



Indispensable but not without challenges: medical plastics and the corona crisis

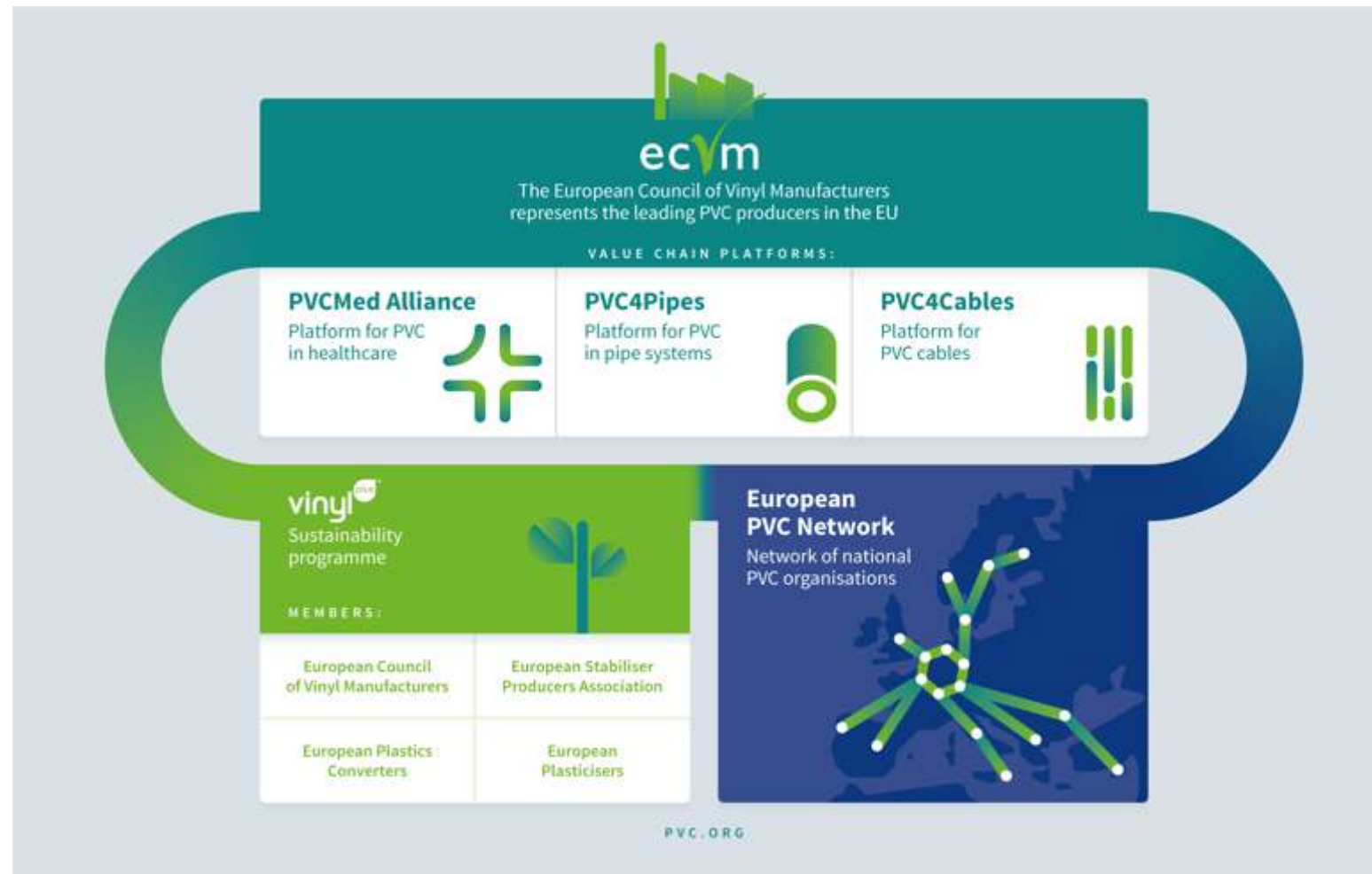
ATV seminar: Plastic in the medical device industry, 2 December 2020

