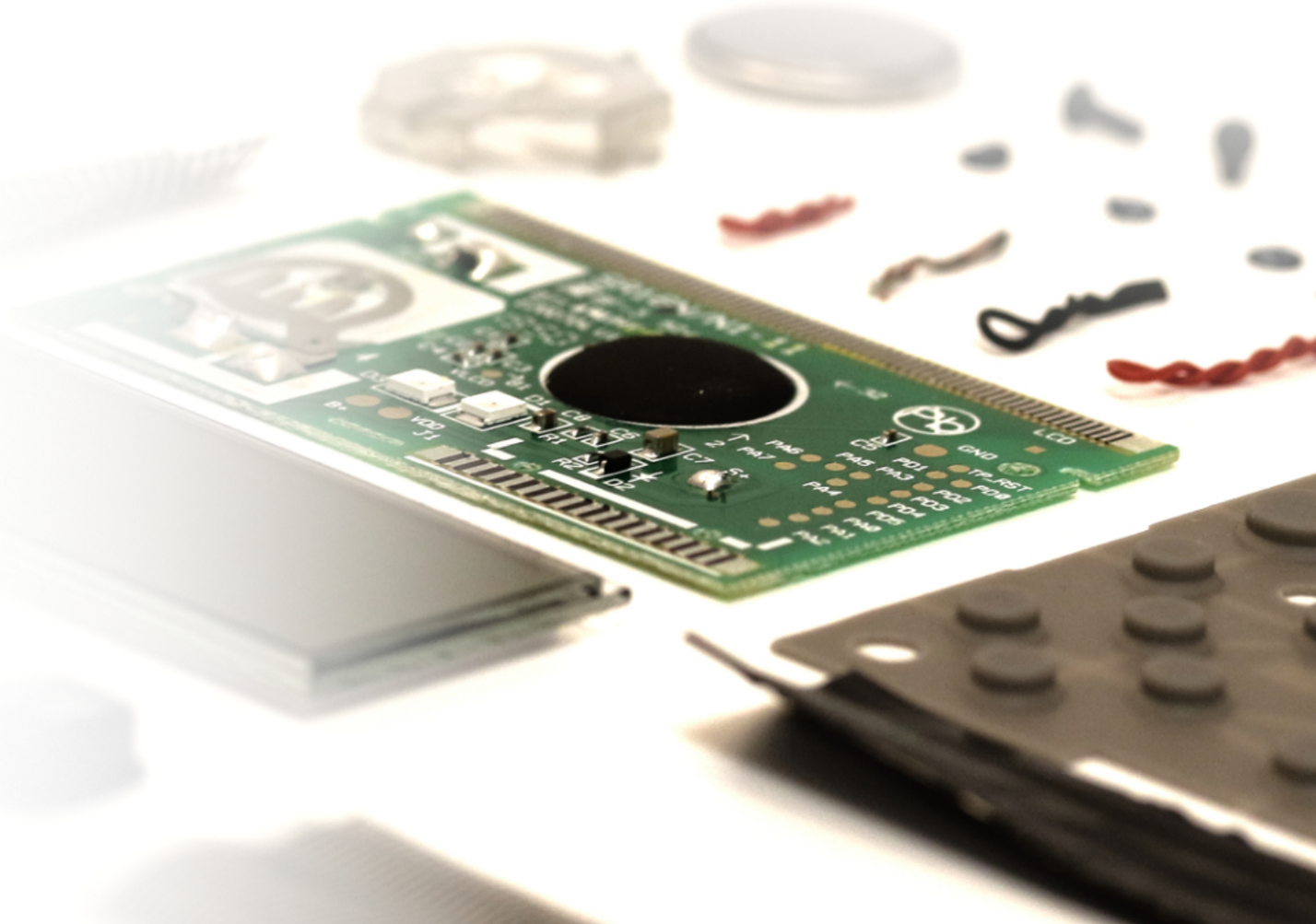
Claigan
Less Journey. More Results.

