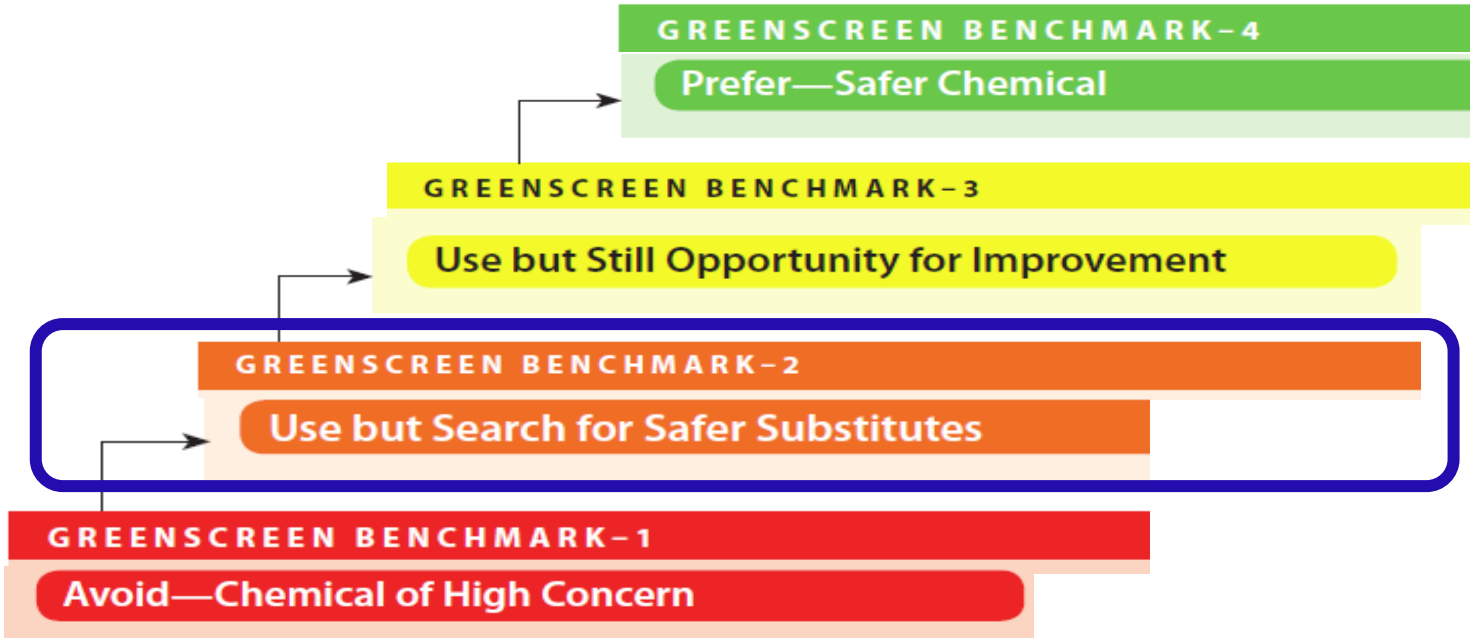
Platinum Hazard Criteria



Subdivide Benchmark-2 with a focus on worker health and safety

Prioritized **chronic human health effects** such as cancer, birth defects, neurotoxicity, sensitization.

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List of GreenScreen Certified™ Products

https://www.greenscreenchemicals.org/certified/products/category/cleaners-degreasers-in-manufacturing

GreenScreen Certified™

You are here: Home / Certified / Certified Products / Cleaners & Degreasers in...

GreenScreen Certified™ Products > Cleaners & Degreasers in Manufacturing

Company	Product Type	Product	Level	Version & Certificate#	Expires
Shenzhen Vital New Material Company Limited	Cleaners & Degreasers in Manufacturing Water-based Cleaning Agent	Vital GW9066	Gold	v1.0 #20211165	2027-07-31
Zestron	Cleaners & Degreasers in Manufacturing Electronic Cleaner	Vigon PE 180	Gold	v1.0 #20211169	2027-07-31
Zestron	Cleaners & Degreasers in Manufacturing Electronic Cleaner	Vigon A 201	Gold	v1.0 #20211168	2027-07-31
Zestron	Cleaners & Degreasers in Manufacturing Electronic Cleaner	Hydron SE 230 A	Gold	v1.0 #20211167	2027-07-31
Kushan Aolin Electronic Company Ltd.	Cleaners & Degreasers in Manufacturing Water-based Cleaning Agent	Aolin836	Gold	v1.0 #20211166	2027-07-31

cpa Clean Production Action

Steps to Certification

https://www.greenscreenchemicals.org/certified/get-certified

1. Pre-Registration
2. Registration
3. Application
4. Evaluation
5. Certification

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GreenScreen Certified™ for Cleaners & Degreasers

