

Current technical solutions for treating materials contaminated with PFAS

6th International Congress on
PFAS – Geneva, Switzerland

Michael Evangelou

27.11.2025



Eberhard

EBERHARD

EBIOX

WEIACHER

DETZELN

Pioniere in Bau und Umwelt

PFAS in the environment

Treatment technologies



Designed by Freepic



Designed by Freepic



Designed by Freepic

-
- Liquids (Drinking water, leachate etc.)
 - Solids (soil, excavated material etc.)
 - Air

Treatment technologies

Solids – also solutions?



(Soil-)washing - principal



Challenges



Legal limits - Thresholds

Designed by Freepic



TOC and foreign objects



Chemical Analysis

Designed by Freepic



Origin of PFAS contamination

Designed by Freepic

PFAS in the environment

Point or diffuse source



Source:cdmsmith.com



Designed by Freepic



Source: californiaagnet



Designed by Freepic

PFAS in the environment

Processing options

Excavated material



PFAS in «dissolved» form

- PFAS serve **no** purpose in the material
- Most PFAS are water-soluble
- PFAS are easily desorbable from the material

Material processing options (washing)

- Material challenges:
 - porous, matrix, foreign objects
- Components needed:
 - attrition, flotation, water treatment, PFAS-sink
- Process engineering:
 - Thorough understanding of the process
 - Preliminary investigations - very important
 - PFAS composition and concentration
 - Good staff – engineers and operating personnel

Specific applications



Important for building material recycling:

- Paint/Coating/Plaster (in living spaces, bathrooms, kitchens, workshops etc.)
- Wallpaper
- Shotcrete

Source: <https://rgo.dk/>

PFAS in building materials

Processing options

Demolition materials - mixed demolition waste



PFAS in «bound» form

- PFAS serve a **specific** purpose in the material
- PFAS are poorly soluble in water (water repellent)
- PFAS penetrate building fabric

Material processing options

- Dry screening with fine fraction separation

Not sufficient

1. Washing facility with dedicated units for targeted PFAS removal
2. Pre-demolition removal of PFAS-containing surfaces (such as with PCBs, PAHs or asbestos)

Thermal treatment- principal



Thermal treatment options

Variety of plants and methods



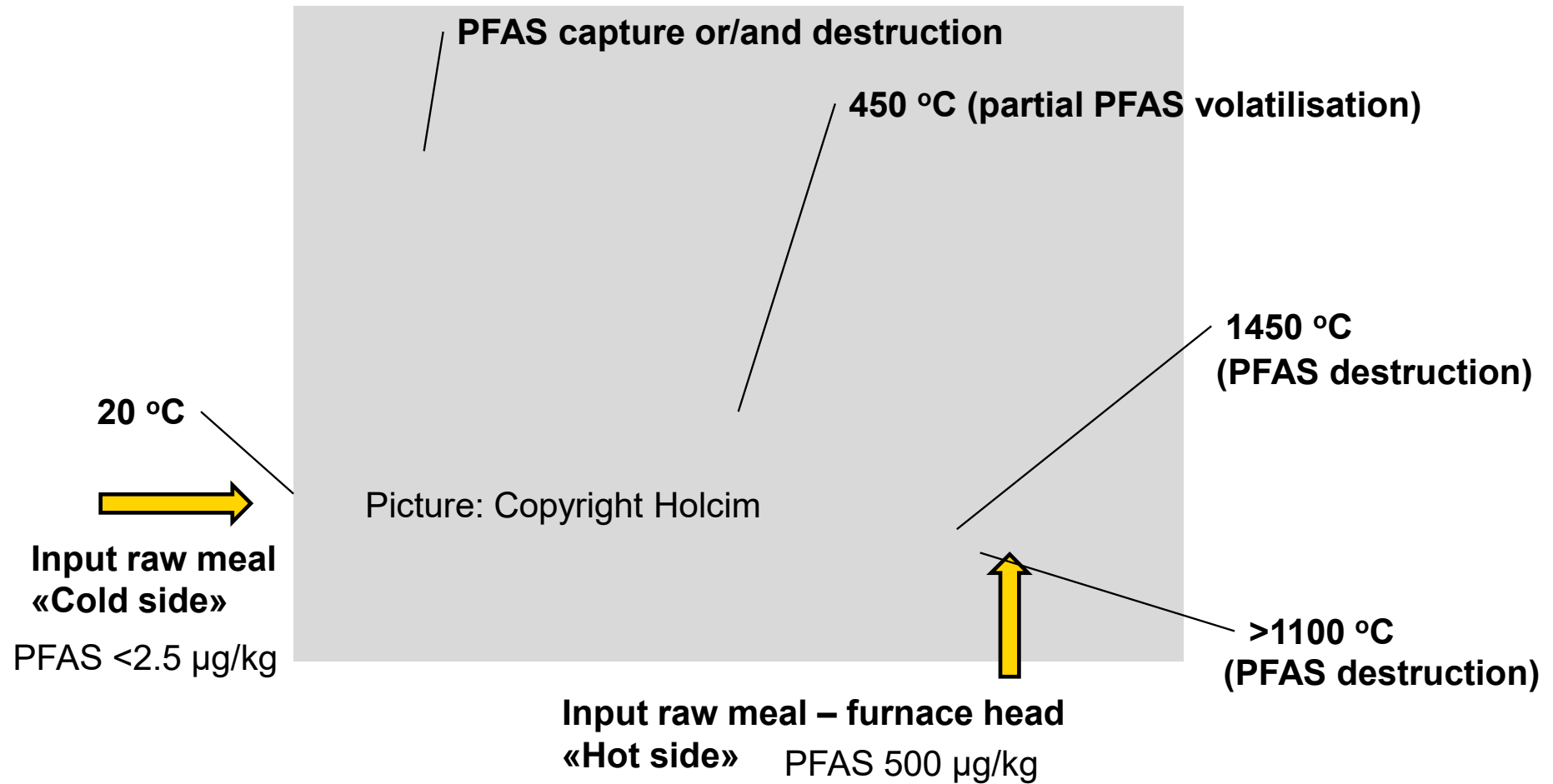
Cement production

Picture: Copyright Holcim



Thermal process – cement plant

Temperatures



Cement plant for thermal treatment of PFAS

Opportunities and limitations



picture alliance / Arnulf Hettrich

Opportunities

- Destruction of PFAS (1450 °C)
- Recycling of raw materials

Limitations

- Capacities are limited (esp. «hot side»)
- Heavy metal conc. are limited
- PFAS conc. are limited

Treatment and disposal options

Ideal Combination Soil washing – cement plant



PFAS-reduction



Output

Circular economy



«PFAS-concentrate»



PFAS-destruction



Output

Circular economy

Complementary procedures

Quality control



Designed by Freepic

- ✓ Complete: All products (sand, gravel, cement etc.) and all relevant parameters
- ✓ Transparent
- ✓ Independent

TRUST!

in products and procedures by authorities and customers

Which way we take is up to us.



Designed by Freepic