



EUROPEAN STABILISER PRODUCERS ASSOCIATION

Examples of hazardous substances substitution by the PVC supply chain and the Additives Sustainability Footprint

Milano, 31st May 2018

Dr. Ettore Nanni

Reagens group CEO

ESPA President and VinylPlus Board Member



Content

- ESPA, European Plasticisers and VinylPlus
- PVC additives in the 80'ies
- PVC additives today...
- ... and in the future (why and how)
- what's better to do with „old“ PVC articles?

ESPA: members

ESPA (www.stabilisers.eu) is the European Stabilisers Producers Association which represents > 95% of the PVC stabilisers producers active into the European market; its members are:



ESPA: stabiliser classes

- A unique organisation representing three chemical families of stabilisers:
 - **Calcium-based stabilisers** (including Ca-Zn and Ca-organic) for food contact & medical applications, plus all Lead*
 - **Tin-based stabilisers** used primarily in rigid applications including food contact use
 - **Liquid stabilisers** used in a wide range of flexible PVC

**Lead-based stabilisers have been fully replaced in the EU for all applications by end 2015*

A founding Member of **VinylPlus** (www.vinylplus.eu)

European Plasticisers: members

<http://www.europeanplasticisers.eu>



A founding Member of **VinylPlus** (www.vinylplus.eu)