Claigan Webinar
RoHS Changes in 2025

Presented by:
Bruce Calder
VP Consulting

February 12, 2025



Major Changes to RoHS

- **New EU RoHS Exemptions**
  - Changes to all the major RoHS exemptions

- **International RoHS Technical Documentation Standard being updated**
  - To include mandatory testing of high risk parts
  - Mandated by both the EU and China

Overview - Agenda

- About Us
- New RoHS Exemptions
- Exemption timelines
- Update to RoHS Technical Documentation
- China RoHS changes

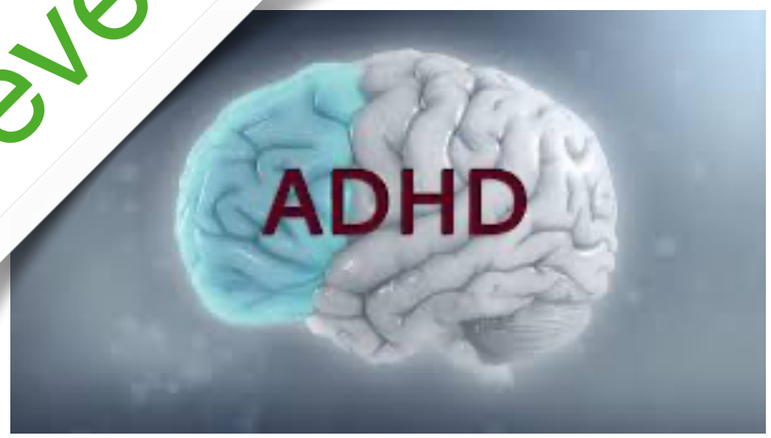
- Claigan RoHS High Risk Components Table
- Q&A

Scott Metzger

What does Claigan Environmental do?

