Moving towards *zero exposure* in the global electronics supply chain -

Update on the multi-stakeholder initiative CLEAN ELECTRONICS PRODUCTION NETWORK (CEPN)

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International Campaign for responsible technology

Setting the Context

- We take an industry sector approach that focuses in the most important industry – Tech
- Production is now completely globalized – brands hold the power, outsourcing production to low wage countries this also outsources the hazards and people suffer
- Trade wars are making things worse –US - China rivalry is heating up – 2 Internets?
- Rise of authoritarianism and massive protests around the world
- Climate change is here and now and is getting worse very fast – floods and fire, sea rise
- We are currently focusing on one of the key parts of the life cycle – Production -- a broader global coalition is necessary is we want to include mining and e-waste
- Our focus on OSH is a strategy to encourage the phase out of the most hazardous chemicals in the global supply chain
- There are new opportunities for collaboration with industry insiders - CEPN

Background:
Chemicals used in Electronics -

Researchers working with International Campaign for Responsible Technology developed a list of 1109 chemicals known to be used in production — many were identified as very hazardous:

- 330 are acutely toxic
- 32 are carcinogens
- 60 are endocrine disruptors
- 41 are germ cell mutagens
- 46 are reproductive toxins

Source: ICRT, ETBC in collaboration with Northwestern University and Greenpeace researchers, 2020, incorporated into PHAROS

Some of Our Recent Efforts – ICRT and Good Electronics

1. UN Strategic Approach to International Chemicals Management for Electronics - SAICM - 2011

2. Chemical Challenge to the Electronics Industry - 2015

3. Meeting (Implementing) the Challenge - 2015

4. Clean Electronics Production Network -

Principles on Human Rights and the protection of workers from exposure to toxic substances

Human rights council 2019

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Baskut Tuncak
UN Special Rapporteur on Toxics
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“The implementation of these principles can and will strengthen the coherence between human rights and occupational health and safety standards with respect to the exposure of workers to toxic substances”

– Baskut Tuncak
UN Special Rapporteur on human rights and toxics

For more information → https://bit.ly/2J1uoaH

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Clean Electronics Production Network & Toward Zero Exposure

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.

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	
	University of Mass, Lowell – Toxics Use Reduction Institute (TURI)	
Enviro/Other	ChemFORWARD	
	Clean Production Action (CPA)	
	Scivera	
	Sustainable Purchasing Leadership Council (SPLC)	
	TCO Development	
	US EPA	

CEPN WORKING GOAL

Move toward zero exposure of workers to toxic chemicals in the electronics manufacturing process.

SCOPE

CHEMICAL FOCUS

Process chemicals

HAZARD & EXPOSURE FOCUS

reducing both hazard and exposure

DOOR-TO-DOOR FOCUS

includes exposure during usage, handling, and disposal of chemicals

Process Chemicals & Why Important?

- 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

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Tools & Resources Developed by CEPN

- Process Chemicals Data Collection (PCDC) Tool
- Qualitative Exposure Assessment (QEA)
- Alternatives Assessment Guide
- Resources for Safer Alternatives

Free and publicly available via the CEPN website, as well as the RBA E-Learning Academy!

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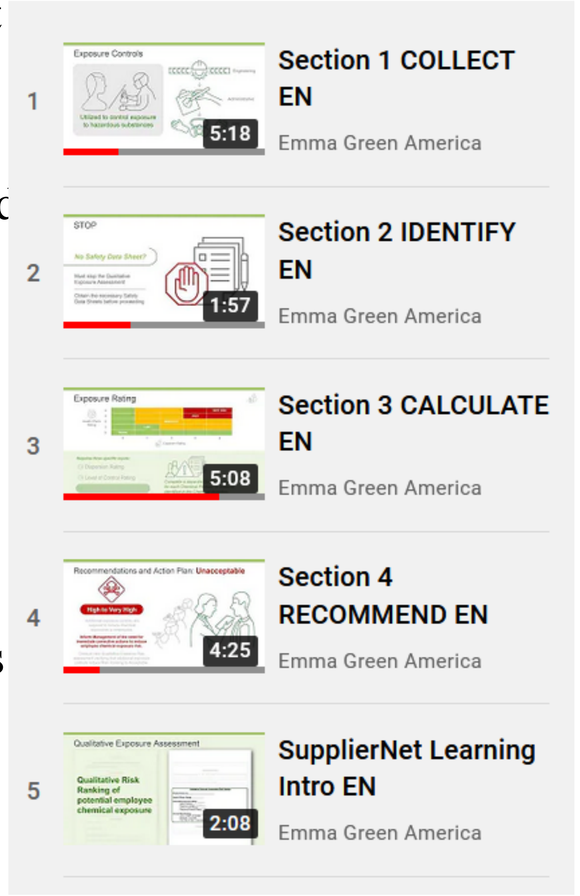
Qualitative Exposure Assessment (QEA)

