DESOTEC

Sustainable mobile
filtration solutions

Breaking the cycle: The power of activated carbon in PFAS removal and destruction

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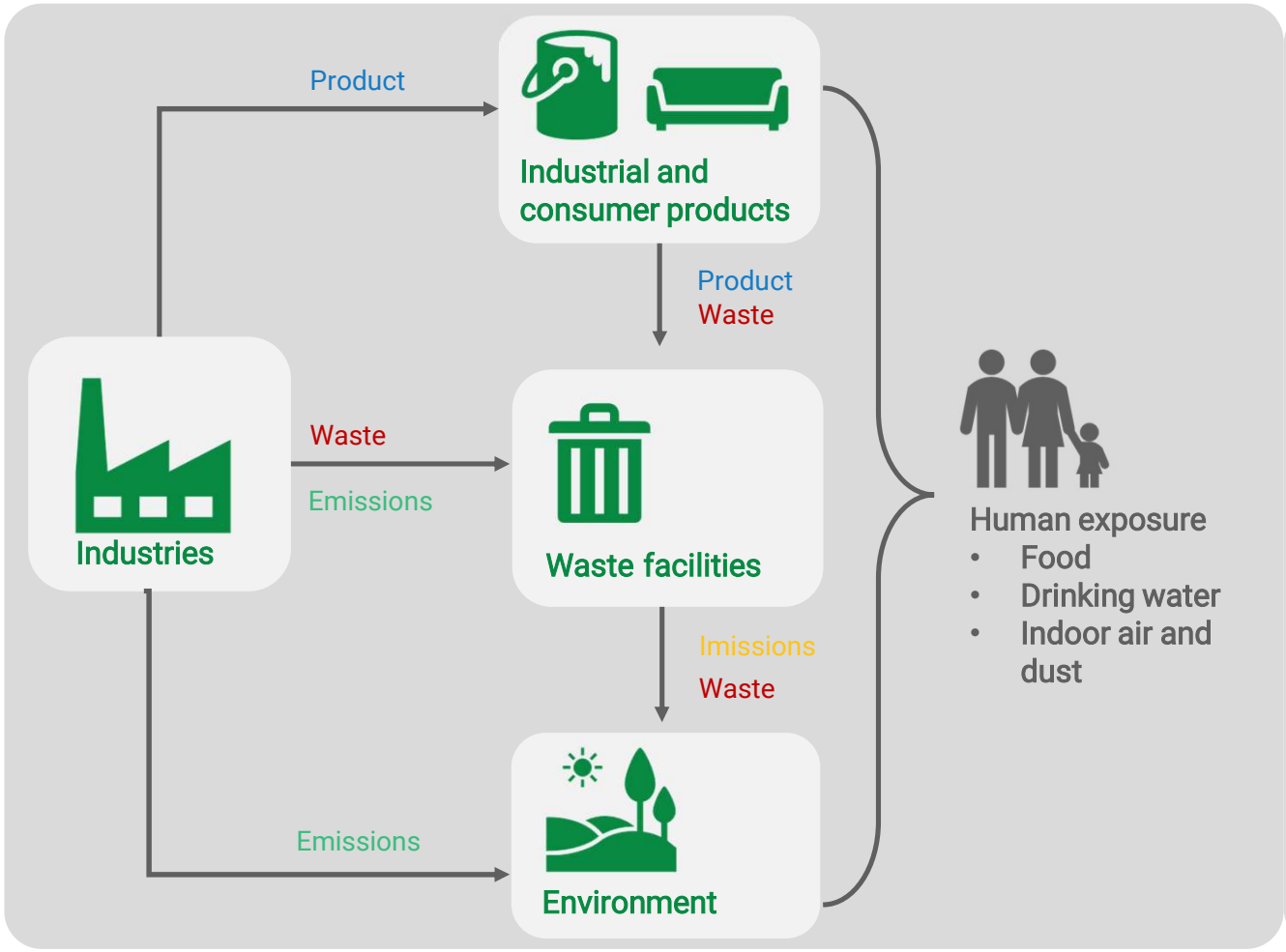
Pressure on the use of PFAS – increasing regulations



Product-specific
EU: REACH + CLP + GPSR

Emission-based
Regulates direct emitters
Only local/regional limits
EU for VOC/COD: IED

