

CreaSolv®

Closing the PS Loop:

Our contribution to the concept of Circular Economy

CreaSolv® process plus a bromine recovery for **removal of HBCDD and destruction** into bromine to be used in a new sustainable polymeric FR



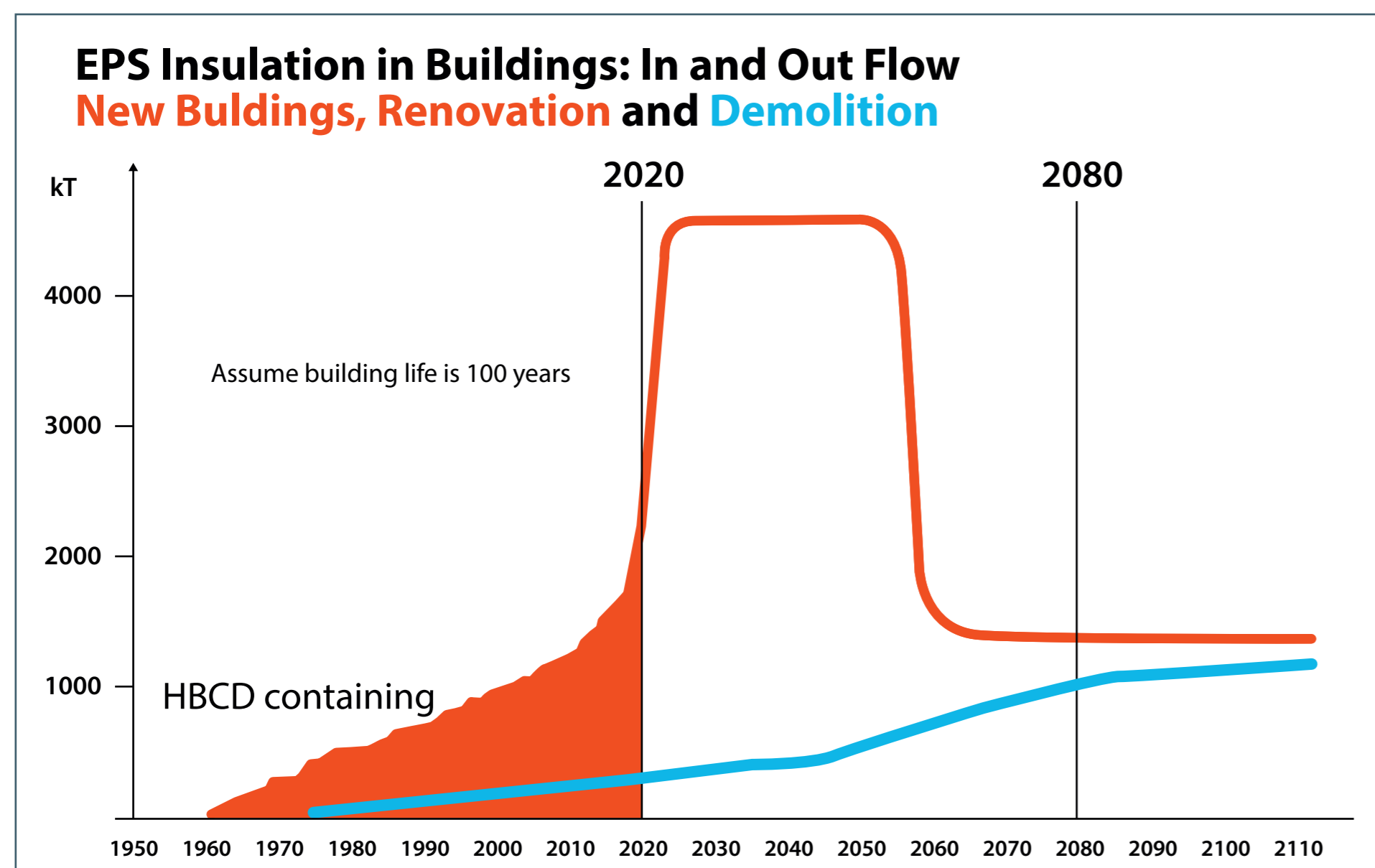
Subject:

HBCDD is classified as a substance of very high concern (SVHC) under EU REACH. HBCDD is also listed as a persistent organic pollutant (POP) under the UNEP Stockholm convention and recycling is prohibited. As such, its usage, shipment and trade is widely forbidden and the disposal is strictly regulated as HBCDD has to be destroyed.



