



TOWARD ZERO EXPOSURE
Clean Electronics Production Network

Toward Zero Exposure

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

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Background

The Clean Electronics Production Network (CEPN) is a multi-stakeholder Innovation Network, formally launched in June 2016 by the Center for Sustainability Solutions at Green America, to address complex workplace health and safety challenges in the electronics supply chain. Upon the Network's founding, CEPN members developed a goal to guide the direction of the collaboration:

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

CEPN launched the **Toward Zero Exposure** program in August 2021, designed to support electronics companies in assessing the use of process chemicals, strengthening the culture of worker safety and engagement, reducing worker exposure to identified priority process chemicals, and substituting them with safer alternatives within their own manufacturing processes, as well as ultimately reaching deeper into their supply chain. The program is built with data security and integrity as core components.


Program Framework

The program is a global collaborative leadership effort to reduce worker exposure to toxic chemicals in the electronics supply chain, and includes three core building blocks:

1. **Program Principles** that guide the program design
2. **Commitments** that companies are making with their participation in the program
3. **Commitment Requirements & Verification** that specify how companies implement the commitments

PROGRAM PRINCIPLES

- Lead the industry toward zero exposure of workers to toxic chemicals, and identify priority chemicals for collective action
- Prioritize elimination and substitution to both eliminate hazards and align market signals to encourage chemical suppliers to bring better solutions to market
- Avoid more harmful substitutions
- Protect workers through controls where elimination or substitution is not yet possible
- Support and enable others to follow through support, research, education, pathways, and filling data gaps (e.g. on safer alternatives)
- Prevent highly toxic chemicals that are no longer in use from re-entering facilities
- Collect data and conduct shared analysis to identify key areas of risk/hazard
- Ensure that workers are consulted, informed, and actively participating in protecting their health

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- Systematically expand the program into extended supply chains
 - Ensure accountability to workers and the public through verification and progress reporting
 - Support continuous learning and improvement

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 into Deeper Tiers.** Work with selected suppliers to join the Toward Zero Exposure program to reduce worker exposure to toxic chemicals in the extended electronics supply chain
5. **Verification and Reporting.** Ensure progress towards implementing the Commitments through verification and annual reporting to workers and the public
6. **Continuous Improvement across all areas above**

Commitment Requirements are outlined in the following sections, and *Verification* is described in Appendix B.

TIMING OF COMMITMENT REQUIREMENTS AND VERIFICATION

Commitment requirements and verification take effect at the end of a Signatory's first, second, or third year of the program (i.e., Year 1, 2, or 3), as specified in each of the requirements. Requirements at the end of Year 3 extend beyond Year 3 into the future.

Future major revisions to these requirements take effect at the beginning of the next Toward Zero Exposure annual cycle or, if revisions are associated with Commitment #1, these requirements take effect either at the beginning of the next annual cycle or after the Signatory's current Priority Chemical round, depending on the preference of each Signatory.

ALIGNMENT WITH OTHER PROGRAMS

CEPN and the Toward Zero Exposure program will seek to align, integrate, support and partner with new and existing electronics industry chemical management leadership programs and other supporting programs using the power of collaboration to protect workers, maintain leadership role and reduce redundancies and duplication for electronics companies.



Definitions

Cleaning Products: Chemicals and chemical mixtures used to remove contaminants, unwanted materials and/or manufacturing processing residues (e.g. lubricants, adhesives, solder flux residues, plastic residue, mold release residues, etc.) from:

- Individual parts, subcomponents, assemblies, process substrates and/or final assembled products; and/or
- Manufacturing equipment used to manufacture individual components or final product

Examples of chemical products used for cleaning include solvents, aqueous detergent solutions, stencil/ink removers, adhesive removers, solvent vapor degreaser solutions, ultrasonic parts cleaner solutions, photo-resist strippers, solder defluxing solutions, etc.

Note that fluxes and mold release agents are not considered cleaning products.