Immission-based
Regulates e.g. water use
Regulation leads to remediation projects

Waste-specific
EU: POP regulation, Waste Framework Directive

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Activated carbon = Best Available Technique

High efficiency

Long chain: **close to 100%**

Established

TRL 9

Widely adopted in Flanders

Regenerable

GAC can be reactivated

Flexible setup

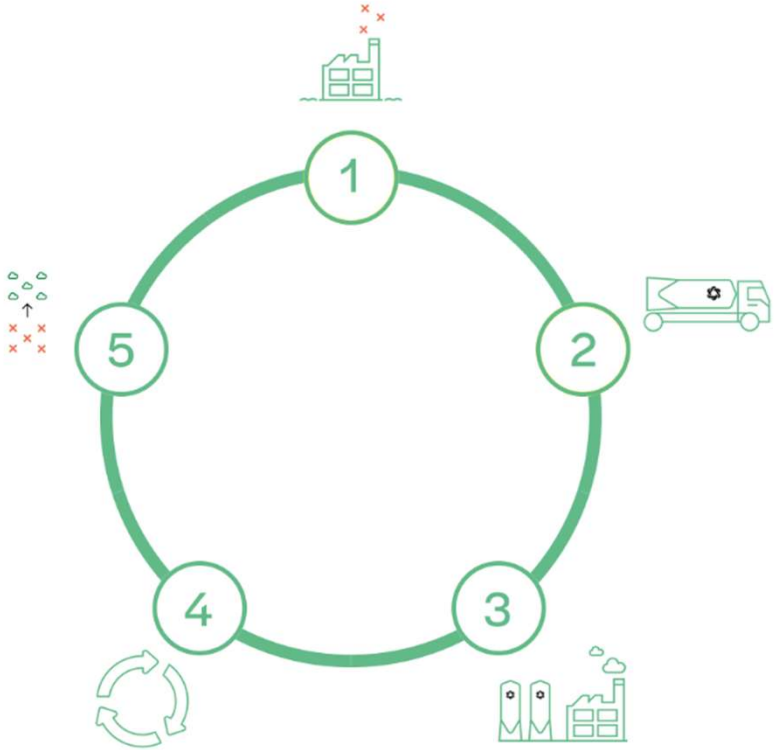
Mobile filters

Filters in series

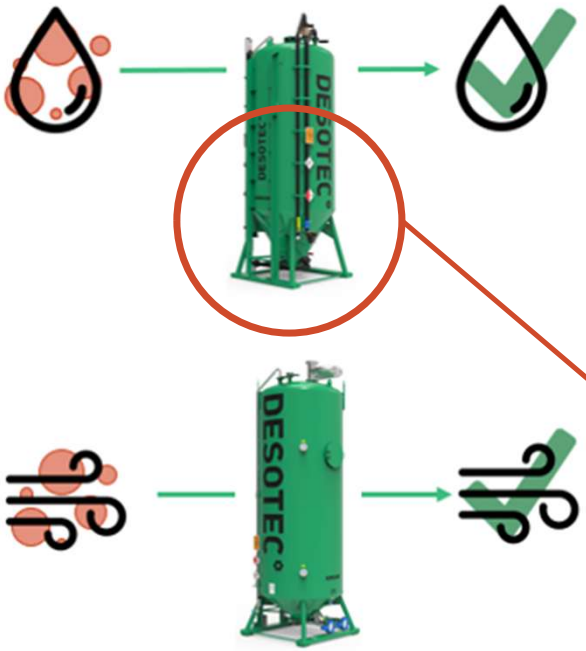
Combinable

DESOTEC in a nutshell

We are an international environmental services company that helps protect the planet with sustainable mobile filtration solutions based on activated carbon for the purification of liquids and gases