Claigan

Prevent



Prevent

Cancer

Trace

To the warlords in the Congo

Conflict Minerals

Claigan Environmental

Consulting

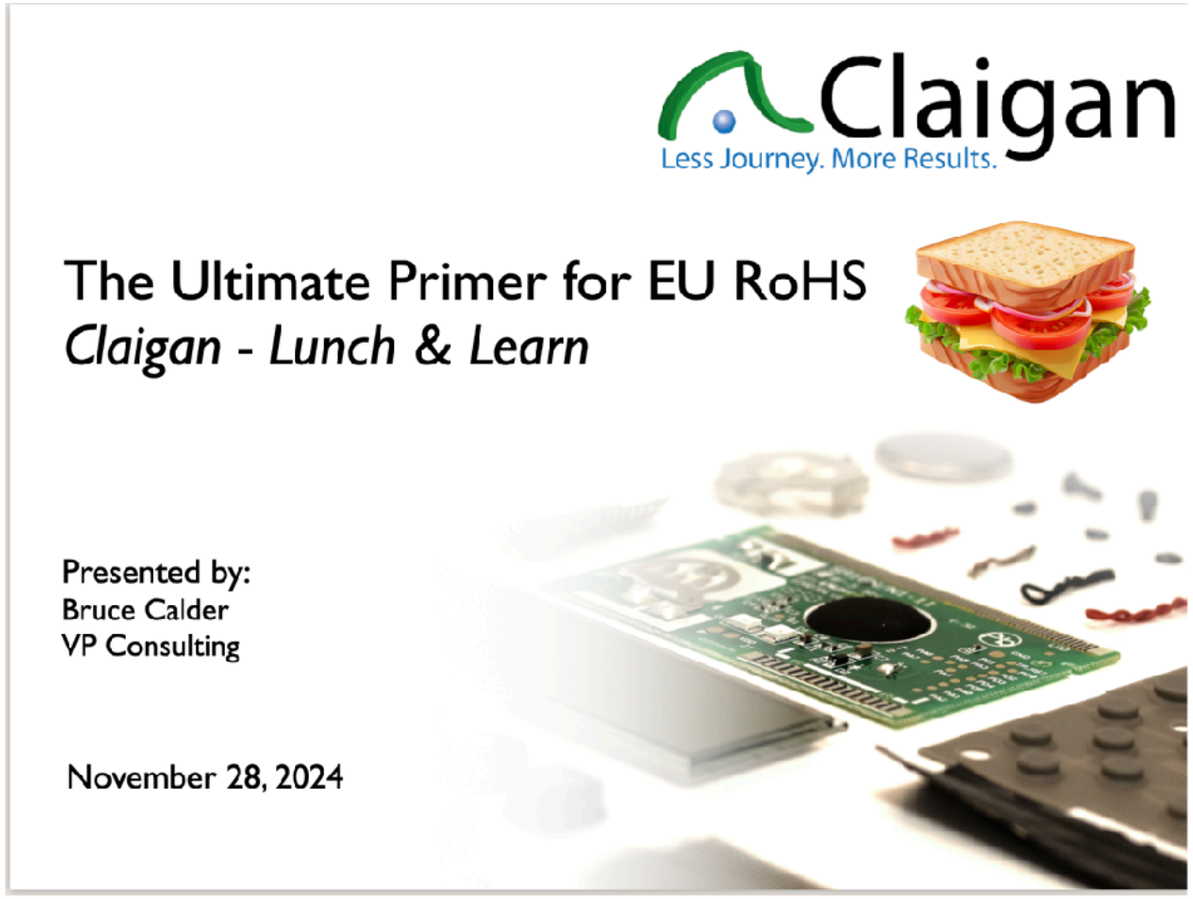
Testing

Declarations / Reporting

*Been doing **RoHS** since 2003*

Claigan Lunch and Learn Series

- Claigan Youtube
  - The **Ultimate** Primer for EU RoHS



I should probably get to the topic….

New RoHS Exemptions

- Ok. Not really new
  - These were proposed by Oeko (consultant) in 2022

- **Current status**
  - Consultation until February 10 2025
  - 6(a), 6(b), 6(c)
  - 7(a)
  - 7(c-i)

Notes on Expiry

6(b)-II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4% by weight*	Expires on [PO: 18 months after the entry into force of the Delegated Directive] for categories 1-7, 10.
		Expires on 31 December 2026 for categories 9 (industrial monitoring and control instruments) and 11.*

Text for **expiring**
X number of months from entry into force

Text for **renewal**
Special date (ex. 31 December 2026)

Btw - Category 8 (Medical) was never included in this and went straight to 6(b)-III

RoHS Exemptions
6(a) Pb in Steel

Becomes

6(a) - Pb in Steel

Expires 12 months from publication!

No Cap!

If you are born before 2005

(Translation) *For Real!*

6(a)-I - Pb in Steel
for Machine Purposes

31 Dec 2026 'Expiry'

Translation

Jun 30 2025 renewal deadline

6(a)-II - Pb in Steel
Hot Dip Galvanized

31 Dec 2026 'Expiry'

Jun 30 2025 renewal deadline

RoHS Exemptions
6(b) Pb in Aluminum

Becomes

6(b) - Pb in Al

Expires 12 months from publication!

6(b)-I - Pb in Al for Machine Purposes

Expires 18 months from publication

Translation

What about 6(b)-II?

Except briefly for professional lab gear

Gone.

Not sh

Shorter than Peter Ostrum's career

And about as memorable

n Al for
num

31 Dec 2026 'Expiry'

Which means

Jun 30 2025 renewal deadline

RoHS Exemptions
6(c) Pb in Copper

Becomes

6(c) - Pb in Copper

31 Dec 2026 Expiry

Nothing yet.