Content

- About PVCMed Alliance
- PVC in healthcare – some figures and applications
- Why PVC is king in medical plastics
- Coronavirus – new PVC applications and more waste
- Recycling of PVC-based medical devices – some case stories
- Barriers to recycling
- Conclusion

An ECVM platform

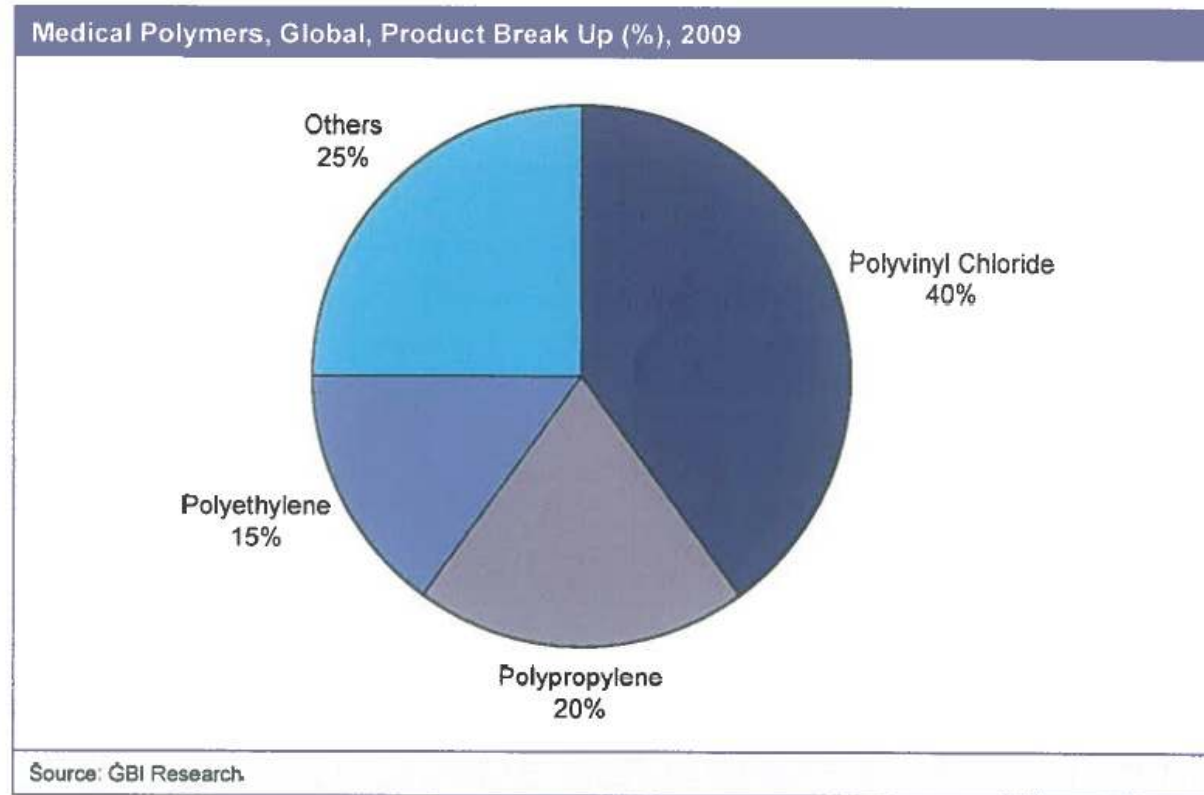
Founded in 2012 as a value chain platform



Members & Partners



PVC is #1 in healthcare



Medical plastic market continues growth in coming years

Why is PVC and plastics used in healthcare?