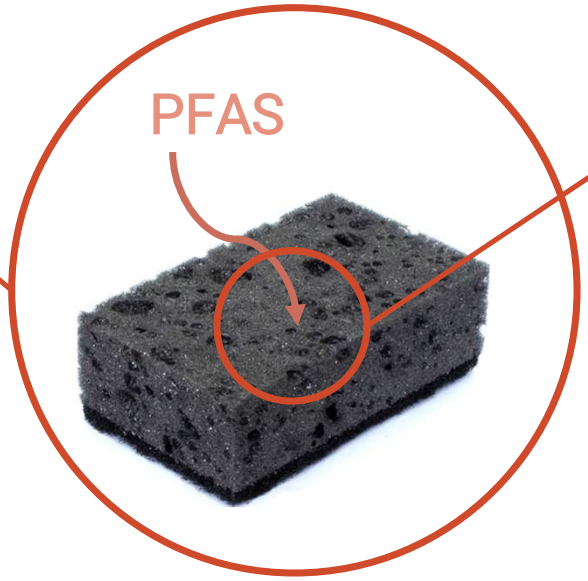


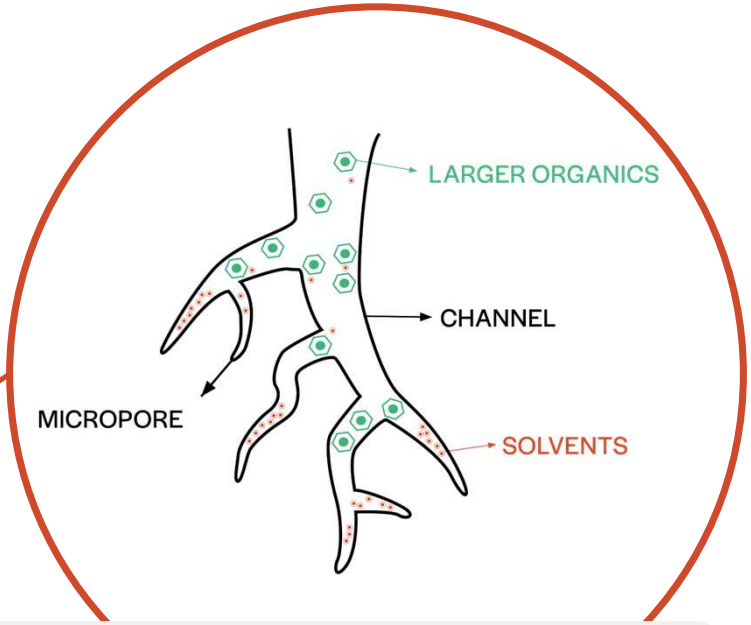
How does activated carbon remove PFAS?



Activated carbon takes up PFAS from **water and gas streams**

Sponge-like retention of PFAS inside filters





- Activated carbon has pores of different sizes, creating a **large surface area**
- PFAS molecules and solvents (e.g., water) move through **larger channels**
- When PFAS reaches **smaller pores**, it gets trapped by interactions like Van der Waals forces (**adsorption**).

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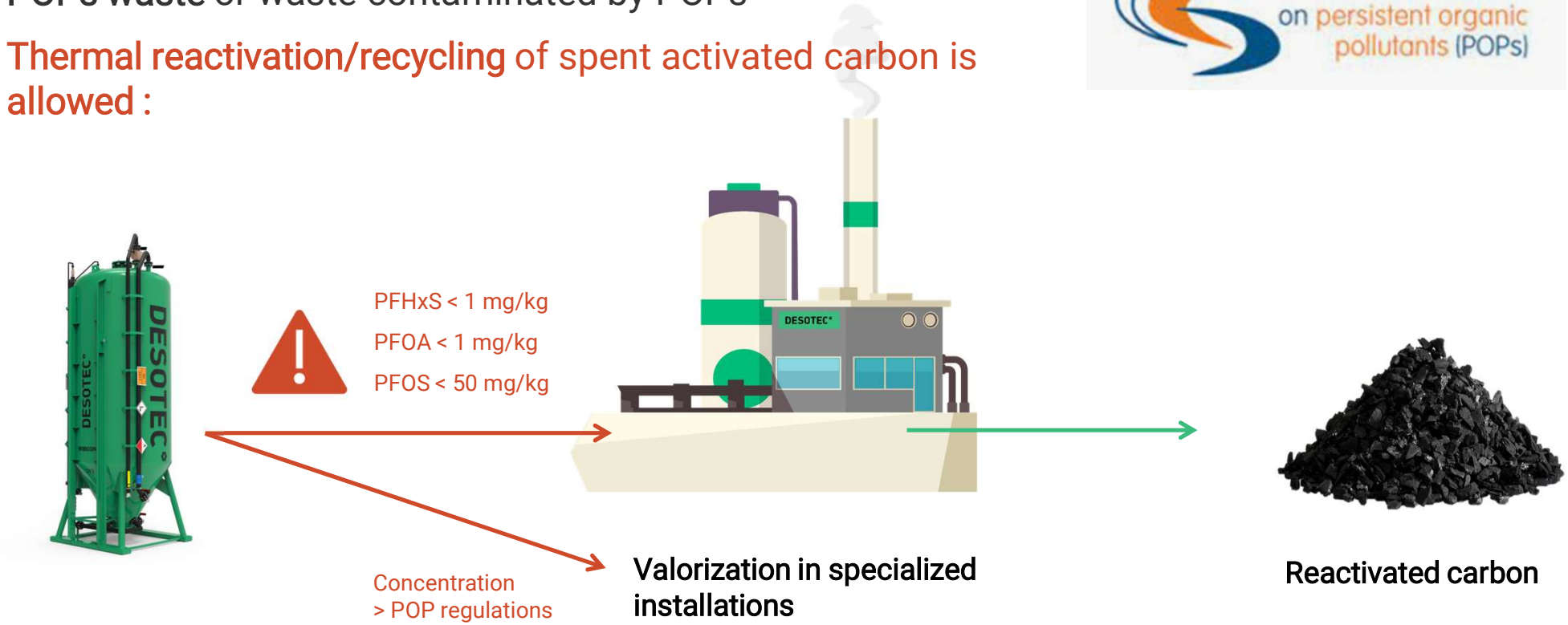
PFAS and POP regulation