Closed Process: Enclosed production, or processes with equivalent containment conditions, without likelihood of exposure. The enclosed transfers inherent to the process, including sampling, are included. Unenclosed transfers to charge/discharge the process are not included. (Adapted from [EU PROC 1](#))

Photoresist Stripping: The removal of unwanted photoresist layers from the wafer. Its objective is to eliminate the photoresist material from the wafer as quickly as possible, without allowing any surface materials under the resist to get attacked by the chemicals used. Resist stripping can be classified into 1) organic stripping; 2) inorganic stripping; and 3) dry stripping.

Source: EESEMI Comprehensive Reference on Semiconductor Manufacturing (<https://www.eesemi.com/wafer-cleaning.htm>)

Process Chemicals: Chemicals (individual chemicals or mixtures) used during the manufacture and/or finishing of a product and/or maintenance of related production equipment that are not intentionally fully incorporated into the product. Examples of process chemicals include cleaning agents, lubricants, photochemicals, plating agents, refrigerants, hydraulic fluids, and solvents, including volatile chemicals emitted from adhesives, inks and coatings during manufacturing.



Toward Zero Exposure Commitment Requirements

COMMITMENT #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.

The scope of the 1st and 2nd Round of Priority Chemicals is solvents used in cleaning products during the manufacturing process. A summary of the first two rounds of Priority Chemicals is provided on the [CEPN website](#) and in Appendix A.¹

CEPN will approve a new Priority Chemical list at least every 3 years, taking into consideration chemical hazard, worker exposure potential, availability of safer substitutions, etc. Priority Chemicals will be identified following CEPN's [Procedure: Selection of Priority Chemicals](#).

1 Commitment Requirements:

1.1 Implementation of Priority Chemical rounds


- 1.1.1 Signatories opt to commit to each Priority Chemical round (once published), starting with the 1st Round, and choose when they initiate implementation of each successive round
- 1.1.2 For all chemicals in each Priority Chemical round that the Signatory has opted into, eliminate or substitute with safer alternatives, within 3 years, in all facilities in scope (see Section 1.4)
 - a. Signatories can utilize Conditional Use Case(s)² with elimination of exposure (see Sections 1.2 and 1.3)
- 1.1.3 Priority Chemical rounds remain fixed and in sequence, however, Signatories can implement additional rounds at the same time
- 1.1.4 Signatories are designated and publicly identified by the Priority Chemical round they are implementing (e.g., 1st Round, 2nd Round, etc.)

1.2 Program-Wide Conditional Use Case(s) with elimination of exposure

- 1.2.1 Program-Wide Conditional Use Cases may be identified for each round of Priority Chemicals by CEPN as part of the [Priority Chemicals selection procedure](#), and will be designated as phase-out chemicals for future elimination or substitution

¹ Future rounds of Priority Chemicals will be added to Appendix A as they are finalized.

² Possible reasons for Conditional Use Cases include: no viable alternative(s), uniquely critical to manufacturing processes, lack of marketable scalable technology, not feasible to change infrastructure in 3-year timeframe.

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- 1.2.2 Program-Wide Conditional Use Cases require elimination of exposure with verification of below adopted occupational exposure limits (<OELs) (see Appendix A)
 - a. OELs are adopted from lowest global regulatory levels
 - b. If lowest global regulatory levels change and/or science evolves, adopted OELs may be revised to align with updated levels


