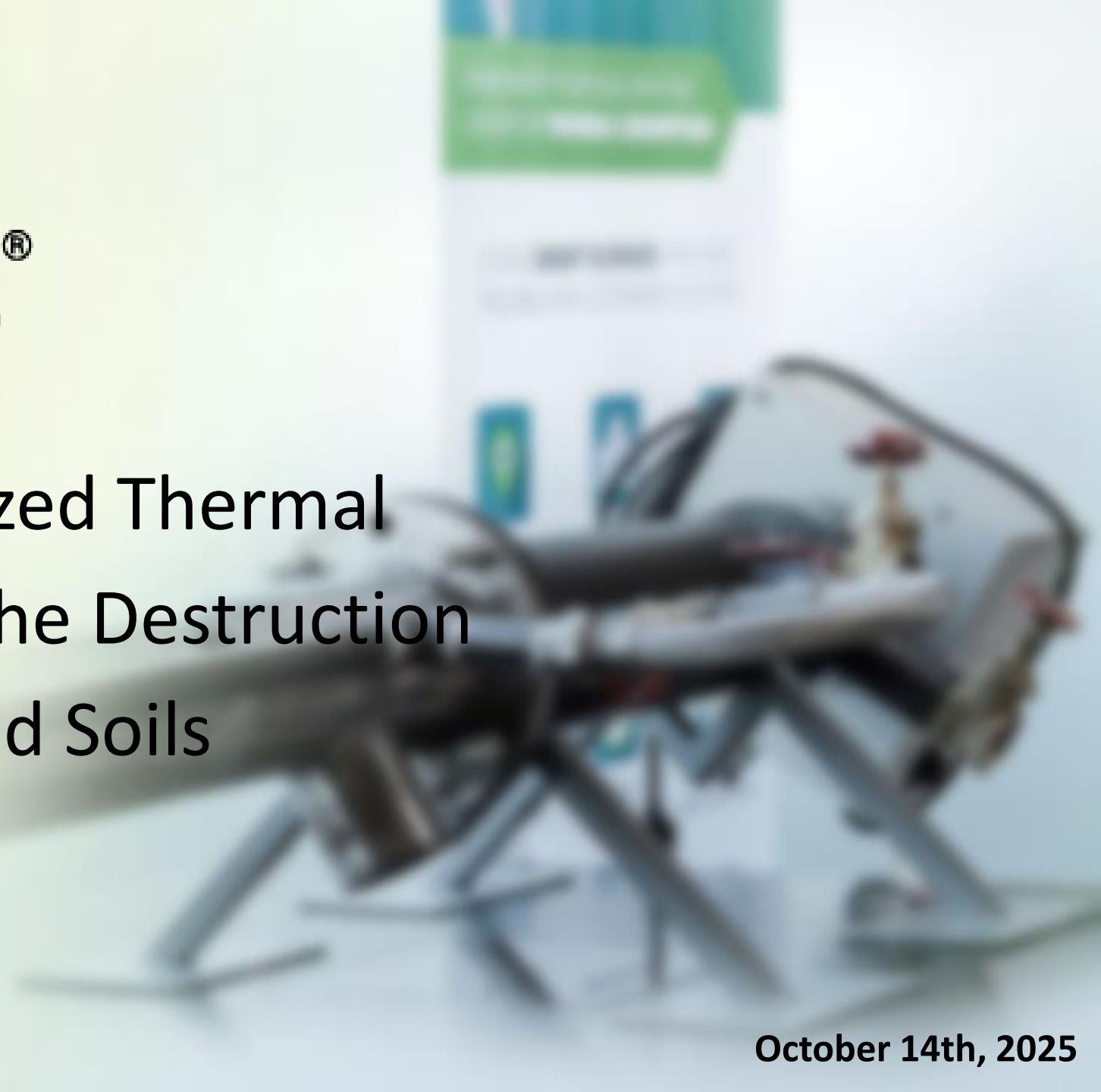
Krysalis - A Containerized Thermal Treatment System for the Destruction of PFAS in Contaminated Soils