- **Regulation (EU) 2019/1021:** Regulate the proper **disposal of POPs waste** or waste contaminated by POPs
- **Thermal reactivation/recycling** of spent activated carbon is **allowed :**

Stockholm Convention on persistent organic pollutants (POPs)



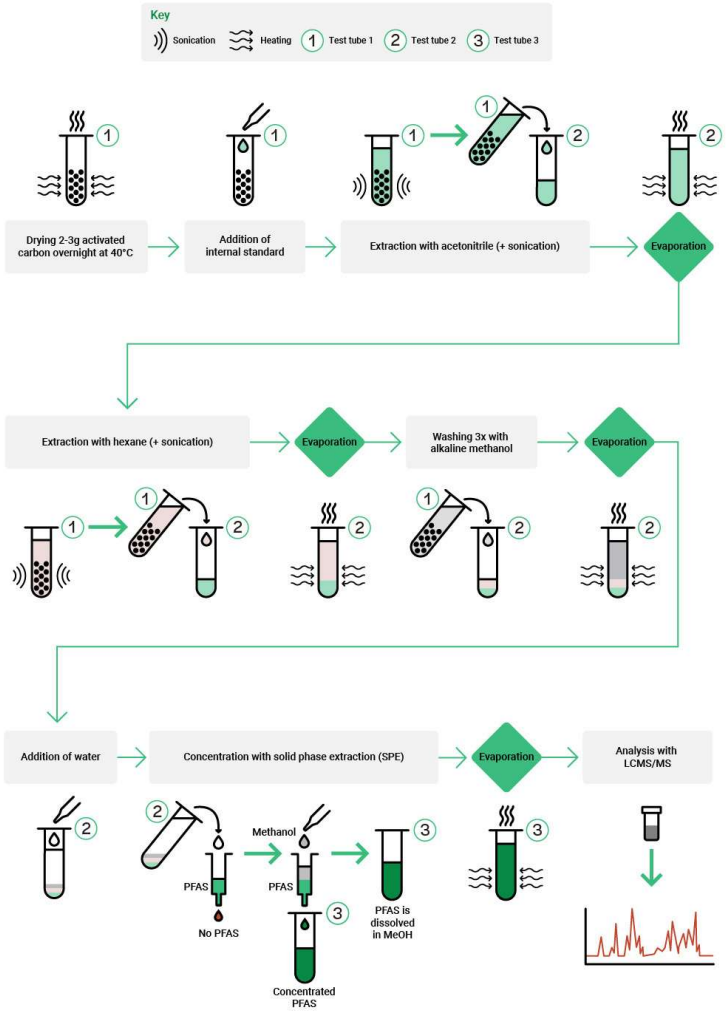
Measuring PFAS on spent carbon

Challenge

Until now, there was no method to accurately extract and detect PFAS on spent carbon