1. All chemicals in the product disclosed under confidentiality
2. Product meets all Restricted Substances List requirements
3. Product meets all analytical testing requirements
4. All chemicals in the product assessed for hazard using GreenScreen tools
5. Product meets skin and eye irritation requirements

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TCO Certified Accepted Substance List

Stephen Fuller

About TCO Certified

Independent sustainability certification for IT products

Environmental **and** supply chain social responsibility

ISO 14024 type 1 **No Greenwash!**

Independent verification is mandatory - products, factories, brand initiatives. 20 000+ hours per year

Wide product choice - 3500+ certified models from 27 brands - search at tcocertified.com

Product finder, purchaser resources at tcocertified.com

TCO Certified change in chemical strategy

Awareness of a problem means we have an obligation to find and share a solution.

Restriction lists and regrettable substitution.

TCO Certified Accepted Substance List – transition to positive lists.

2015 - Flame retardants.

2018 - Plasticisers.

2021 - Process chemicals – Cleaning solvents.

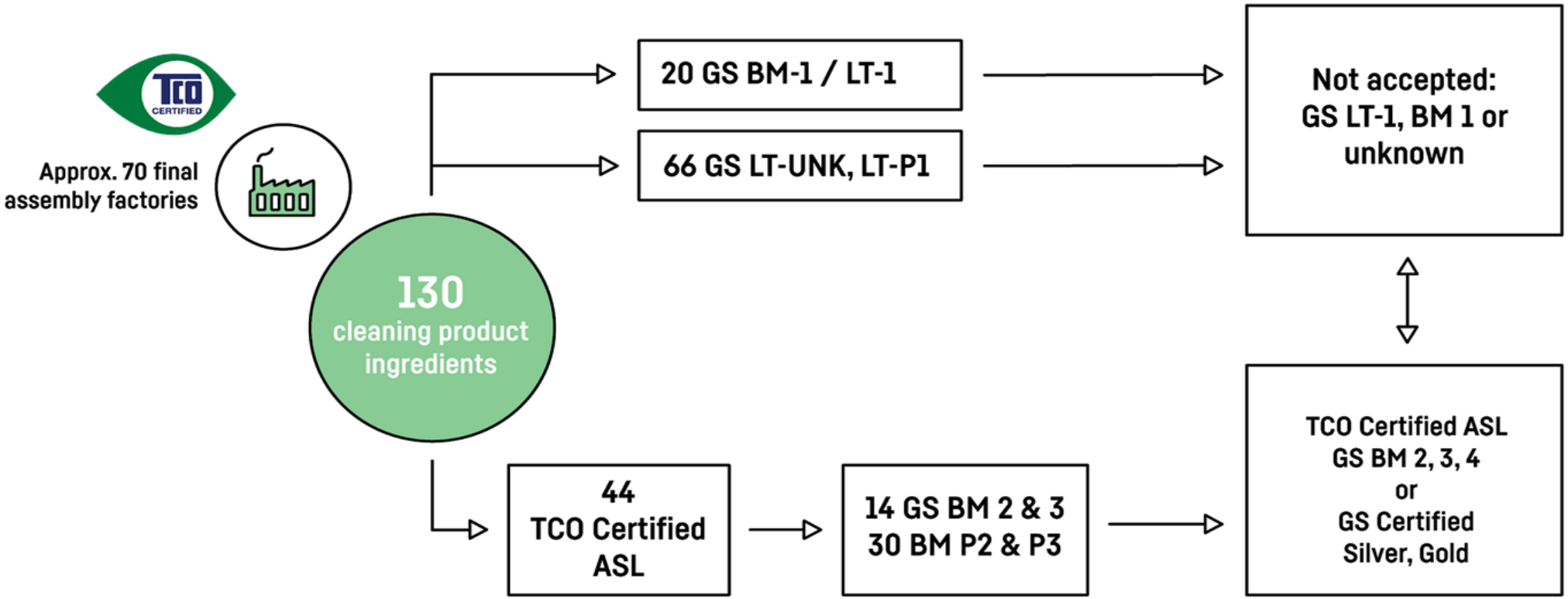
Data collection – Chemicals being used.

