



# EPEA Position Paper

on

## PVC and chlorine management





## Background

Worldwide, about 45 Mio tons of PVC are produced each year for many different applications. PVC is associated with many issues during production, use and after use of products, and therefore challenged from different sides, including EPEA. In the 1980s, Michael Braungart headed the chemistry section of Greenpeace Germany and led its PVC campaign. The number and severity of issues justified strong opposition to PVC as an emergency measure.

It took decades but meanwhile significant progress was made and is still ongoing in the market. Some companies dealing with PVC - often visible ones - have taken the raised issues seriously and addressed them: **they substitute PVC or they improved PVC recipes** e.g. by substituting phthalate plasticizers and heavy metal based stabilizers and by establishing take back systems for the safe and productive post-use management. Changes were also made in the PVC production background. For example, chlorine generation with the mercury cell Chloralkali process will have been finally phased-out in the Western world by 2018.



## Consequences

Conditions are given for thinking about PVC in a different practical way today. In their book „The Upcycle“, Michael Braungart and William McDonough stated: „In fact, ironically, PVC was initially put into mass production to close loops in the manufacture of paper and hydrocarbons. Those processes created huge amounts of chlorine residue of sodium hydroxide and acetylene. Industry chose to put those byproducts into PVC, a choice that demonstrates how modeling manufacturing on a simplified version of a closed loop is often not sufficient. (...) Because hard PVC is manufactured without the problematic plasticizers or UV stabilizers found in soft PVC, we may have to consider sequestering these products in hard PVC piping deployed underground for the next thousand years or so.“ [1]

Historically, there was a good **reason for the invention of PVC** and its patenting on July 4th, 1913. It was to **divert chlorine away from applications like chemical weapons** or other very problematic routes of chlorine use. Chlorine gas is the toxic byproduct from the huge production volumes of some caustic chemicals, first caustic soda. The magnitude of the issue can be illustrated by looking

at the market: **Caustic soda** is one of the most demanded chemicals with a production volume **exceeding 60 million tons/year** [2]. **As a byproduct, almost the same amount of chlorine is produced annually.**

Caustic soda is a consumable with no opportunity to be kept in technical cycles. In effect, likely more than 98% of caustic soda and 100% of chlorine are produced this way. [3, 4] **If this demand for caustics prevails and alternative offers are lacking or lacking suitability, a transitional chlorine management solution is obviously needed.**



## Our proposal

We believe that it is preferable to **park chlorine in PVC applications with positively defined composition that can be managed after-use**. Only those products for which a take back and recycling system can be established and properly managed come into question for this sequestration. It is rather possible for durable immobile applications in the construction sector but not for packaging or other easily scattered applications like bags or toys, wallpapers, etc.

In collaboration with companies involved in the PVC discussion, we developed the:

### **Charter for a Responsible Use of PVC™ and chlorine management**

to structure frame conditions for **distinction of “Tolerable PVC applications that provide a transitional solution”** from still problematic applications.



## Charter's implementation

We invite companies and public institutions concerned by PVC either as

- user of PVC
- or as producers of PVC, its monomer vinyl chloride or caustic soda and chlorine,
- or as companies managing products` after use phase,
- as distributor of construction products,
- as purchaser of construction products,
- as product/construction project coordinator,
- as companies having phased out already or in the process of phasing out problematic uses of PVC

to **download the Charter**, to **express** publicly their **adhesion** to it and to inform EPEA about this at [communication@epea.com](mailto:communication@epea.com).

Responsible Use of PVC™ is a trademark of EPEA Taiwan

1. William McDonough, Michael Braungart: The Upcycle. Beyond Sustainability - Designing for Abundance. April 2013, North Point Press, p. 43/44

2. Cetin Kurt, Jürgen Bittner (2005), „Sodium Hydroxide“, Ullmann's Encyclopedia of Industrial Chemistry, Weinheim: Wiley-VCH, doi:10.1002/14356007.a24\_345.pub2

3. Dow Chemicals. Caustic soda. Process overview.

4. European IPPC Bureau. Best Available Techniques (BAT) Reference Document for the Production of Chloralkali. Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control). 2014.