Solution

1. New **method** co-developed with **VITO**
2. Validated & integrated in **DESOTEC's acceptation framework using an in-house LC-MS/MS**
3. Officially **recognized** in the Flemish CMA/3/D



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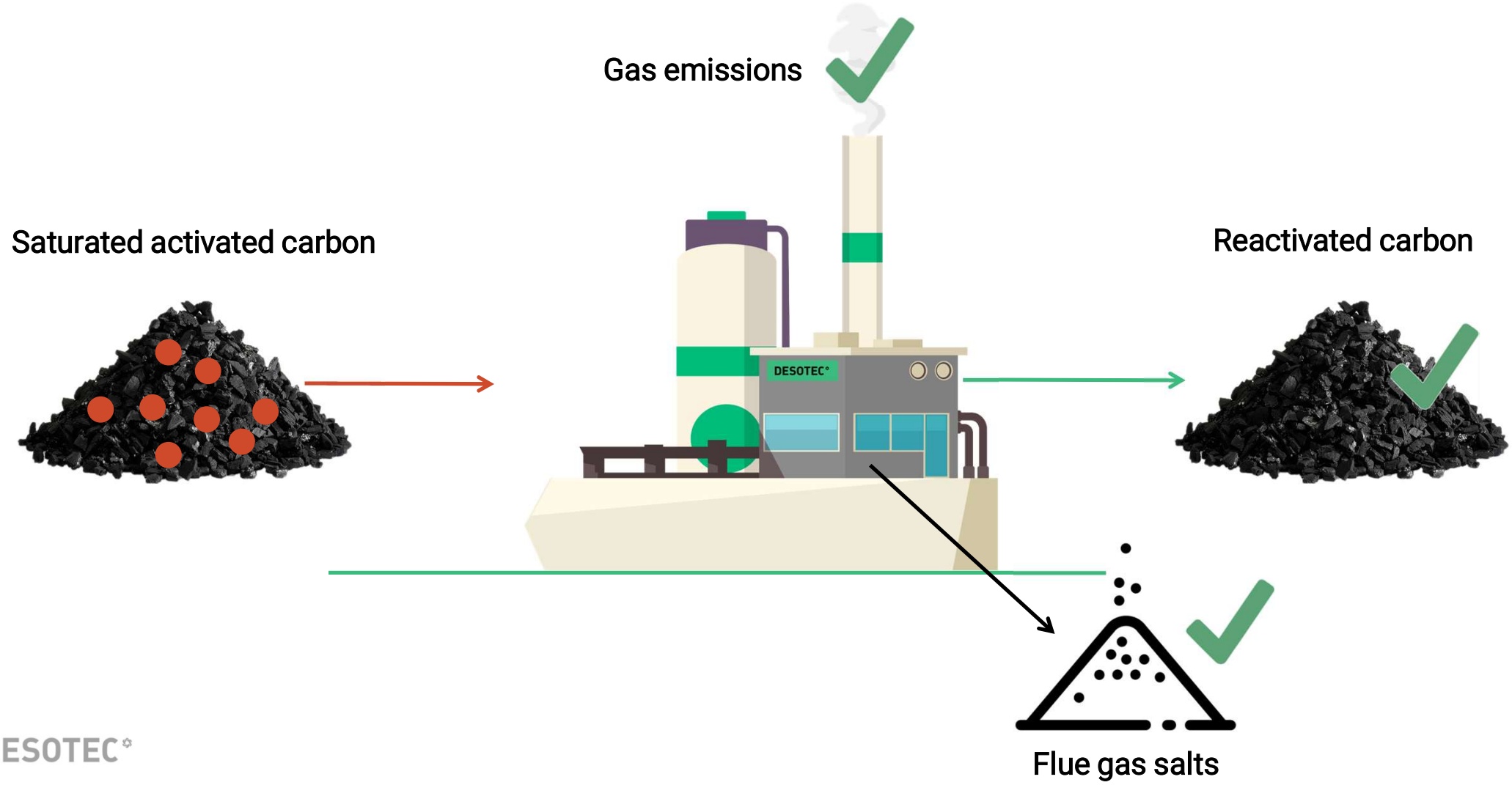