GreenScreen™ – Independent hazard assessment framework.

Public list – Industry continues to populate the list.

https://tcocertified.com/industry/accepted-substance-list/

Data collection - majority without full assessment.



Cleaning solvents and TCO Certified gen 9

Scope of the requirement

Final assembly factories now extended to next tier suppliers.
Product and Printed Circuit Board/Surface Mounted Technology.

Independent assessments accepted

Cleaning ingredients (CI) - GreenScreen Benchmark 2. 3 or 4.
Cleaning products (CP) GreenScreen certified gold or platinum.

Two public lists of chemicals.

TCO Certified Accepted Substance List.
Potential candidate list (tentative – awaiting assessment)

Collaborations

1. Access to full assessment reports
2. Expert guidance
3. Peer review – resolving conflicts.

TCO Certified Accepted Substance List

Our success is proving industry are ready for the ASL strategy.

Thank you

Chemicals criteria - Stephen.fuller@tcodevelopment.com
TCO Certified - purchasers@tcodevelopment.com
manufacturers@tcodevelopment.com

Contact us:

www.tcocertified.com
Twitter @tcocertified
Facebook - TCO Certified

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A project of the Center for Sustainability Solutions

Clean Electronics Production Network & Toward Zero Exposure

GreenScreen Webinar
December 2021

Agenda

- Overview of Clean Electronics Production Network (CEPN)
- Toward Zero Exposure - *A Commitment Program to Protect Workers from Chemical Hazards in the Electronics Supply Chain*
- Safer Alternatives & CEPN Tools and Resources

CLEAN ELECTRONICS PRODUCTION NETWORK (CEPN)

A program of Green America

Center for Sustainability Solutions

CEPN is a global, leadership network of diverse stakeholders collaborating to reduce worker exposure to toxic chemicals in the electronics supply chain - a complex issue that no individual business, organization, or leader can solve alone.

CEPN WORKING GOAL: *Move toward zero exposure of workers to toxic chemicals in the electronics manufacturing process*

Why Process Chemicals?

- Process Chemicals are used during the manufacture of a product and/or maintenance of related production equipment that are **not intentionally fully incorporated into the product**
- **Millions of workers** in the electronics global supply chain using process chemicals
- **Increasing focus** on process chemicals including potential purchasing requirements and regulations
- Process chemicals increasing being viewed as a **human rights issue**

Why a Network Approach?

- Process chemical management is an **industry-wide issue**
- Companies **share a supply base** with other brands, so **collaboration is critical to success**
- By working together network members are able to make a **bigger impact and do it faster**

Most effective way to protect workers from exposure to toxic chemicals is to eliminate use or substitute with safer alternatives!

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Participating Organizations

Industry	Apple, Inc.	HP, Inc.
	Cisco Systems, Inc.	Intel Corporation
	Dell, Inc.	Inventec Performance Chemicals
	Fairphone	Responsible Business Alliance
	Flex	Seagate Technology
Labor	CEREAL (El Centro de Reflexión y Acción Laboral)	
	Electronics Watch	
	Int'l Campaign for Responsible Technology (ICRT)	
	Social Accountability International (SAI)	
Research	University of California, Berkeley	
	Santa Clara University	
Enviro/Other	ChemFORWARD	
	Clean Production Action (CPA)	
	Scivera	
	Sustainable Purchasing Leadership Council (SPLC)	
	TCO Development	
	US EPA	

Toward Zero Exposure:

A Commitment Program to Protect Workers from Chemical Hazards in the Electronics Supply Chain

Toward Zero Exposure Program

- Developed by the members and advisors of CEPN, a **collaborative multi-stakeholder** innovation network
- **Unites companies** throughout the electronics industry in a journey to reduce worker exposure to hazardous chemicals through collective action
- Signatories share a strong and valuable commitment to deploying the **highest practices in protecting workers** from hazardous process chemicals
- Program **provides resources, tools and structure** to boost the credibility of safety claims
- ***Launched with founding Signatories Apple, Dell and HP, Inc.***

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PROGRAM COMMITMENTS

#1 Eliminate Exposures to Priority Chemicals

Protect workers from exposure to Priority Chemicals in the electronics supply chain, prioritizing elimination or substitution with safer alternatives and protecting workers until that is achieved

#2 Process Chemical Data Collection

Collect data on company and supplier facility use of process chemicals to support collective mapping across supply chains