- Developed to help facilities identify potential risk of worker exposure when workplace chemical exposure data is not available
- Consists of simple forms and detailed instructions for documenting chemical use, hazards control systems, and worker tasks
- Can be completed by EHS staff with limited industrial hygiene expertise
- Generates a risk ranking that can be used to determine necessary controls, ways to improve performance, and reduce exposure risk
- Guidance and collection form available in English, Chinese and Spanish
- Training videos also available in English, Chinese and Spanish



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Alternatives Assessment Guide

- Concise, high-level guide for identifying and evaluating potential substitutions for chemicals of high concern used in electronics manufacturing processes
- Intended to allow companies to assess safer alternatives while avoiding regrettable substitutions
- Includes guidance for evaluating:
  - Human health and environmental impacts
  - Technical feasibility
  - Lifecycle thinking
  - Social impacts
  - Availability
  - Cost of potential alternatives
- Guide and worksheet available in English and Chinese

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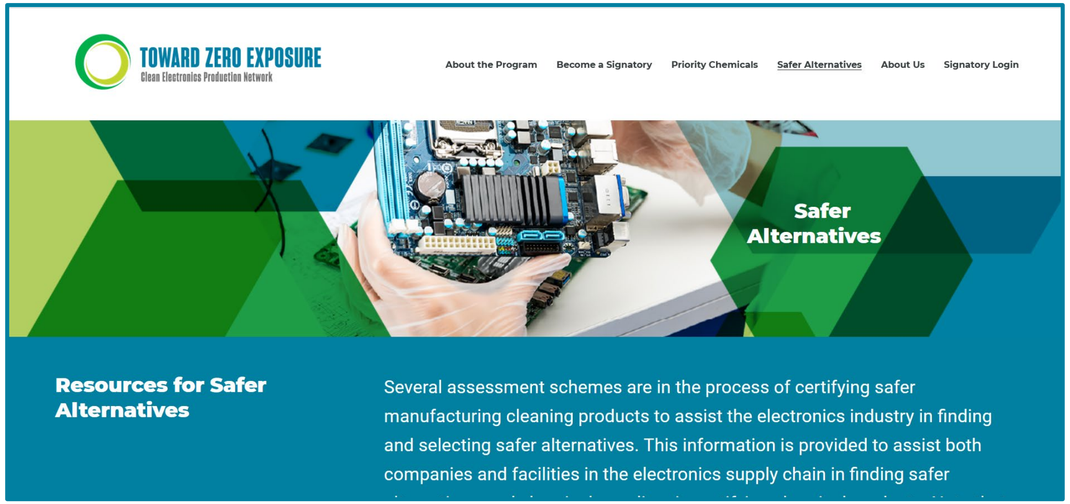
Resources for Safer Alternatives