Some refinement (such as Pb in machined copper) expected

Jun 30 2025 renewal deadline

RoHS Exemptions
7(a) Pb in High Temperature Solder

7(a) Pb in High Temp Solder

31 Dec 2026 Expiry

Which means

Jun 30 2025 renewal deadline

AND

Missing related exemptions can be requested

Becomes

But it sa

But it says

7(a)-I - Pb in High Temp Solder for die attach

31 Dec 2027 'Expiry'

7(a)-II - Pb in High T e

for integral (meaning internal and external) connections of die attach in electrical and electronic components, if all the following conditions are met:
- the thermal conductivity of the

31 Dec 2027 'Expiry'

7(a)-III - Pb in Multi-Phase Solder Joints

31 Dec 2027 'Expiry'

7(a)-IV - Pb in Electrical Connections for Hot Lamps

31 Dec 2027 'Expiry'

7(a)-V - Pb in Solder in audio tranducers

31 Dec 2027 'Expiry'

RoHS Exemptions
7(c)-I Pb in Glass in Electronics

7(c)-I Pb in Glass in Electronics

31 Dec 2026 Expiry

Which means

Jun 30 2025 renewal deadline

AND

Missing related exemptions can be requested

Becomes

7(c)-V - Pb in Glass in

31 Dec 2027 'Expiry'

- Pb borate electrical insulation of high voltage diodes
- For resistive elements (The 'resistor' one)
- Hermetic sealing between glass and metal parts
- For bonding at glass transition temperature
- Chemically modified glass surfaces

7(c)-VI - Pb in Piezo and in PTC Materials

31 Dec 2027 'Expiry'

Recap
RoHS Exemptions

Today

Consultation Ended

~May

Publication

June 2025

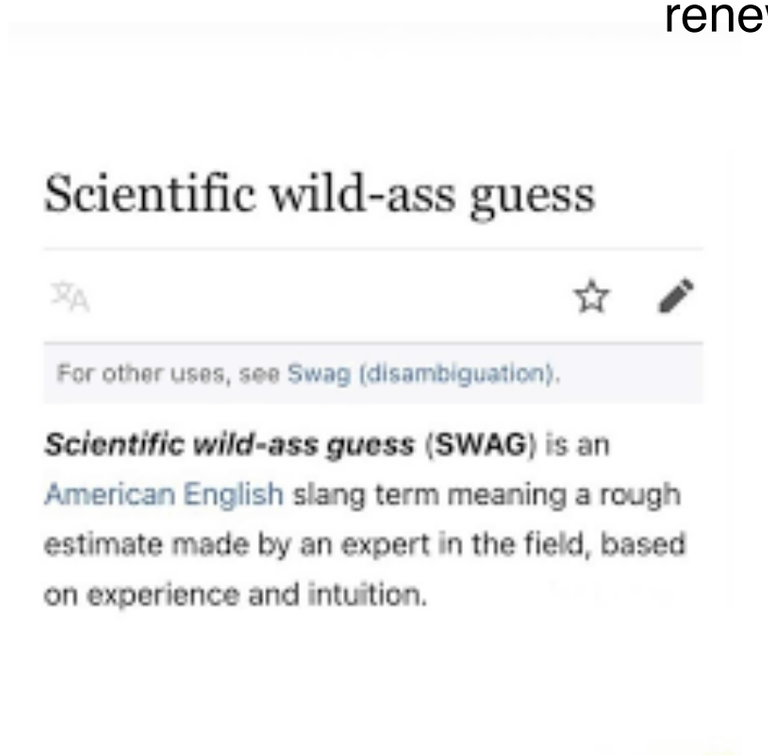
Deadline for most renewals

May 2026

6(a) and 6(b) go the way of the dodo

June 2026

Deadline for renewal of ‘slam dunk’ exemptions



Update to RoHS Technical Documentation Standard

- **IEC 63000**
  - Which is a renaming of the original EN 50581
  - Being changed to align with global requests

EU Update Request

- **Official request from EU Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs**
    - To update RoHS compliance standard to identify that testing data is mandatory for an RoHS technical file
    - Text of Request

Globally - China RoHS

- **Mandatory testing for ‘catalog’ products**

4) When declaring conformity with the restrictions on the use of hazardous substances in electrical and electronic products, a requirement has been added for technical supporting documents to include test reports covering high-risk components containing hazardous substances. This aims to enhance the overall credibility of the RoHS "self-declaration" conformity assessment results within the industry;