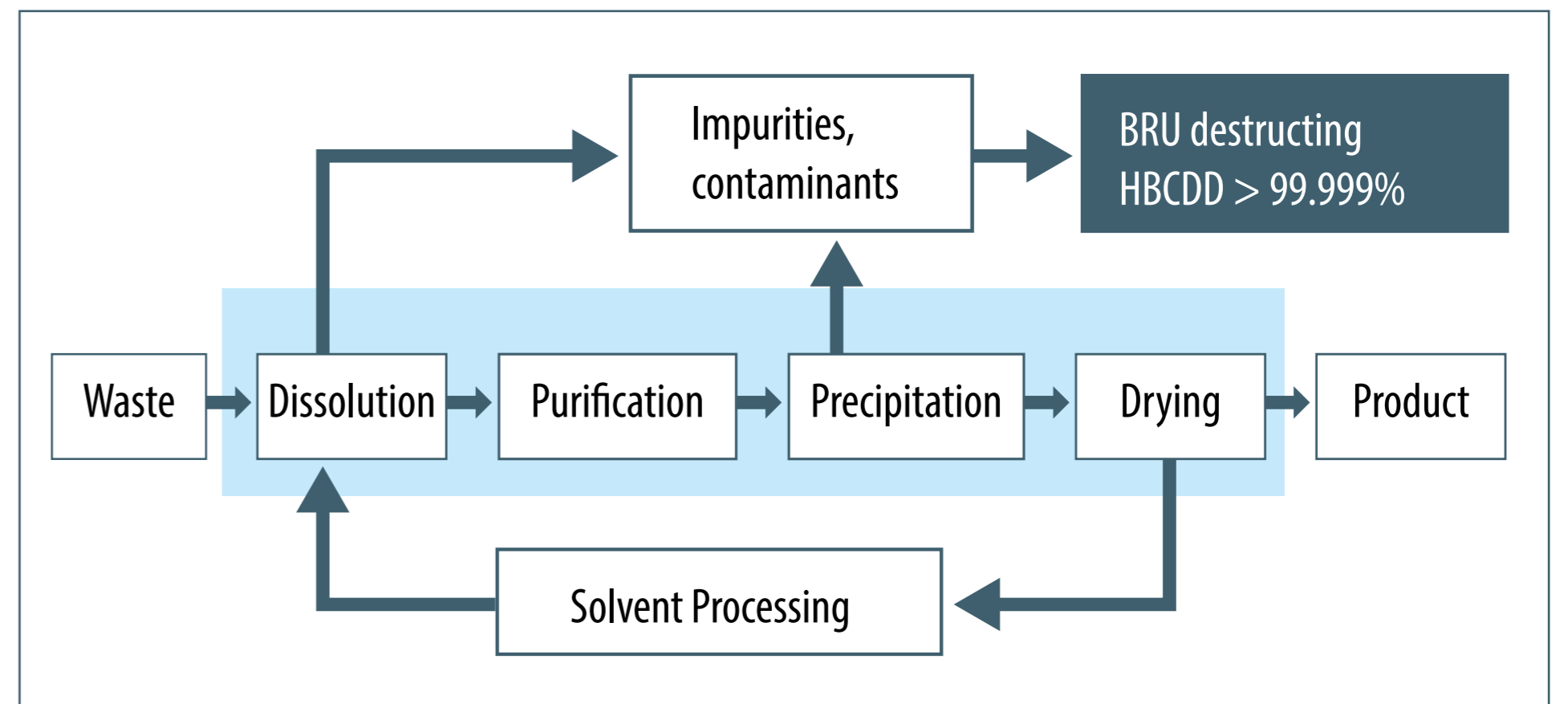
Demolition waste expected to increase:

To fulfil safety requirements, the flame retardant (FR) HBCDD was added to PS foam insulation material for buildings since the 1960's. Due to the long service life as insulation material we can expect a strong increase of HBCDD containing EPS waste from demolition of these buildings. We will have to deal with the large volumes of PS foam waste during the coming decades.



HBCDD destruction applying CreaSolv® technology.

The proven CreaSolv® technology is used. We do this by compacting and dissolving the polystyrene foam and removing the HBCDD (>99,8%). The PS can be re-used in the same application. The HBCDD is destroyed (> 99,999%) in a bromine recovery unit (BRU) running at > 1100° C. The challenge is to demonstrate economic feasibility of closing the PS loop.