European Plasticisers: classes

CLASSIFIED PLASTICISERS

Included in REACH Candidate List or pending Authorisation

ORTHOPHTHALATES

Low Molecular weight
3-6C

DEHP DBP
DIBP BBP

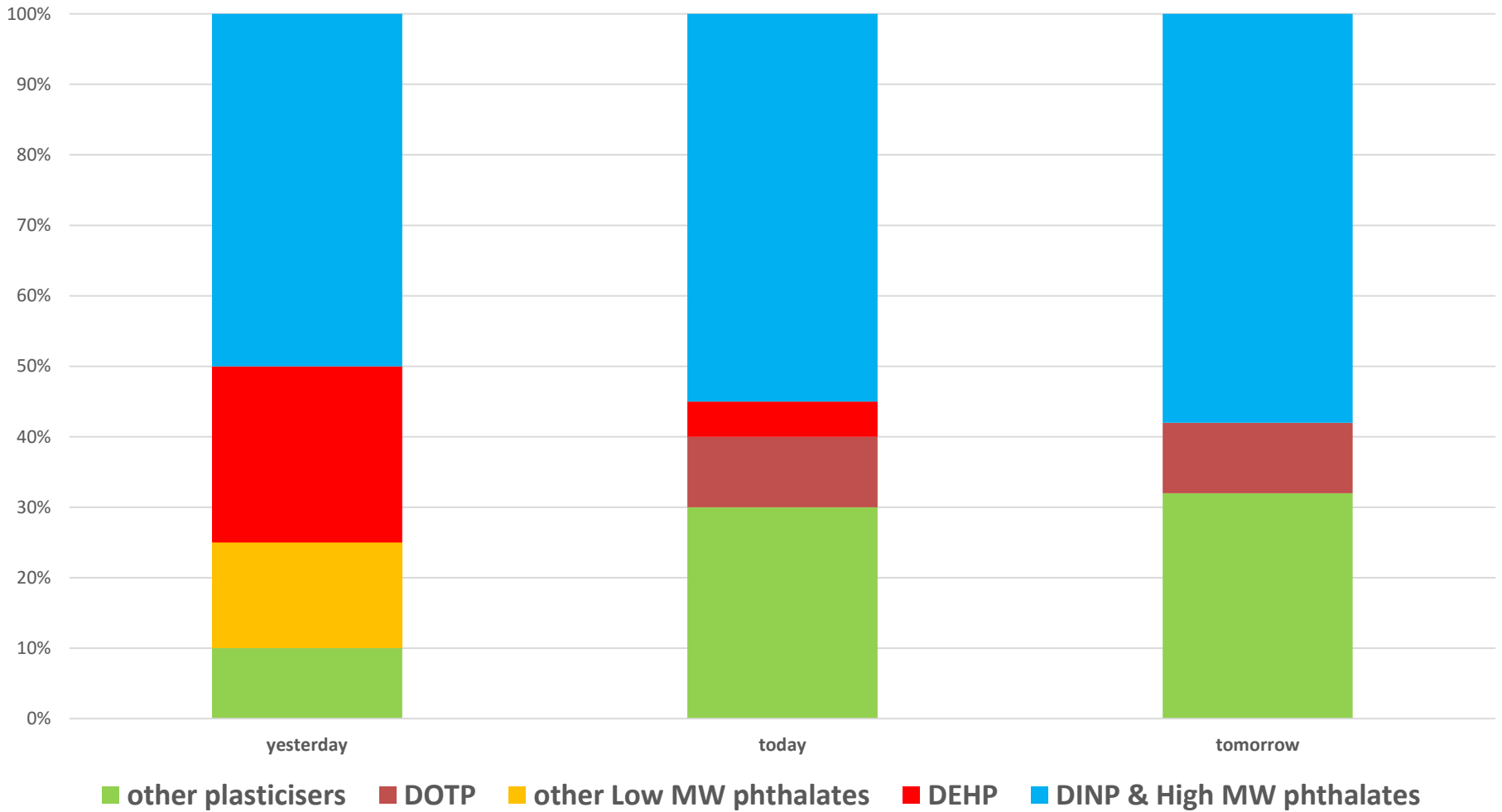
DCHP

NON-CLASSIFIED PLASTICISERS

ORTHOPHTHALATES High Molecular weight $\geq 7C$ DINP DIDP DPHP		Sebacates DMS DBS	
		Azelates DIDAz	
Cyclo-hexanoates	Terephthalates DOTP DBT	Adipates DEHA DINA DIDA DTDA	Alkyl sulfonates ASE
Dibenzoates ODEB OXPDB	Trimellitates TOTM	Phosphate TPP	Citrates ATBC
Benzoates INB IDB	Vegetable Oil based Expoxidized, hydrogenated and acetylated vegetable oil		Butyrates
		Valerates	

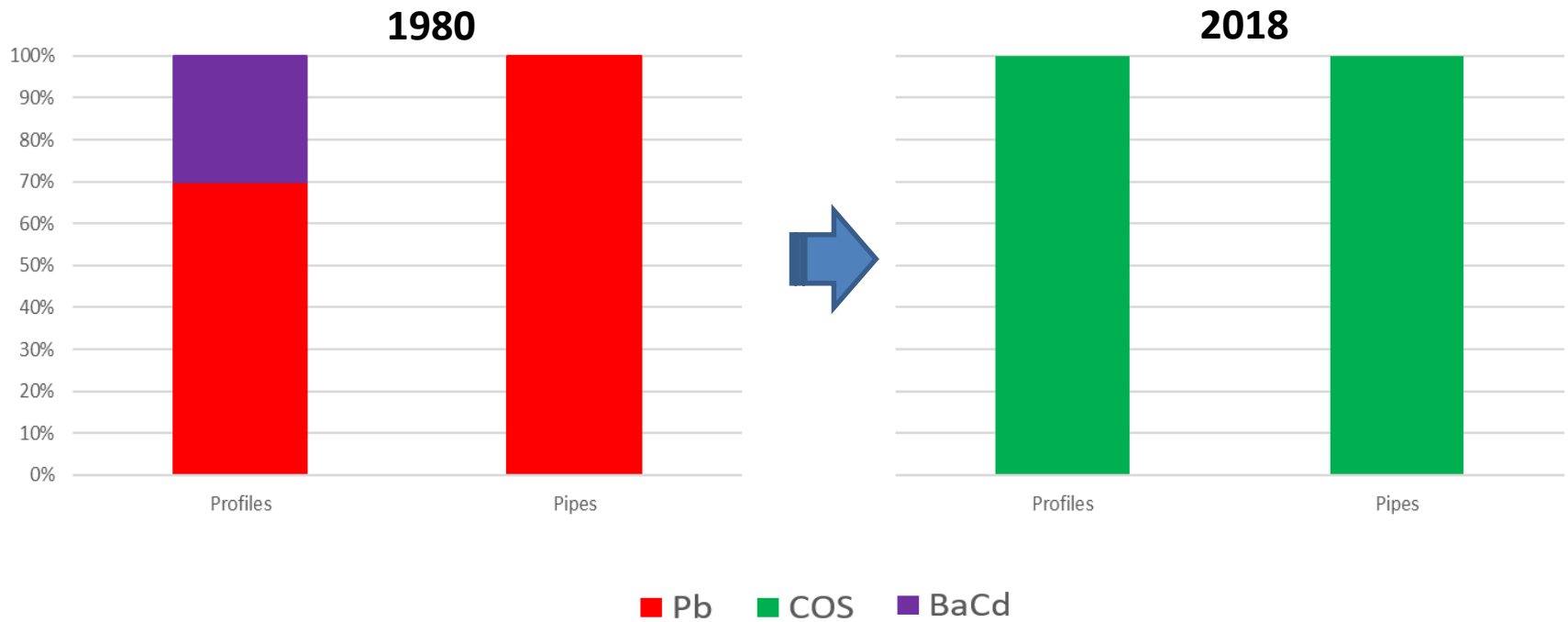
This table is for illustration purposes only. The list of plasticisers is non-exhaustive and box sizes do not accurately represent market volumes.