#3 Worker Engagement and Participation

Build safety systems and culture around process chemical management through support for the maturation of governance systems that protect the health of workers, where workers are consulted, informed and actively participating

#4 Reach Deeper into Tiers

Work with selected suppliers to join the Commitment Program to reduce worker exposure to toxic chemicals in the extended electronics supply chain

#5 Verification and Reporting

Ensure progress toward implementing the Commitments through verification and annual reporting to workers and the public

#6 Continuous Improvement

Drive ongoing improvement across all commitment areas

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First Round of Priority Chemicals

- Process chemicals prioritized for elimination or substitution in the electronics industry supply chain
- First round of Priority Chemicals contains 9 solvents used as cleaners in electronics manufacturing
  - 1-Bromopropane (CAS #106-94-5)
  - Benzene (CAS #71-43-2)
  - Dichloromethane (Methylene Chloride) (CAS #75-09-2)
  - Methanol (CAS #67-56-1)
  - n-Hexane (CAS #110-54-3)
  - N-Methyl-Pyrrolidone (NMP) (CAS #872-50-4) – Exempted Conditional Use for photoresist stripping
  - Tetrachloroethylene (CAS #127-18-4)
  - Toluene (CAS #108-88-3)
  - Trichloroethylene (CAS #79-01-6)
- Selected from CEPN member companies' Manufacturing Restricted Substances Lists (MRSL) and then evaluated by the Technical Review Board and screened:
  - Meets CEPN High Hazard Criteria
  - Can be replaced by available and potentially viable ***safer alternatives***
- Additional rounds of priority chemicals will be identified in the future

Availability of credible safer alternatives is the key!

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Safer Alternatives & CEPN Tools and Resources

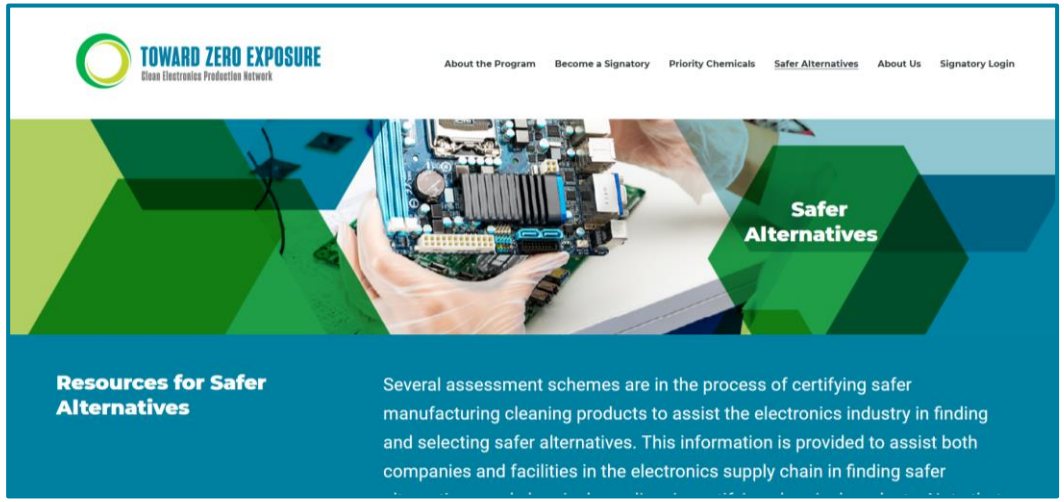
CEPN Resources for Safer Alternatives

Goals

- Assist the electronics industry in identifying and using safer chemicals/formulations
- Initial efforts focused on safer alternatives to cleaners and degreasers
- Provide collective solutions for common issues
- Help drive innovation by chemical suppliers and manufacturers toward safer chemistries

Direction

- Highlight and collaborate with assessment schemes to drive both supply and demand ➔ **GreenSreen!**
- Align with broader industry efforts (e.g., IPC 1402)
- Drive towards a single repository of approved cleaners and degreasers ➔ ease of access



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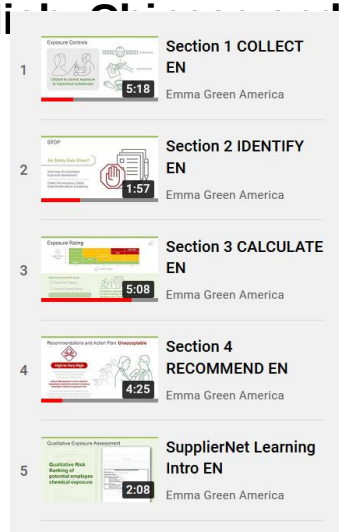
Qualitative Exposure Assessment (QEA)