1.3 Participant-Specific Conditional Use Case(s) with elimination of exposure

- 1.3.1 Participant-Specific Conditional Use Cases may be identified for each round of Priority Chemicals for up to 2 Priority Chemicals or 10% of the number of Priority Chemicals, whichever is greater, by an individual Signatory for a longer planned transition to elimination or substitution
- 1.3.2 Participant-Specific Conditional Use Cases require elimination of exposure with verification of below adopted OELs
 - a. OELs are adopted from lowest global regulatory levels
 - b. If lowest global regulatory levels change and/or science evolves, adopted OELs may be revised to align with updated levels
- 1.3.3 The following information is to be publicly disclosed during annual reporting:
 - a. Rationale for the Conditional Use Case Chemical(s) (e.g. no known substitutes, prohibitively expensive, infrastructure cost, unavailable in that region, etc.)
 - b. Description of adequate engineering controls in place to achieve elimination of exposure below adopted OELs
 - c. A description of current and planned efforts to eliminate or substitute the Conditional Use Case Chemical(s)

NOTE – Identification of Participant-Specific Conditional Use Case Chemicals will be publicly reported in aggregate by CEPN; Signatories are also free to publicly identify their Participant-Specific Conditional Use Case Chemical(s)

1.4 Facilities In Scope

- 1.4.1 These requirements apply to either:
 - a. 15 total facilities (Signatory-owned manufacturing facilities and/or supplier facilities), OR
 - b. At least 50% of the total number of owned manufacturing facilities plus directly contracted supplier facilities within 80% of the Signatory's annual spend when that total number of facilities is < 30
- 1.4.2 Facilities prioritized by elements such as:
 - a. Owned and/or supplier facilities that may have the greatest impact toward CEPN goal

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- b. Highest risk facilities based on criteria such as volume and number of Priority Chemicals used, number of workers, etc.
 - c. Top suppliers by spend
 - d. Supplier willingness to participate

NOTE – “Facilities” to be defined by the program Signatory, and “facility sites” can be defined as specific production lines dedicated to, or utilized by, the brand

COMMITMENT #2: PROCESS CHEMICAL DATA COLLECTION

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

The [CEPN Process Chemicals Data Collection \(PCDC\) Tool](#) provides a standardized format for collecting and mapping data related to process chemicals usage and includes definitions, instructions and formatting rules.


This commitment is built with data security and integrity as core components:

- All data will be held securely and confidentially in a third-party data platform
- Suppliers can opt to share information with their customers through the platform (B2B communication)
- Some information will only be available for B2B communications; other select data will be anonymized and aggregated and shared with CEPN (preventing disclosure of the associated individual company and/or supplier identification information)
- The PCDC Tool is available to all companies, regardless of whether they join the Toward Zero Exposure program
- Companies not participating in the Toward Zero Exposure program can opt to not have their information included in the aggregated and anonymized dataset

2 Commitment Requirements:

2.1. Complete the PCDC Tool

- 2.1.1. For years 1 and 2, publicly reporting the number of facilities in scope that have completed the PCDC Tool annually
- 2.1.2. By the end of Year 3 and beyond, all facilities in scope complete the PCDC Tool for process chemicals
- 2.1.3. Annual completion of PCDC Tool on rolling basis, or confirmation that no updates are required
- 2.1.4. Expectation is for the number of suppliers completing the PCDC Tool to increase each year



2.1.5. Where intellectual property is a concern:

- a. Signatory may provide ingredient information not associated with a chemical product or manufacturer; and/or
- b. Third-party providers may be used to aggregate the data

2.2. Facilities in Scope

2.2.1. These requirements apply to either:

- a. 30 total facilities (Signatory-owned manufacturing facilities and/or supplier facilities), OR
- b. At least 50% of the total number of owned manufacturing facilities plus directly contracted supplier facilities within 80% of the Signatory's annual spend when that total number of facilities is < 60

2.2.2. Facilities prioritized by elements such as:

- a. Owned and/or supplier facilities that may have the greatest impact toward CEPN goal
- b. Highest risk facilities based on criteria such as volume and number of Priority Chemicals used, number of workers, etc.
- c. Top suppliers by spend
- d. Supplier willingness to participate

NOTE 1 – Equivalent and fully compatible forms that can be uploaded into a central platform may be used

NOTE 2 – “Facilities” to be defined by the program Signatory, and “facility sites” can be defined as specific production lines dedicated to, or utilized by, the brand

COMMITMENT #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.