Plasticisers classes: yesterday, today, tomorrow



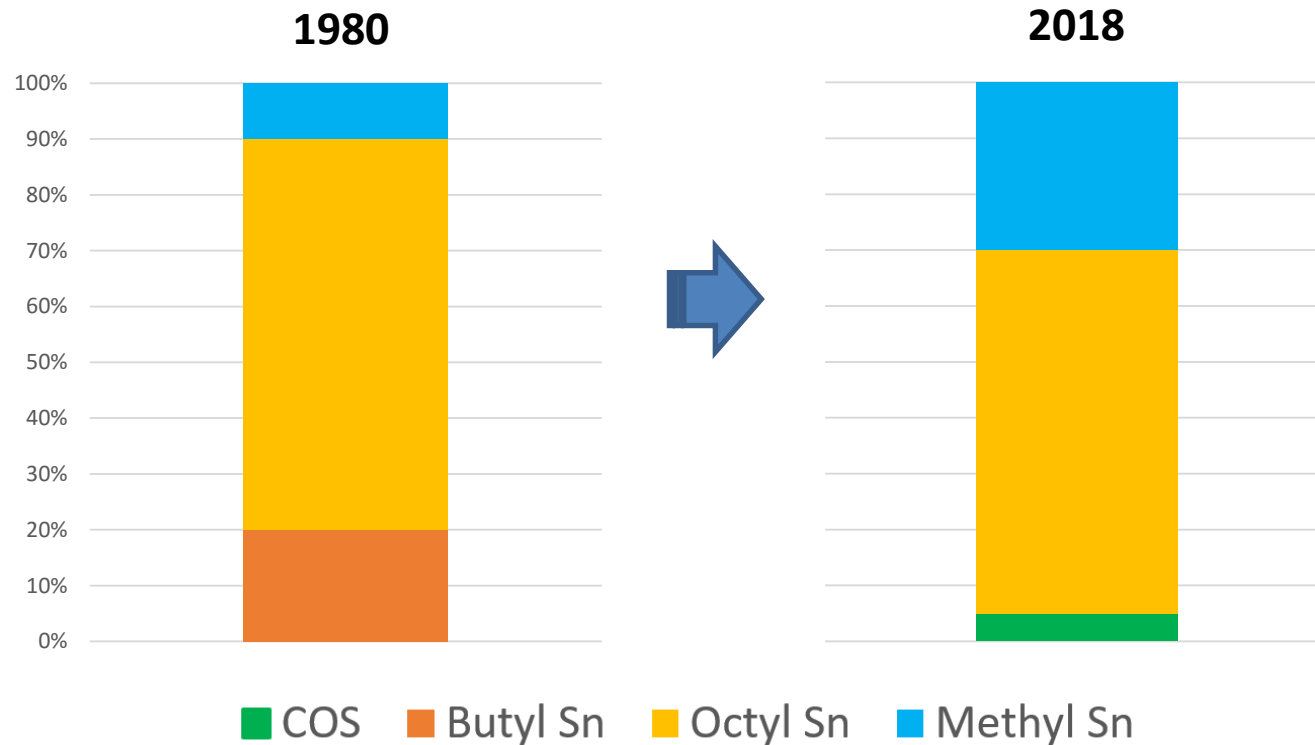
U-PVC stabilizers (Pipe & Profile), 1980 and 2018

