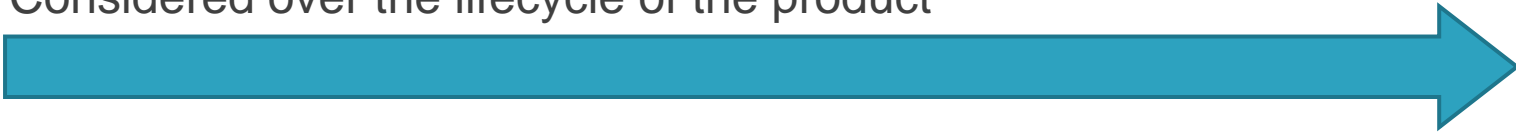


Risk assessment of toxics in IT products

Hazard + Exposure = Risk (of negative effects)

Considered over the lifecycle of the product



Exposure to toxics

Many toxic substances are sealed in the product during normal use... but...

*“Up to 90% of the world’s electronic waste, is illegally traded or dumped each year!”
according to the UN Environment Programme (Unep).*

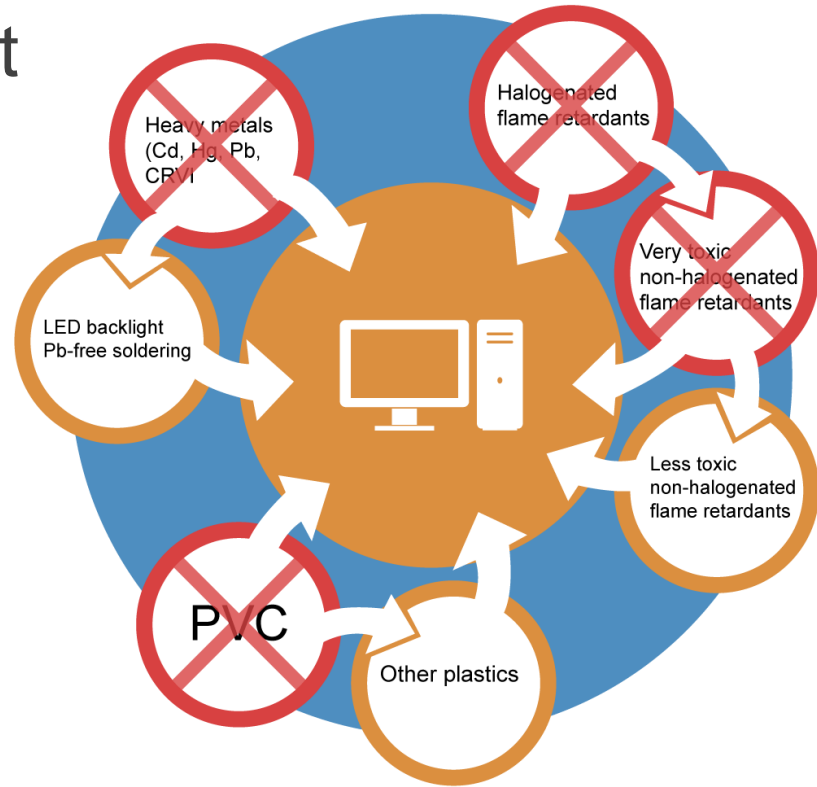


Workers may be exposed to used toxics substances in the production...



When E-waste is recycled in an irresponsible way toxics may leak out in the nature...

Example of toxic content of an IT product and substitution



Challenges – non halogenated flame retardants

- Wide range of hazards and physical aspects
- Many unknown substances

Solution in TCO Certified:

- All these must be assessed and declared



Assessment tool – Green Screen® for Safer Chemicals

Hazard based assessment method

Hazard + exposure = risk



TCO Certified criteria document

Mandate A.6.4.3:

Non halogenated flame retardants used in plastic parts that weigh more than 25 grams shall;

- **have GreenScreen™ assessments performed by Licensed Profilers and**
- **be assigned a benchmark score ≥ 2 .**
- **be on the publically available Accepted Substance List for TCO Certified.**

With the transparency of Green Screen, TCO Development is creating a list of approved flame retardants that can be used in certified products



Benchmark score table

Benchmark key		
Benchmark 4	Few concerns, i.e. safer chemical	Approved for use
Benchmark 3	Slight concern	Approved for use
Benchmark 2	Moderate concern	Approved for use
Benchmark 1	High concern	Not accepted
Unspecified (U)	Insufficient data to assign a benchmark	Not accepted

All substances of a flame retardant mixture shall be accounted for. Non-accepted components shall not exceed concentration levels of 0,1% by weight of the flame retardant.

Exempted are *printed wiring board laminates*, electronic components and all kinds of cable insulation.

Endpoints that are assessed

Chemical Hazard	
Persistence	Neurotoxicity
Bioaccumulation	Acute Toxicity
Acute Aquatic	Corrosion/Irritation of the
Chronic Aquatic	Skin or Eye
Carcinogenicity	Sensitization of the Skin or Respiratory System
Mutagenicity / Genotoxicity	Immune System Effects
Reproductive toxicity	Systemic Toxicity/Organ Effects
Developmental toxicity	Explosive
Endocrine Disruption	Flammability

www.greenscreenchemicals.org

The public list

TCO Certified Accepted Substances List

Last updated: 2016-01-22

Substance name	CAS	Benchmark	Assessment date (expires 3 years)	Sunset date	Report public
Aluminum diethylphosphinate	225789-38-8	2	Feb 9, 2014	-	Yes
Aluminum Hydroxide	21645-51-2	2	Feb 9, 2014	-	Yes
Melamine Polyphosphate	15541-60-3	2	Feb 9, 2014	-	Yes
Poly[phosphonate-co-carbonate]	77226-90-5	2	Feb 9, 2014	-	Yes
Resorcinol Bis-Diphenylphosphate	125997-21-9	2	Feb 9, 2014	-	Yes
Red Phosphorus	7723-14-0	2	Feb 9, 2014	-	Yes
Substituted Amine Phosphate mixture	66034-17-1	2	Feb 9, 2014	-	Yes
Triphenyl Phosphate	115-86-6	2	Feb 9, 2014	-	Yes
Tetrakis (2,6-dimethylphenyl)-m-phenylene biphosphate	139189-30-3	2	Jan 12, 2015	-	-
Siloxanes and silicones, di-Me, di-Ph, polymers with Ph silsesquioxanes	68648-59-9	2	Jan 18, 2016	-	-
Ammonium Polyphosphate	68333-79-9	3	Feb 9, 2014	-	Yes
Magnesium Hydroxide	1309-42-8	3	Feb 9, 2014	-	Yes
Polyphosphonate	68664-06-2	3	Feb 9, 2014	-	Yes



What do we to achieve?

- Increased transparency of the content in IT-products
- A shift towards safer alternatives
- A guide for substitution
- A contribution of knowledge to society

*Less toxics in
nature (and our
food)...*