<https://youtu.be/v1GSWMNMw-4>

Typical PVC applications



Typical PVC applications



Coronavirus as an eye opener

PVC medical devices



Endotracheal tube



Nasal cannulae w. oxygen tubing



Venturi and oxygen masks



Guedel airway



Nasal cannulae



Nasopharyngeal airway

Coronavirus as an eye opener

Personal protective equipment (PPE)



Protective goggles



Apron



Gloves



Face, nose and mouth
protection mask



Face shield
(Image © Dezeen)

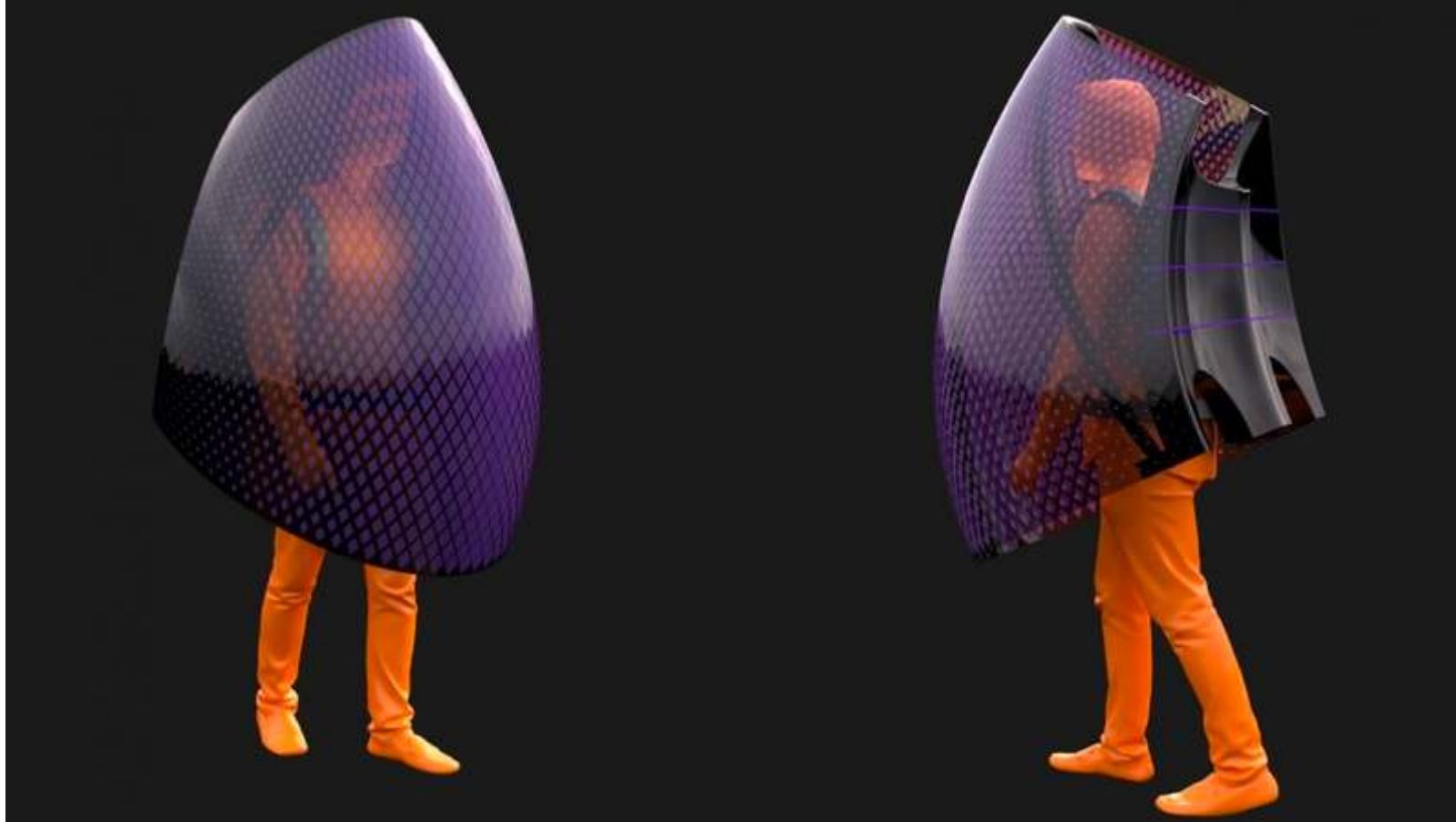
Innovation!