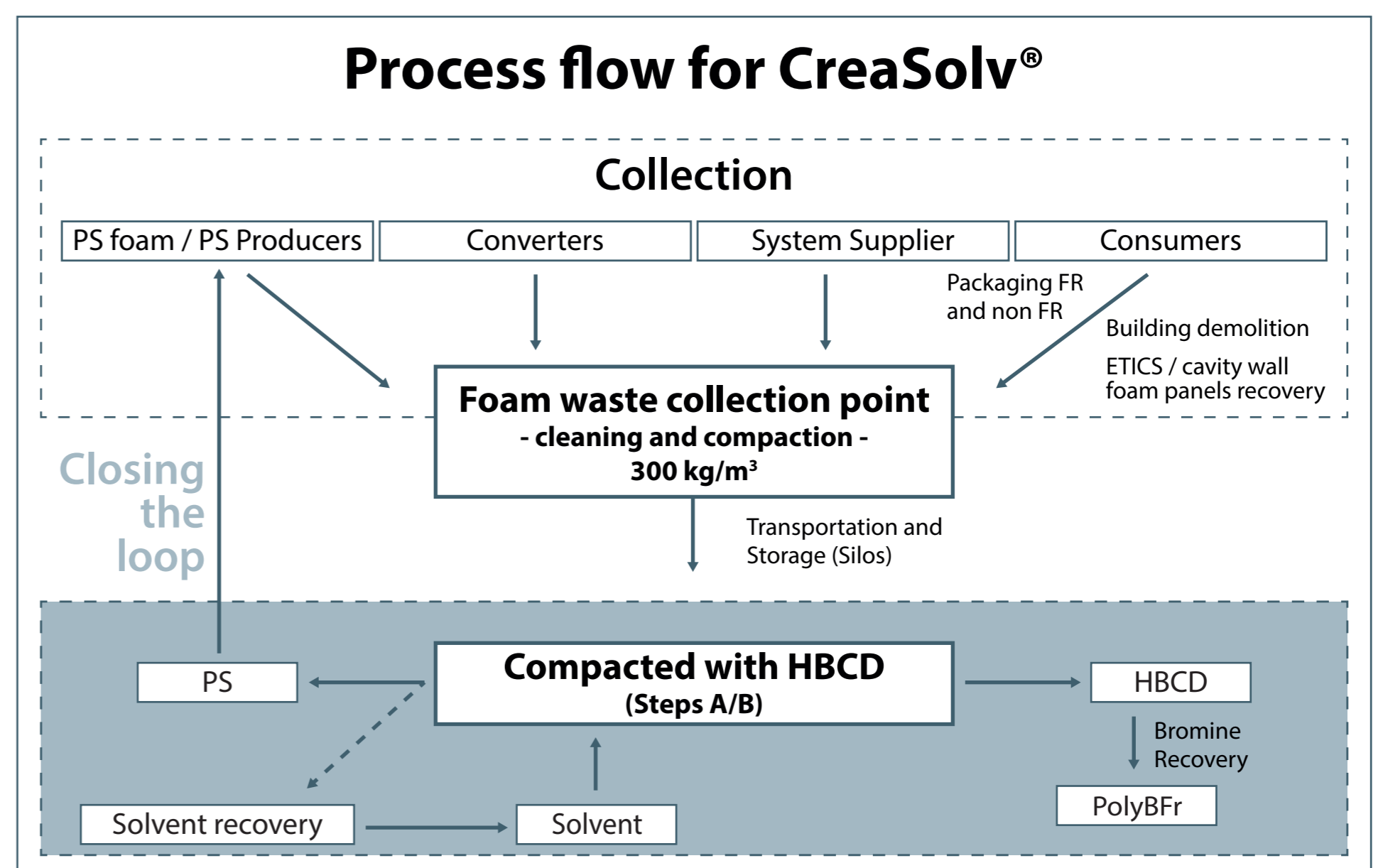


This process enables the industry to deal with the growing volumes of construction PS waste, that will originate from the demolition of buildings in the coming decades. The process fits very well into societal circular economy ambitions.



From a pilot plant to a large scale industrial recovery

To be able to prepare the ground work for a demonstration plant, an industry consortium set up a non-profit foundation. This proposed demo plant has to recycle PS foam, containing HBCDD, from building and construction waste into Polystyrene. At the same time a **full destruction of the HBCDD** followed by a bromine recovery planned to be realized in the existing BRU at ICL-IP in Terneuzen, where the bromine that originated from the restricted Persistent Organic Pollutant (POP) flame retardant HBCDD, will be re-used to make new polymeric FR.



In 2018, we are aiming to have a full scale demonstration plant with a planned capacity of 3000 mtons/y of PS foam containing HBCDD.