- Developed to help facilities **identify potential risk of worker exposure** when workplace chemical exposure data is not available
- Consists of **simple forms** and instructions for documenting chemical use, hazards control systems, and worker tasks
- Guidance and collection form, and training videos available in **English, Chinese and Spanish**



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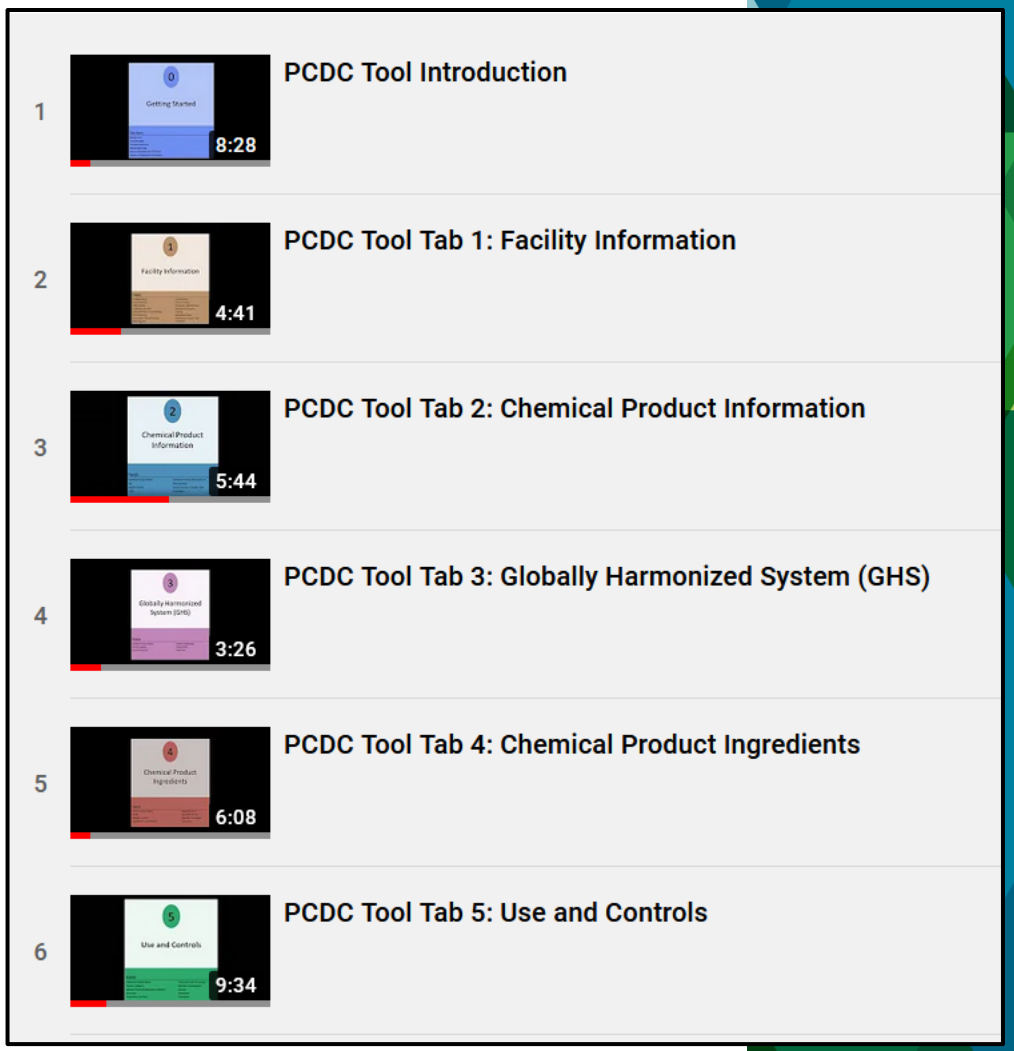
Alternatives Assessment Guide

- Concise, high-level guide for identifying and evaluating potential substitutions chemicals
- Allow companies to assess safer alternatives while avoiding regrettable substitutions
- Guide and worksheet available in English and Chinese

Process Chemicals Data Collection (PCDC) Tool

- Standardized reporting tool for process chemicals data thorough the electronics supply chain
- Creates common format for consistent collection of data across the supply chain
- ***Already being used by several major electronics companies!***
- Free and publicly available
- Enterprise platform being developed
- All data will be held securely and confidentially
- Guidance and instructional videos available in 3 languages - English, Chinese and Spanish



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THANK YOU!