Ventilation hood

<https://youtu.be/McQGJpElqGk>

Innovation!



Wearable shield to protect against coronavirus outbreaks – “Be a Batman”

<https://projects.archiexpo.com/project-272164.html>

The downside: Growing amounts of waste

Le Monde 15/05/20:

“In China, where, at the peak of the epidemic, hospitals in the Wuhan region saw their medical waste increase six-fold, due in part to the millions of masks and other single-use protective equipment used against the Covid-19.”

While the containment and closure of many companies has led to an overall decrease in treated waste in France, there is one sector where volumes have exploded: medical waste (up to 50 % increase)”

L'incinération des déchets médicaux progresse et, avec elle, l'émission toxiques

L'épidémie a démultiplié le recours aux équipements de protection des déchets médicaux. Le secteur de l'incinération tente de tirer av tandis que ses opposants vantent des méthodes alternatives comm

Par Dorothée Moisan - Publié le 15 mai 2020 à 04h18 - Mis à jour le 15 mai 2020 à 09h

Lecture 9 min.

Article réservé aux abonnés



The downside: Growing amounts of waste

Politico 26/5/20:

“In EU countries most affected by the coronavirus, waste collectors and managers had to increase working hours and have incinerators operating day and night to prevent an overflow of waste at hospitals.”

According to the World Health Organization, about 15 percent of medical waste is hazardous, while 85 percent is not.”

‘There is no reason why the circular economy principles shouldn’t be applied more to the health care sector,’ says Health Care Without Harm.”



How to solve this issue? Recycling!

- PVC is well suited to recycling!
- 771,313 tonnes PVC recycled through VinylPlus in 2019
- More than 5 mio. tonnes recycled since 2000
- Medical PVC also recycled



PVC medical recycling schemes



UK



Australia & New Zealand



South Africa

PVC medical recycling schemes



<https://youtu.be/B02Ru3S0BGA>



<https://youtu.be/dDr8k-TbevA>



<https://youtu.be/m--AQkJDsbA>

Barriers to recycling

- Contamination
- Devices made from multiple polymers or materials
- The phthalate plasticiser DEHP



Barriers to recycling

Contamination

- Uncertainty on how long virus survives on plastic surfaces
 - [New England Journal of Medicine](#) (NEJM): 3 days
 - [The Lancet](#): 7 days
- Some suggest that the virus will die if the plastic is washed at 65 degrees
- More studies needed for medical devices
- However, with appropriate handling and quarantine periods (+7 days) recycling of medical devices could still be an option
- Before corona, risks associated with recycling were handled by hospital staff, transporters and recyclers



Barriers to recycling

Devices made from multiple polymers or materials

- Successful recycling depends on mono materials
- Paradoxically, the trend to market so-called “PVC-free” medical devices very often results in switching from a single-polymer design to a multi-layer device
- Because of PVC’s unique properties when it comes to versatility and formulation, this polymer is the ideal choice for designing recyclable medical devices

Barriers to recycling

The phthalate plasticiser DEHP

- The ortho-phthalate DEHP has traditionally been the main plasticiser for medical PVC due to its technical properties and low cost
- However, recycling of DEHP-containing PVC in the EU is subject to restrictions
- From 26 May 2021, medical device manufacturers must justify the presence of CMR and ED substances, such as DEHP under the new EU Medical Device Regulation
- Fortunately, companies within the medical PVC value chain have progressively made available a range of alternatives to DEHP plasticiser, which are approved by the European Pharmacopeia

Conclusion

- Coronavirus shows us that PVC is indispensable in both existing and new applications
- Coronavirus results in an increase in medical plastics waste
- Recycling of medical plastic is possible and necessary – and PVC is the best choice for recyclable medical devices & PPE
- Barriers to recycling must be surmounted



Thank you for your attention!