This Commitment and set of requirements have been developed with the recognition that, although there is no “blueprint” for creating safety systems and worker engagement around process chemical management in the global electronics industry, it is crucial to start action, even in the face of incomplete information. Programmatic learning in early years will be used to develop and refine requirements for future years.

3 Commitment Requirements:


3.1. Communicate to workers:



- 3.1.1. Inform workers about the facility's involvement in the Toward Zero Exposure program (for owned and/or supplier facilities involved in Commitments 1 or 3)
- 3.2. Implement and operate Joint Chemical Safety Committee:
 - 3.2.1. Following [CEPN's Guidance for Joint Chemical Safety Committees](#)³ or equivalent
 - 3.2.2. The guideline used must be made available to the workers on the Joint Chemical Safety Committee
 - 3.2.3. The Joint Chemical Safety Committee should also include:
 - a. Participation of non-managerial workers democratically elected by workers, selected by workers or selected by worker representatives, without management interference, where allowed by law
 - b. Inclusion of chemical safety, including having a process for addressing worker concerns in the committee charter
 - c. Determining actions to reduce hazards and OH&S risks, including chemical safety (ISO 45001:2018, Section 5.4 e.3)
 - d. Formal process available to workers to raise concerns regarding:
 - i. Chemical safety to the Joint Chemical Safety Committee
 - ii. Functioning of the Joint Chemical Safety Committee
- 3.3. Conduct training: Mechanisms to inform, train and involve production workers:
 - 3.3.1. Generally applicable training conducted for new production workers at onboarding (at a minimum) and to include the following elements⁴:
 - a. How/where to find information on process chemicals, including chemical identity, CAS numbers, hazard, and how they are used
 - b. Incoming controls and how chemicals are tracked within the facility, as elements of a good management system
 - c. Hierarchy of controls training
 - d. Health and safety impacts of process chemical exposure, including reproductive and developmental hazards

³ Based on ILO Guidelines on occupational safety and health management systems, 2001. Page 6, section 3.2 Worker participation; and ISO 45001 Requirements on occupational health and safety management systems, 2018. Page 10, section 5.4 Consultation and participation of workers.

⁴ The RBA Voices Mobile Learning App sections *Chemical Hazard Identification*, *Preventing Exposure to Chemical Hazards*, and *Response to Chemical Emergencies* include the generally applicable training elements. Other training programs that include the listed elements may also be used.

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- e. Hazard communication, e.g., requirements, labeling, SDSs and how to find hazard information

3.3.2. Facility-specific training conducted for new production workers at onboarding, and annually for all production workers handling or potentially exposed to process chemicals; to include the following information on process chemicals used in the facility/work area^{5,6}:

- a. Chemical identity and CAS numbers
- b. Potential hazards of the chemicals
- c. How the process chemicals are used
- d. Appropriate protective measures
- e. The facility's hazard communication requirements
- f. How to obtain additional information
- g. Spill/emergency response

NOTE – In person for facility specific training is considered a best practice

3.4. Implement Grievance/Feedback Reporting System⁷

3.4.1. Consisting of:

- a. A simple reporting method for workers to submit grievances/feedback via QR codes, mobile phones, and/or website
- b. A system where workers are protected from retaliation and can choose to be included in the resolution process, or to provide feedback anonymously
- c. A Feedback Reporting element as in the RBA Voices Platform, or equivalent system with an option for workers to escalate outside the factory to a third party

3.5. Conduct annual Worker Survey on Chemical Safety⁸, to capture worker perspective on chemical safety systems and effectiveness of the program:

3.5.1. Using [CEPN's Worker Survey on Chemical Safety](#) or other credible third-party tool, implemented in facilities in scope

⁵ RBA's e-Learning Academy *Process Chemical Management and Safety* courses are an available resource for those conducting facility-specific training for workers.