RoHS Standard Update

- **Why?**

  - To align the harmonised standard EN IEC 63000:2018 with the Decision No 768/2008/EC

  - **Summary - The current standard does not meet the EU's conformity assessment requirements**

  - And - *"The revised standard shall reflect the generally acknowledged state of art."*

    - Testing for RoHS has matured greatly since the original EN 50581 was written

RoHS Standard Update

- **Key points**
  - If it can be tested
  - And a non-compliance is possible
  - It should be tested
    - CENELEC (EU Standardization body) has 32 months to complete
      - Which means international standard needs to be complete earlier

RoHS Standard Update

- **Risk assessment for testing is allowed**
  - The IEC 62321-2 chart does not reflect the 'state of the art'
  - **Being updated by Claigan**

Allowed but outdated

Table B.1 – Probability of the presence of certain substances in materials and parts used in electrotechnical products

Materials and parts	Certain substances[a]							Number of homogeneous materials[b]	Remarks
	Hg	Cd	Pb	Cr (VI)	PBBs	PBDEs	Phthalate		
Mechanical parts									
Framework – metal	L	L	L	L	N/A	N/A	N/A	1	Unpainted and not chromated
Housing – plastic	L	L	L	L	L	M	L	1	
Power cord or cable	L	M	H	L	L	M	H	> 1	
Thick film sensor	L	M	M	L	L	L	L	> 1	
Heat sink	L	L	L	L	N/A	L	N/A	1	
Screw, washer, fastener – metal	L	M	M	H	N/A	L	N/A	1 and > 1	Some are coated, e.g. black and yellow chromate

Claigan Table

- Claigan to release high risk components table **this week**
- Based on 2023 and 2024 test data

Claigan

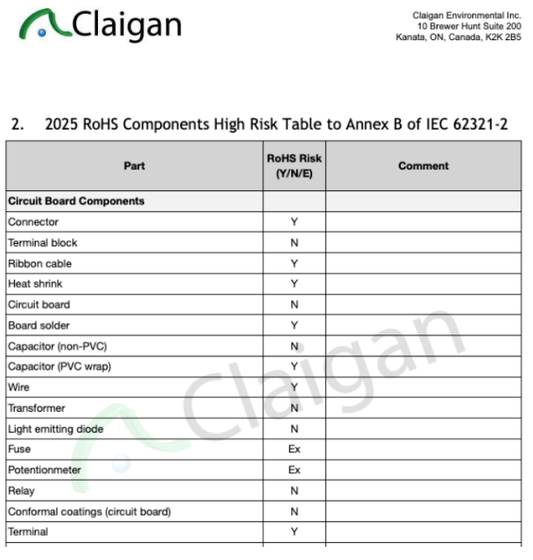
Claigan Environmental Inc.
10 Brewer Hunt Suite 200
Kanata, ON, Canada, K2K 2B5

2. 2025 RoHS Components High Risk Table to Annex B of IEC 62321-2

Part	RoHS Risk (Y/N/E)	Comment
Circuit Board Components		
Connector	Y	
Terminal block	N	
Ribbon cable	Y	
Heat shrink	Y	
Circuit board	N	
Board solder	Y	
Capacitor (non-PVC)	N	
Capacitor (PVC wrap)	Y	
Wire	Y	
Transformer	N	
Light emitting diode	N	
Fuse	Ex	
Potentionmeter	Ex	
Relay	N	
Conformal coatings (circuit board)	N	
Terminal	Y	

Claigan Table

- Guidance table to supplement
    - IEC 63000 conformity assessment
    - IEC 62321 testing
    - China RoHS
- Based on
    - Two (2) years of Claigan Environmental Test data (2023 / 2024)
    - Encompassing approximately 100,000 components tested.