- BaCd, Pb, toxic pigments, etc..
- COS: light or no-classified & REACH friendly additives



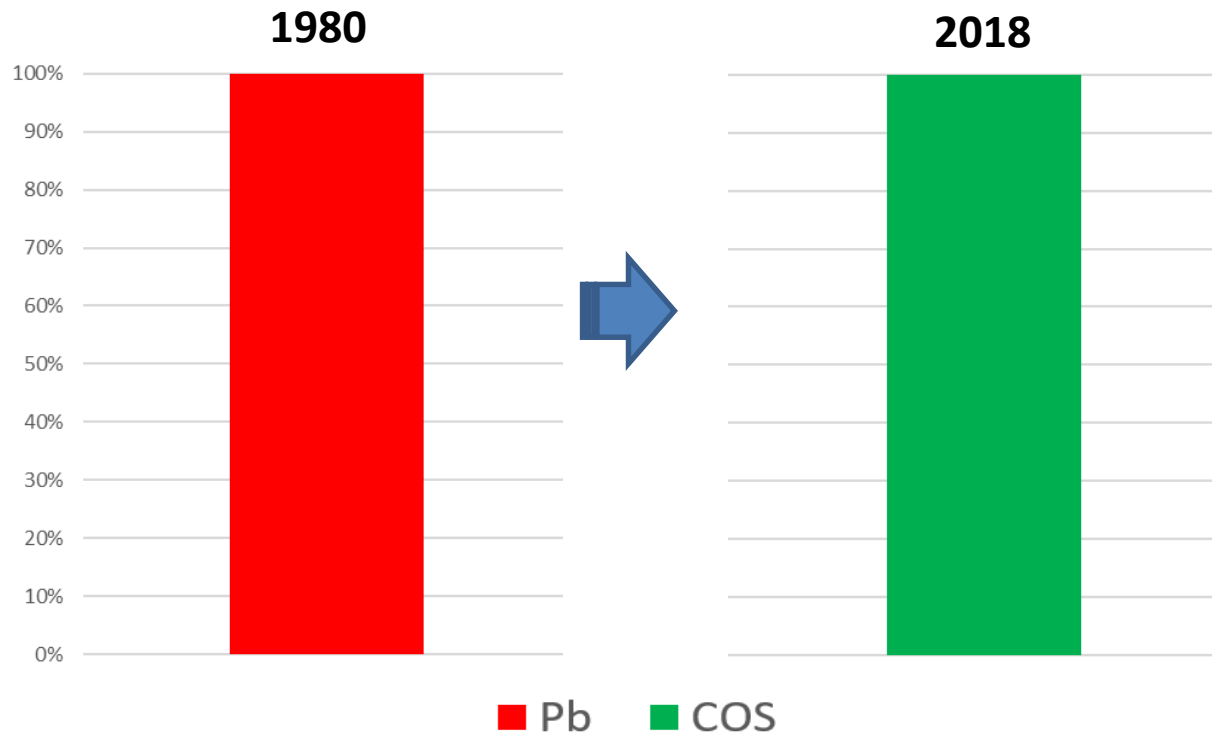
U-PVC stabilizers (film & sheets), 1980 and 2018