⁶ <https://chemhat.org> is one online resource for chemical hazard information.

⁷ A *Feedback and Grievance Reporting* system is available on the RBA Voices platform to all RBA Members and their suppliers.

⁸ The CEPN Worker Survey on Chemical Safety is available in 12 languages to all RBA Members and their suppliers within the RBA Voices' Worker Survey Tool as well as on the [CEPN website](#). Signatories may also create an equivalent worker survey to deploy within the RBA Voices' Worker Survey Tool or on their own.

3.5.2. Workers are to be provided a report of the survey results and participate in receiving and providing feedback addressing concerns, grievances, and actions taken

3.6. Facilities in Scope

3.6.1. Facility Requirements by Year

Elements	Commitment #3 Requirements		
	Year 1	Year 2	Year 3 and beyond
3.1 Communications to Workers	Inform workers on participation in all owned and/or supplier facilities involved in Commitments 1 or 3	Inform workers on participation in all owned and/or supplier facilities involved in Commitments 1 or 3	Inform workers on participation in all owned and/or supplier facilities involved in Commitments 1 or 3
3.2 Joint Chemical Safety Committee	In 3 facilities (owned and/or supplier), or at least 50% of the total number of facilities in the case where the number of directly contracted facilities within 80% of the Signatory’s annual spend is < 6	In 6 facilities (owned and/or supplier), or at least 50% of the total number of facilities in the case where the number of directly contracted facilities within 80% of the Signatory’s annual spend is < 12	In 10 facilities (owned and/or supplier), or at least 50% of the total number of facilities in the case where the number of directly contracted facilities within 80% of the Signatory’s annual spend is < 20
3.3 Training			
3.4 Grievance/ Feedback Reporting System			
3.5 Worker Survey			

NOTE – “Facilities” means Signatory-owned and/or directly contracted supplier facilities

3.6.2. Facilities prioritized by elements such as:


- a. Owned and/or supplier facilities that may have the greatest impact toward CEPN goal
- b. Highest risk facilities based on criteria such as volume and number of Priority Chemicals used, number of workers, etc.
- c. Top suppliers by spend
- d. Supplier willingness to participate

COMMITMENT #4: REACH INTO DEEPER TIERS

Work with selected suppliers to join the Toward Zero Exposure program to reduce worker exposure to toxic chemicals in the extended electronics supply chain.

4 Commitment Requirements:

4.1. By the end of Year 3,



4.1.1. Each Signatory commits to working with at least 5 suppliers to become Signatories to the Toward Zero Exposure program

OR

4.1.2. Signatory has worked with at least 15 suppliers to encourage them to become Signatories to the Toward Zero Exposure program

4.2. Suppliers selected based on, but not limited to, the following elements:

4.2.1. Suppliers which may have the greatest impact toward CEPN goal

4.2.2. Highest risk suppliers based on criteria such as volume and number of Priority Chemicals used, number of workers, etc.

4.2.3. Willingness to participate

NOTE – Signatories can work with CEPN and its members to support onboarding suppliers into the program

COMMITMENT #5: VERIFICATION AND REPORTING

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

CEPN will annually report to the public on topics such as:

- Progress and status of the Toward Zero Exposure program, for example:
 - Number of companies participating
 - Priority Chemicals targeted for exposure elimination or substitution with safer alternatives
- Measures of collective Signatory progress toward the program goals using anonymized and aggregated data
- Links to Toward Zero Exposure Signatories' public reports

5 Commitment Requirements:

5.1. Signatories will publicly report annually on:

5.1.1. Their participation in the program

5.1.2. Three key areas of progress (of Signatory's choice)

5.1.3. If claimed, the number of Participant-Specific Conditional Use Case Chemicals and:

- a. Rationale for the Conditional Use Case Chemical(s) (e.g. no known substitutes, prohibitively expensive, infrastructure cost, unavailable in that region, etc.)
- b. Description of adequate engineering controls in place to achieve elimination of exposure below adopted OELs



c. A description of current and planned efforts to eliminate or substitute the Conditional Use Case chemical(s)