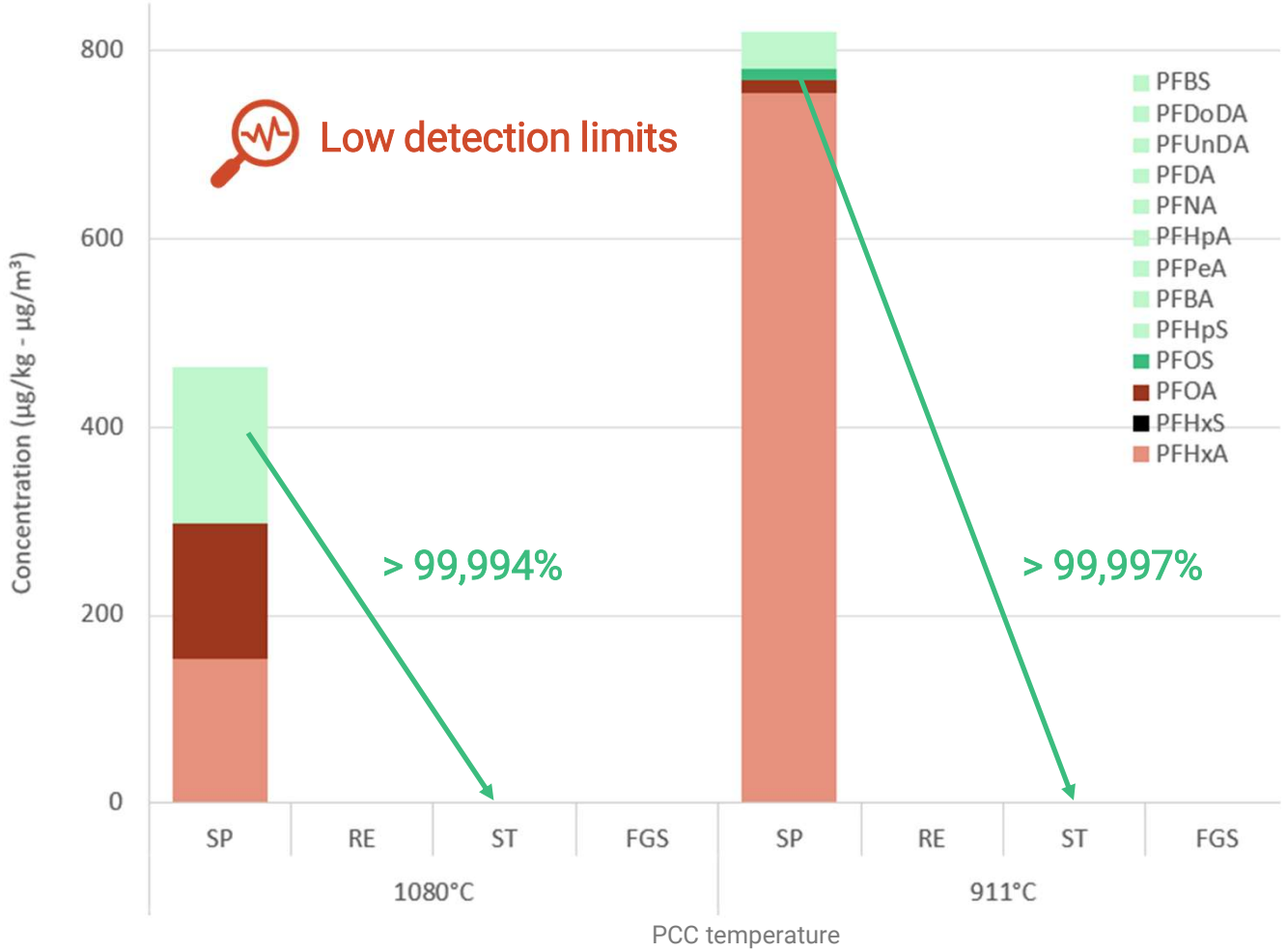
Result of furnace measurements



Effective destruction during reactivation



SP	Spent carbon
RE	Reactivated carbon
ST	Stack
FGS	Flue gas salts

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Conclusions

Effective removal

Compliant & sustainable solutions

Circular approach