- Butyltin, Octyltin, Methyltin
- (mono)Octyltin, Methyltin, solid COS



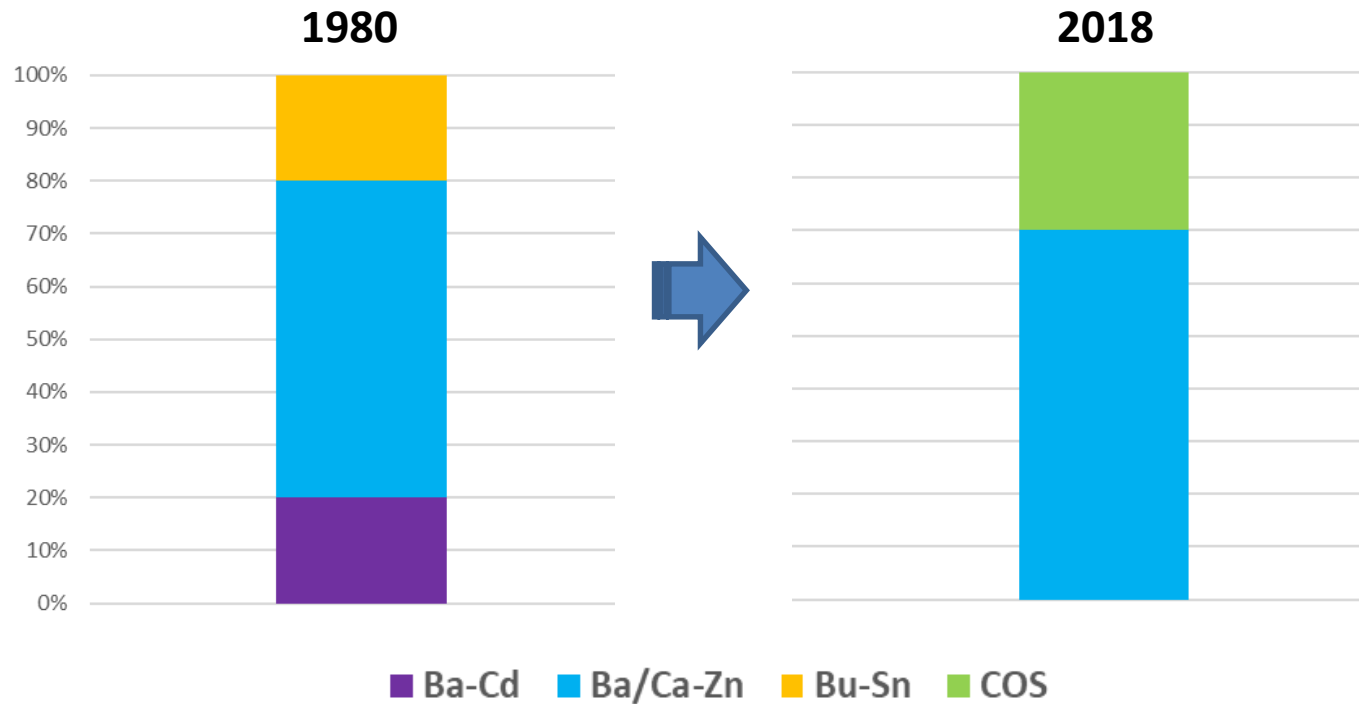
P-PVC stabilizers (Wire & Cables), 1980 and 2018

- Pb, BPA, DEHP plasticizers, etc...
- COS, HMW (DiDP) or non-phthalate plasticizers



P-PVC stabilizers (Flooring & Sheets), 1980 and 2018

- BaCd, phenol-based phosphites, DEHP plasticizers, etc...
- Ba&Ca/Zn, COS, alkylphosphites, HMW (DiDP) or non-phtalate plasticizers



Additives Sustainability Footprint (ASF): *a new tool for sustainable product development*