Goals

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

Program Direction

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



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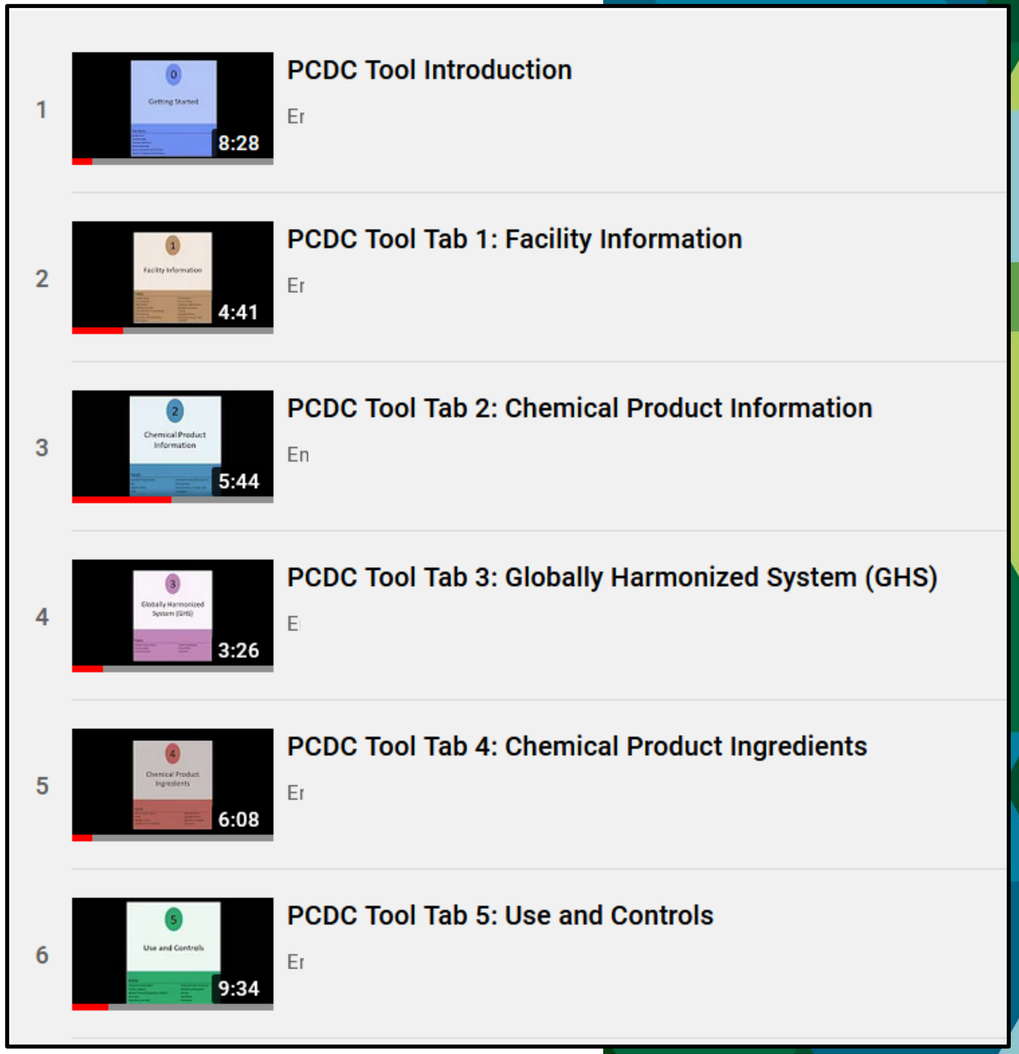
Process Chemicals Data Collection (PCDC) Tool

- Standardized reporting tool for process chemicals data thorough the electronics supply chain
- Already being used by several major brands!
- Creates common format for consistent collection of data across the supply chain
- Free and publicly available
- Enterprise platform being developed
- All data will be held securely and confidentially
- Facilities will be able to opt to share information with their customers through the platform
- Guidance and instructional videos available in 3 languages - English, Chinese and Spanish



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PCDC Tool Data Fields

Facility Information
Company Name
Factory Name
Factory Address
Factory Country
DUNS Number *(optional)*
Production/ Facility Scope
Production Line ID(s)
Number of Customers
Chemical Product Function Scope
Training
PPE Assessment
Respondent Name
Respondent Title and Function
Respondent Contact E-mail
Reporting Date

Chemical Product Information
Chemical Product Name
Chemical Product Manufacturer *(optional)*
SDS *(optional)*
Physical State (Solid/Liquid/Gas)
Specific Gravity
Annual Volume / Weight Used
Unit of Use
Comments

GHS
Chemical Product Name
Hazard Class
Hazard Category
Hazard Code
Hazard Statement
Comments

Chemical Product Ingredients
Chemical Product Name
Ingredient Name
CAS RN
Ingredient % (min)
Ingredient % (max)
Ingredient % (average)
GreenScreen®- List Translator *(optional)*
Comments

Use & Controls
Chemical Product Name
Chemical Product Function
Process Category
Manual or Automated
Chemical Application Method
Persons
Enclosure
Ventilation
Production Line ID(s) *(optional)*
Comments

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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 Overview

- Prioritize the elimination or substitution of priority chemicals with safer alternatives and continue to protect workers until that is achieved
- Collect data on the process chemicals used in manufacturing electronic products
- Advance worker engagement and participation as an essential element of a best-in-class safety culture for managing process chemicals
- Reach deeper into the overlapping and complex electronics supply chain to reduce worker exposure to hazardous chemicals
- Verify and report to ensure progress toward implementing the commitments to strengthen accountability to workers, the public and other stakeholders

PROGRAM COMMITMENTS

#1 Eliminate Exposures to Priority Chemicals

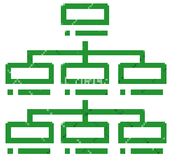
Protect workers from exposure to Priority Chemicals in the electronics supply chain, prioritizing elimination or substitution with safer alternatives and protecting workers until that is achieved

#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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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

Why Are Companies Joining?

- Demonstrate commitment to human rights and protecting workers from exposure to toxic chemicals
- Proactively move the electronics industry to safer supply chain
- Drive greater efficiency and effectiveness in protecting workers from exposure to process chemicals throughout the supply chain
- Prepare for increasing focus of potential regulatory and purchasing requirements on process chemicals
- Effect systemic change as an alliance of stakeholders with a unified vision
- Opportunity to drive business through market differentiation and competitive advantage

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