Pamela Brody-Heine, Senior Director

Clean Electronics Production Network

pbrody-heine@greenamerica.org

Questions & Answers

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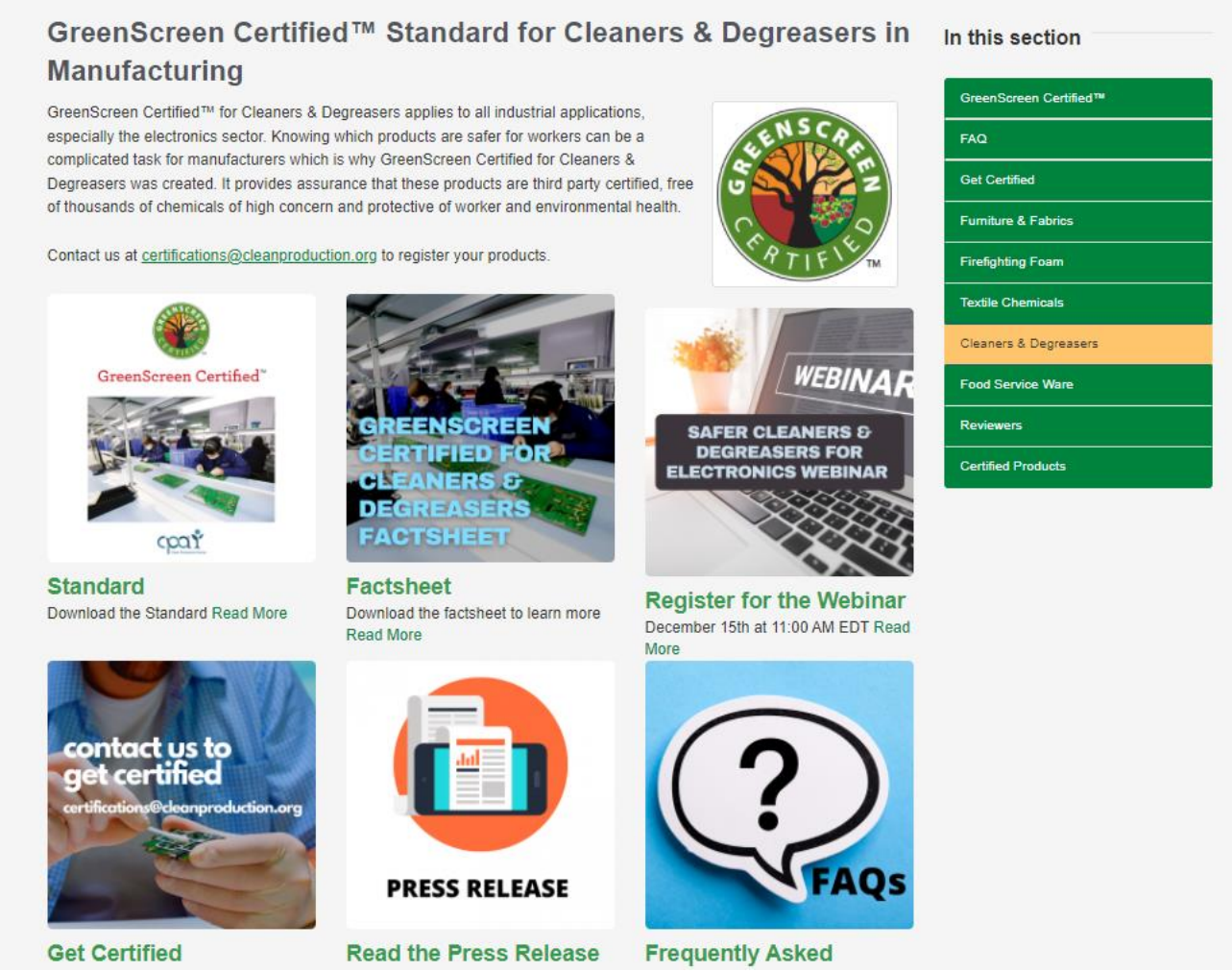
THANK YOU!

Slides from the webinar will be posted on the website

Contact Clean Production Action:

Shari Franjevic
shari@cleanproduction.org
certifications@cleanproduction.org
https://www.greenscreenchemicals.org/



Learn More

https://www.greenscreenchemicals.org/certified/cleaners-degreasers-standard