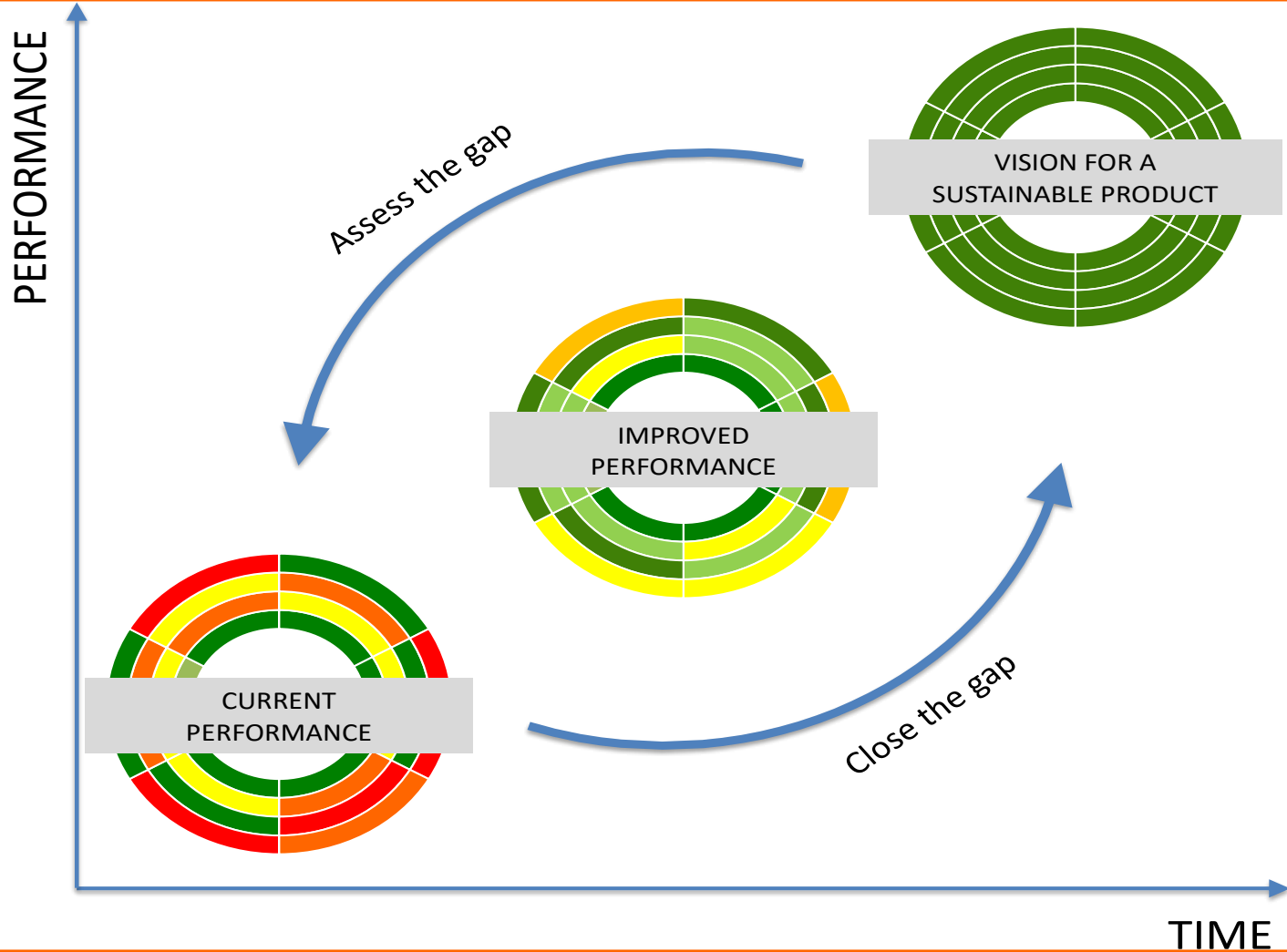
VinylPlus has developed ASF, a voluntary approach to **asses the sustainable use of PVC additives** in various types of articles.

It was initiated by the VinylPlus Additive Committee using scientific input (such as REACH, LCA, etc.) and the **sustainability principles developed by TNS** (The Natural Step).

It takes a wider perspective giving a clear picture of where to aim and what to do to improve additive sustainability performance goal:

- Additives are sustainably produced using **materials that are responsibly sourced**.
- Additives support the sustainable development of PVC products (e.g. **safe and recyclable**).
- The **functional benefits of additives** enable PVC products to support sustainable development goals (e.g. meeting the UN Sustainable Goals).

ASF: a strategic road map, to foster sustainable product development



TNS view on PVC recycling (including SVHC)

- “all PVC articles need to be optimised for and managed within a controlled-loop system in order to align with the principles of sustainability advocated by The Natural Step”“the reuse of this waste stream is preferable to the alternative disposal routes assessed” “Overall, we believe this is **consistent with Europe’s circular economy strategy, resource efficiency and long-term sustainable development**”.
- “This solution also **resolves the dichotomy in EU policy between ‘cyclic economy’ (retaining material value and averting waste) and ‘non-toxic environment’ (which could prevent controlled loop management due to legacy substances)...**”.

PVC is a too valuable material to be destroyed!

Conclusions

- Thanks to the commitment of the entire value chain (VinylPlus), PVC has impressively progressed over the last 20 years in the direction of becoming the best example of a **sustainable manageable material**.
- The PVC additives producers have well contributed to this successful step, **replacing almost 90% of the chemicals commonly used in the 80ies** with new ones, not only REACH-friendly, but also **developped in the light of a long-term sustainable use**.
- This has been possible thanks to **large investments** in R&D and in modern and safe new facilities, having the clear goal of **transforming the entire vinyl world closer to our wishes**

(Reagens Vision)