5.1.4. Information can be included in existing annual CSR reporting or separate reporting, but must be publicly available

5.2. Signatories will provide impact metrics data to CEPN for the annual report

COMMITMENT #6: CONTINUOUS IMPROVEMENT ACROSS ALL AREAS

6 Commitment Requirements:

Toward Zero Exposure Signatory will strive for continuous improvement year over year in each of the Commitments.

Verification for each Commitment is outlined in Appendix B.



Appendix A – Priority Chemicals

This Appendix summarizes the 1st and 2nd Round of Priority Chemicals for elimination or substitution in Commitment #1 of the Toward Zero Exposure program. Details on the selection process and research conducted is available in [Summary of Priority Chemical Selection, First Round, December 2019](#) and the summary report for the [Second Round of Priority Chemical Selection](#).

The list of chemicals and the scope of each round are provided in the tables below. Elimination is defined as concentrations in mixtures below GHS cutoff reporting values according to Table 1.5.1 of the [Globally Harmonized System of Classification and Labelling of Chemicals \(GHS\), Ninth revised edition \(2021\)](#). For all 1st Round Priority Chemicals this is <0.1%, except for methanol, which is <1%. For all 2nd Round Priority Chemicals this is <0.1%, except for 1,1,2,2-tetrachloroethane, which is <1%.

1ST ROUND PRIORITY CHEMICALS

1 st Round Priority Chemicals	
SCOPE: Solvents in cleaning products	
CAS Number	Chemical Name
106-94-5	1-Bromopropane
71-43-2	Benzene
75-09-2	Dichloromethane (Methylene Chloride)
67-56-1	Methanol
110-54-3	n-Hexane
872-50-4	N-Methyl-Pyrrolidone (NMP) <i>Program-Wide Conditional Use Case for photoresist stripping</i>
127-18-4	Tetrachloroethylene
108-88-3	Toluene
79-01-6	Trichloroethylene

Concentrations in mixtures must be below GHS cutoff reporting values according to Table 1.5.1 of the [Globally Harmonized System of Classification and Labelling of Chemicals \(GHS\), Ninth revised edition \(2021\)](#). For all 1st Round Priority Chemicals this is <0.1%, except for methanol, which is <1%.

2ND ROUND PRIORITY CHEMICALS

2nd Round Priority Chemicals

SCOPE: Solvents in cleaning products

CAS Number	Chemical Name
98-82-8	Cumene
107-06-2	1,2-Dichloroethane
111-96-6	Diethylene glycol dimethyl ether
68-12-2	Dimethylformamide
110-80-5	2-Ethoxyethanol (ethylene glycol monoethyl ether)
111-15-9	2-Ethoxyethyl acetate (ethylene glycol monoethyl ether acetate)
100-41-4	Ethylbenzene
109-86-4	2-Methoxyethanol (ethylene glycol monomethyl ether)
108-10-1	Methyl isobutyl ketone
75-52-5	Nitromethane
76-01-7	Pentachloroethane
630-20-6	1,1,1,2- Tetrachloroethane
79-34-5	1,1,2,2- Tetrachloroethane
97-99-4	Tetrahydrofurfuryl alcohol
67-66-3	Trichloromethane (Chloroform)
1330-20-7	Xylenes


Concentrations in mixtures must be below GHS cutoff reporting values according to Table 1.5.1 of the [Globally Harmonized System of Classification and Labelling of Chemicals \(GHS\), Ninth revised edition \(2021\)](#). For all 2nd Round Priority Chemicals this is <0.1%, except for 1,1,2,2-tetrachloroethane, which is <1%.