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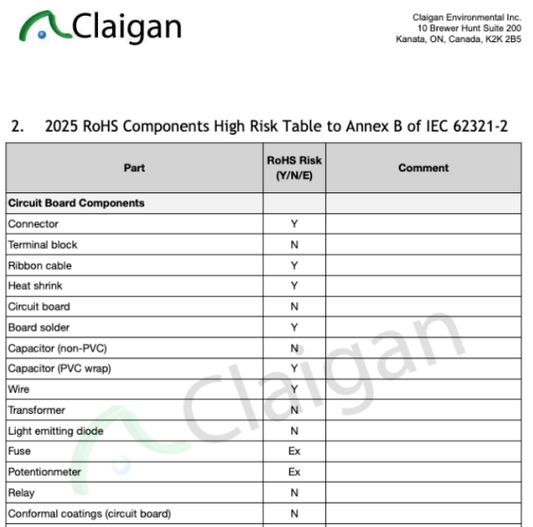
Capacitor (PVC wrap)	Y	
Wire	Y	
Transformer	N	
Light emitting diode	N	
Fuse	Ex	
Potentionmeter	Ex	
Relay	N	
Conformal coatings (circuit board)	N	
Terminal	Y	

Claigan Table

- Risk identifiers
  - **Y** - At least one component matching this description tested in 2023/2024 was found to be non-compliant for RoHS.
  - **N** - No component matching this description tested in 2023/2024 was found to be non-compliant for RoHS.
  - **Ex** - No component matching this description tested in 2023/2024 was found to be non-compliant for RoHS. However, components matching this description were found to use an allowed RoHS exemption.



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Capacitor (PVC wrap)	Y	
Wire	Y	
Transformer	N	
Light emitting diode	N	
Fuse	Ex	
Potentionmeter	Ex	
Relay	N	
Conformal coatings (circuit board)	N	
Terminal	Y	

Claigan Table

- Includes circuit board components

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Circuit board	N	
Board solder	Y	
Capacitor (non-PVC)	N	
Capacitor (PVC wrap)	Y	
Wire	Y	
Transformer	N	
Light emitting diode	N	
Fuse	Ex	
Potentionmeter	Ex	
Relay	N	
Conformal coatings (circuit board)	N	
Terminal	Y	
Switch	Y	
Tape (non-PVC)	N	
Electrical tape (PVC)	Y	

Claigan Table

- Mechanical components

Mechanical Components		
Metal frame	Y	
Fasteners	Y	
Coloured plastic	Y	
Transparent plastic	Y	
White plastic	N	
Black plastic	Y	
Brass components	Y	
Stainless steel components	N	
Silicone	N	
Paper	N	
Spring	Y	
Non-silicone rubber	Y	

-
-
-

Claigan Table

- Wiring and Miscellaneous Components

Miscellaneous		
PVC Tubing	Y	
General rubber tubing	Y	
Silicone tubing	N	
Polyurethane tubing	N	
Fluoropolymer tubing	N	
Neoprene tubing	Y	
PVC / artificial leather fabric	Y	
Neoprene fabric	Y	
Cotton fabric	N	

-
-
-

Claigan Table

- And special rules for repetitive components

Repeat Circuit Board Components		If the first component of its type on a circuit board passed for RoHS
Coaxial connector	Ex	
Solder (board)	N	
Solder (component)	N	
Diode	Ex	
Leads	N	
USB connector	N	
500+ components tested	N	Risk for components in a product after 500 components / materials have been tested in that product. Except for component types that have had a failure in the first 500 tests

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Light emitting diode	N	
Fuse	Ex	
Potentionmeter	Ex	
Relay	N	
Conformal coatings (circuit board)	N	
Terminal	Y	

Recommended Plan for RoHS Technical Documentation

- **New Designs** 

  - Test for RoHS
  - **<u>Leverage Claigan's risk table</u>**
  - Preferably with other regulations

- **Legacy Products** Old
  - Plan to test in the future
  - <u>When another testing opportunity arises</u>
    - RoHS testing is fairly incremental in the modern era
    - Include it when a new regulation arrives
      - PFAS, a new REACH Restriction, a new POP restriction, etc…