PROGRAM-WIDE CONDITIONAL USE CASE: N-METHYL-PYRROLIDONE

N-Methyl-Pyrrolidone (NMP) was selected as a 1st Round Priority Chemical and given a Program-Wide Conditional Use Case for photoresist stripping, because it does not yet have a viable large-market scale alternative for photoresist stripping applications. It is recommended that NMP be considered for a future phase-out and research on alternatives be continued by industry.

For photoresist stripping applications, CEPN has adopted an Occupation Exposure Limit (OEL) from the lowest published regulatory limits for NMP:

- Occupational exposures to N-Methyl-Pyrrolidone (NMP) shall be controlled to prevent inhalation exposures above:

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- An 8-hr Time-Weighted-Average (TWA) Occupational Exposure Limit of 1.0 ppm⁹;
and
 - A 15 minute Short-Term-Exposure-Limit (STEL) of 10 ppm¹⁰
 - Exposure controls shall also include protective measures to prevent all potential skin contact with NMP or mixtures containing NMP.

⁹ California OSHA ([CA OSHA Permissible Exposure Limits](#)) and Japan ([International Regulatory Exposure Limits](#)) have the lowest published 8-hr TWA limit for NMP (1.0 ppm).

¹⁰ Denmark's Short Term Exposure Limit, 15-minute average value, per the [GESTIS Database of International Limit Values](#).



Appendix B – Verification

COMMITMENT #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.

Verification – Annual Desk Review:

- a. At the end of year 3, for each Priority Chemical round that the Signatory has opted into, demonstration that the Priority Chemicals have been eliminated (defined as concentrations below GHS reporting values – see Appendix A) or substituted in the facilities in scope, as follows:
 - i. Signatory provides the following documentation:
 - List of selected facility sites (can be under NDA)
 - A summary attesting which of the Signatory’s selected facility sites are conformant to the Priority Chemical list
 - Documentation of the process, including responsible party and timing, used to conduct the:
 - Process chemical inventory review; or
 - Review of SDS ingredients to ensure no use of Priority Chemicals
 - b. **Program-Wide and Participant-Specific Conditional Use Case(s):** If the Signatory has selected any Program-Wide or Participant-Specific Conditional Use Case(s), at the end of year 3 and beyond, for each Priority Chemical round that the Signatory has opted into, demonstration that worker exposure is below the designated occupational exposure limit (<OEL), as follows:
 - i. Signatory provides the following documentation:
 - List of facility sites with Conditional Use Case Chemical(s) (can be under NDA)
 - A summary attesting which of the Signatory’s facility sites are conformant with the Conditional Use Case
 - ii. Demonstration and public disclosure of meeting the requirements listed in Commitment #1

Verification – Onsite Audit:

- a. Priority Chemicals
 - i. Starting at the end of year 3 and beyond, conduct annual third-party audits for approximately 25% of the total number of facilities (including different facilities each year) such that at the end of 4 years of auditing, all facilities in scope have



been audited¹¹. RBA's Specialty Validated Assessment Program for Chemical Management (SVAP-CM) with the Toward Zero Exposure program addendum meets this verification requirement.

Verification – Industrial Hygiene:

- a. Program-Wide and Participant-Specific Conditional Use Case(s)
 - i. Annually, starting at the end of year 3 and beyond, for facilities with Conditional Use Cases, conduct either:
 - Third-party review and/or audit of the company's industrial hygiene reports of workplace employee exposures to the Conditional Use Chemical(s), including monitoring results
 - OR
 - Third-party industrial hygiene evaluation of workplace employee exposures to the Conditional Use Chemical(s), including monitoring results

NOTE – Public identification of Participant-Specific Conditional Use Case Chemicals is not required, however identification of Participant-Specific Conditional Use Case Chemicals must be provided to CEPN staff for aggregation into the Toward Zero Exposure annual report


COMMITMENT #2: PROCESS CHEMICAL DATA COLLECTION

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

Verification – Annual Desk Review:

- a. Documentation demonstrating that:
 - i. By the end of Year 3 and beyond, at a minimum, the number of facilities in scope for Commitment #2 have either completed the PCDC Tool annually, or confirmed that no updates are required
 - ii. Submittals are generally complete with reasonable data quality (e.g. data is consistent throughout the submittal)
- b. For years 1 and 2, reporting publicly the number of company-owned and supplier facilities that have completed the PCDC Tool annually
- c. Description of activities to improve quality of data, annually, starting with year 1

¹¹ Signatories may choose to have the required third-party audits completed earlier than required, including before the end of year 3.



NOTE – Information above can be provided from a third-party data platform provider

COMMITMENT #3: WORKER ENGAGEMENT AND PARTICIPATION


Build a safety 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.

Verification – Annual Desk Review:

- a. Communications to Workers: Documentation of the means used to inform workers about the facility’s involvement in the program
- b. Joint Chemical Safety Committee: Annual demonstration that the Joint Chemical Safety Committee meets the Commitment #3 requirements, as follows:
 - i. Signatory provides the following documentation:
 - List of facilities with Joint Chemical Safety Committees (can be under NDA)
 - A summary attesting which of these facilities are conformant to the requirements
 - Samples of Joint Chemical Safety Committee meeting minutes
- c. Training: Documentation of at least the required number of facilities conducting:
 - i. Each of the required generally applicable training elements for new production workers at onboarding; and
 - ii. Facility-specific training elements for new production workers at onboarding, and all production workers handling or potentially exposed to process chemicals annually
- d. Grievance/Feedback Reporting System: Documentation of implementation in at least the required number of facilities in scope
- e. Worker Survey: Documentation that the worker survey has been conducted annually in at least the required number of facilities in scope, including the number and percentage of workers from each facility submitting survey, timing of roll out, key lessons learned and high-level summary of findings

Verification – Onsite Audit:

- a. Starting at the end of year 3 and beyond, annual evaluation for approximately 25% of the total number of selected facilities (including different facilities each year) such that at the



end of 4 years of evaluation, all facilities in scope have been audited¹², to verify implementation of key worker engagement activities around chemical safety, especially as related to health and safety training and communication, and grievance/feedback reporting. RBA's SVAP-CM meets this verification requirement.

NOTE – Intention is for improvement in facilities as it is recognized that building chemical safety systems and culture takes time

COMMITMENT #4: REACH INTO DEEPER TIERS

Work with selected suppliers to join the Toward Zero Exposure program to reduce worker exposure to toxic chemicals in the extended electronics supply chain.

Verification – Annual Desk Review:

- a. At end of year 3, statement attesting that, and listing of, at least 5 of a Signatory's suppliers that have become Signatories to the Toward Zero Exposure program

OR

- b. At end of year 3, Signatory can request an extension, and provide documentation demonstrating that the Signatory worked with at least 15 suppliers to encourage them to become Signatories to the Toward Zero Exposure program

NOTE 1 – Information can be provided under an NDA, if needed

NOTE 2 – Unique suppliers can be identified by more than one Signatory

NOTE 3 – Signatory companies who may act as suppliers to other Signatory may be asked to self-identify (under NDA) which client(s) requested they join prior to their joining (i.e. request cannot be retroactively attributed)

NOTE 4 – Selection of suppliers is at the discretion of the Signatory

COMMITMENT #5: VERIFICATION AND REPORTING

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

Verification – Annual Desk Review:

- a. Documentation of a public annual CSR report or separate public reporting including the requirements outlined in Commitment #5

¹² Signatories may choose to have the required third-party audits completed earlier than required, including before the end of year 3.



COMMITMENT #6: CONTINUOUS IMPROVEMENT ACROSS ALL AREAS

Verification – Annual Desk Review:

- a. Documentation describing improvement, learnings and/or good faith effort of improvement for each Commitment year over year