New China RoHS Table

- **New China RoHS Table**

10 substances

Table 1 Name and content information table of hazardous substances in electrical and electronic products

Name and content information table of hazardous substances in products

Component name	Hazardous substances			
	Substance 1	Substance 2	...	Substance n
Component 1				
Component 2				
...				
Component n				

Note 1: ○ indicates that the content of the hazardous substance in all homogeneous materials of the component does not exceed the requirements in the national standard for the restricted use of hazardous substances in electrical and electronic products.

× indicates that the content of the hazardous substance in at least one homogeneous material of the component exceeds the requirements in the national standard for the restricted use of hazardous substances in electrical and electronic products.

Note 2: The components not listed above indicate that the content of hazardous substances does not exceed the requirements in the national standard for the restricted use of hazardous substances in electrical and electronic products.

Implementation ~2026

China RoHS - Mandatory Testing

- **Mandatory testing for 'catalog' products**

4) When declaring conformity with the restrictions on the use of hazardous substances in electrical and electronic products, a requirement has been added for technical supporting documents to include test reports covering high-risk components containing hazardous substances. This aims to enhance the overall credibility of the RoHS "self-declaration" conformity assessment results within the industry;

8.1.2 During normal production, type testing shall be carried out at least once a year. It must also be carried out under any of the following circumstances:

a) When a new product is finalized;

b) When the product is manufactured at a different place;

c) When requested by the national quality supervision authorities.

High Risk Parts - China RoHS

- **High Risk Parts**

Annex B (normative) High-risk components containing hazardous substances in products in the catalogue for compliance management (first batch)

The high-risk components containing hazardous substances in products in the catalogue for compliance management (first batch) are shown in Table B.1.

Table B.1 High-risk components containing hazardous substances in products in the catalogue for compliance management (first batch)

No.	Product name	High-risk components containing hazardous substances
1	Refrigerator	Compressor components, various PCBA components, thermal insulation materials, sealant tapes, various cable jackets, and display components (if any)
2	Air regulator	Compressor components, various PCBA components, thermal insulation materials, sealant tapes, various cable jackets, and display components (if any)
3	Washing machine	Motor components, various PCBA components, sealant tapes, various cable jackets, and display components (if any)
4	Electric water heater	Heating rod components, various PCBA components, thermal insulation materials, various metal pipe fittings, various cable jackets, and display components (if any)
5	Printer	PCBA components in power components or power adapters, data processing PCBA components, various cable jackets, and display components (if any)
6	Photocopier	PCBA components in power components or power adapters, data processing PCBA components, various cable jackets, scanning components, and display components (if any)
7	Fax machine	PCBA components in power components or power adapters, data processing PCBA components, various cable jackets, scanning components, and display components (if any)
8	Television	PCBA components in power components or power adapters, data processing PCBA components, various PCBA components, various cable jackets, and display components
9	Monitor	PCBA components in power components or power adapters, data processing PCBA components, various cable jackets, and display components
10	Microcomputer	Mainboard PCBA, power components PCBA, hard disks, memory, various cable jackets, display components (if any), and battery components (if any)
11	Mobile communication handset	Various PCBA components, display components, battery components, and various cable jackets

Claigan Table

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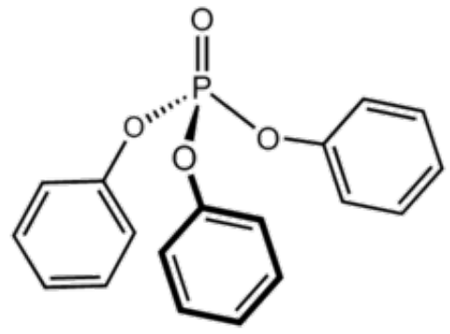
- **New EU RoHS Exemptions**
  - Changes to all the major RoHS exemptions

- **International RoHS Technical Documentation Standard being updated**
  - To include mandatory testing of high risk parts
  - Mandated by both the EU and China

New REACH SVHCs
Nov 2024 - Triphenyl Phosphate

- **Phosphate based flame retardant**
  - Very common in
    - Flame retarded foam
    - Polyethylene wires

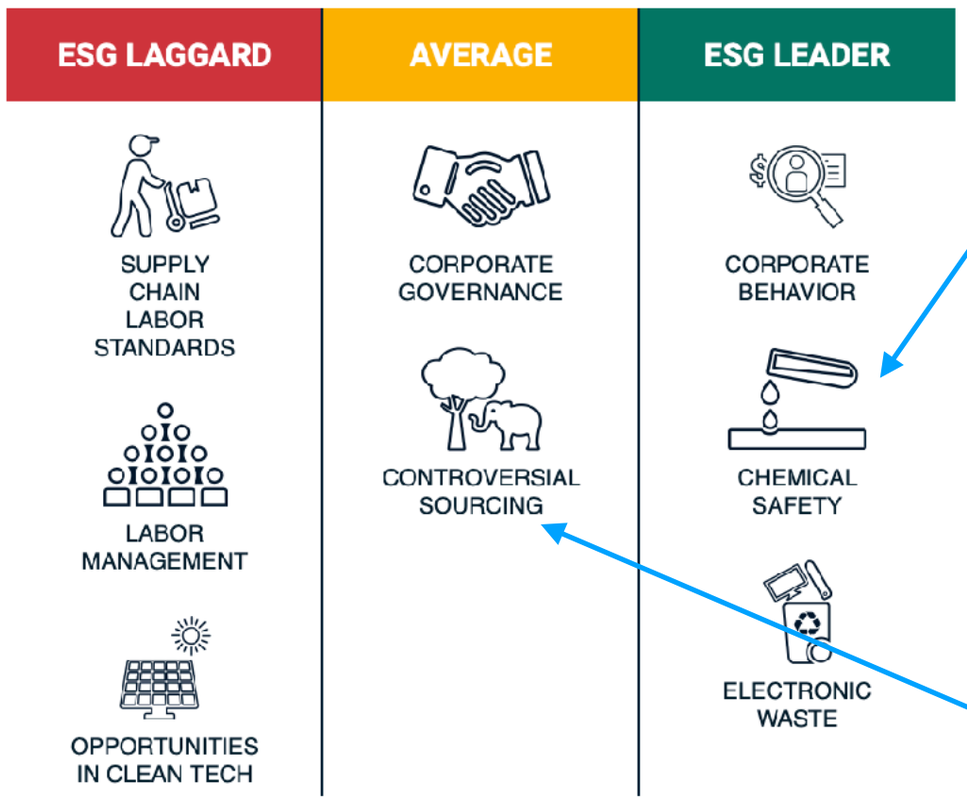


- **Most common SVHC in electronics ever**

Note
REACH SVHC - ESG Ratings

- **Btw -**
  - REACH SVHC compliance is part of a public company's ESG (Environmental, Social, Governance) rating

We focus on the key issues material to the **household durables industry**. Here is how **Panasonic** compares to industry peers. For more details, visit the ESG investing page.



REACH SVHC

Substances of very high concern are hazardous substances with severe consequences and carry a weight of 70%. The Substitute It Now list is a list of hazardous chemicals that are likely to face regulatory restrictions in the future and carry a weight of 30%.

Conflict Minerals

EU CSRD

- **EU Corporate Sustainability Reporting Directive**
  - REACH SVHC, REACH Restriction, and POP are part of corporate disclosures in the EU

Metrics and targets

- Disclosure Requirement E2-3 – Targets related to pollution
- Disclosure Requirement E2-4 – Pollution of air, water and soil
- Disclosure Requirement E2-5 – Substances of concern and substances of very high concern
- Disclosure Requirement E2-6 – Anticipated financial effects from pollution-related impacts, risks and opportunities

Restricted Materials

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