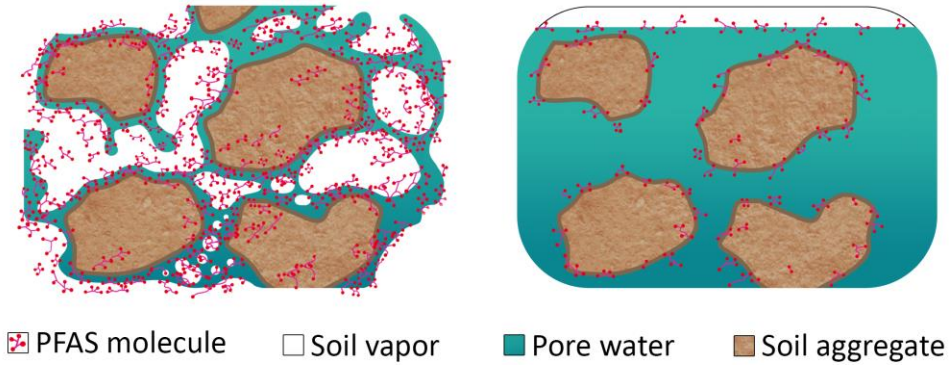


Aurélien Vandekerckhove

October 14th, 2025

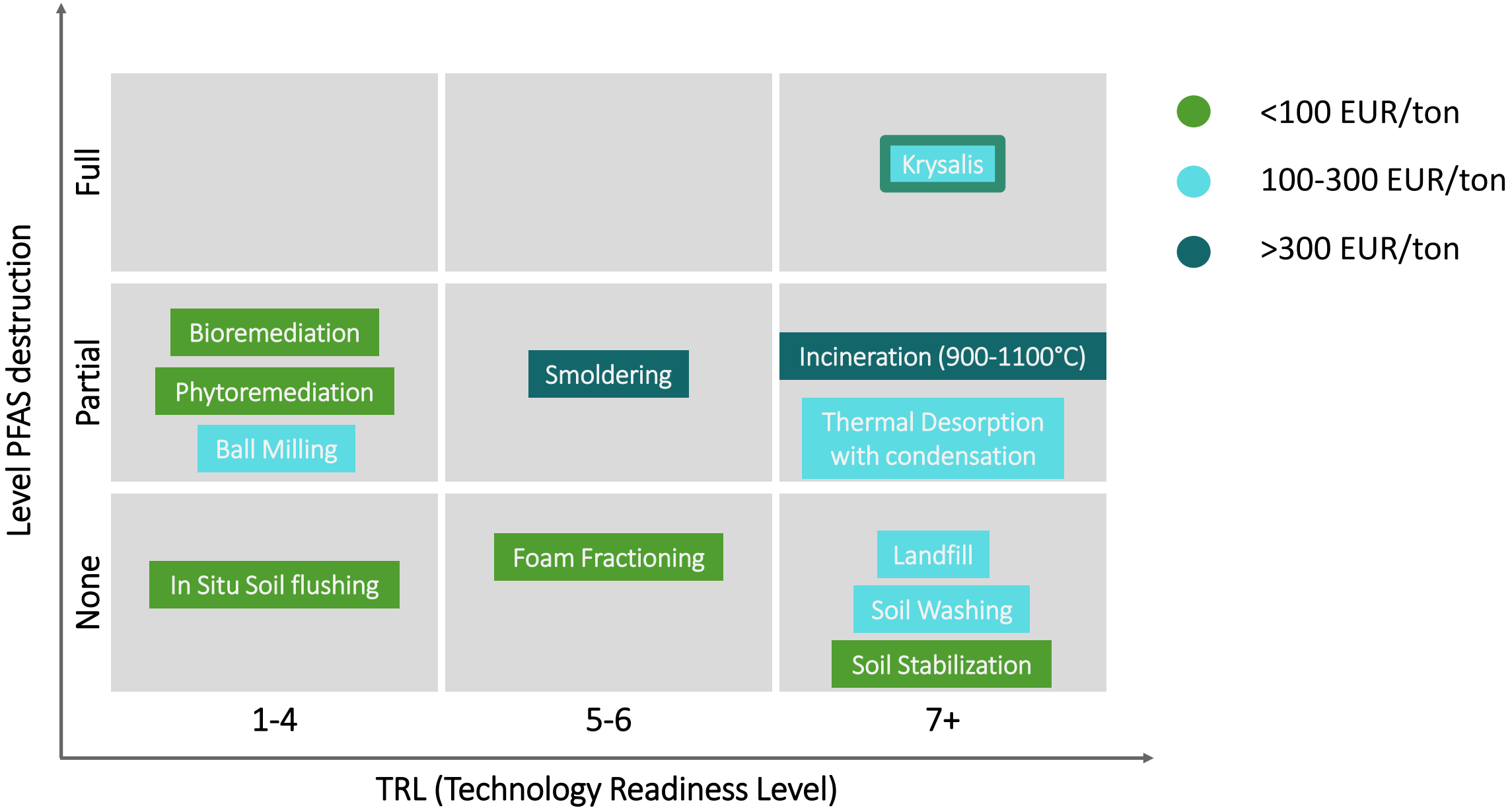
Why Soil is the Key to Solving the PFAS Problem

- ~80% of PFAS mass is trapped in soil (especially in source zones: airports, firefighting sites, military, factories)
- PFAS bind strongly to soil and pore water
  → long-term reservoir & continuous release
- Current efforts focus mainly on water treatment
  → but that only treats the *symptom*
- Soil is the source: addressing it is the only way to cut emissions at their origin



Ignoring soil = shifting the cost from polluters to society

PFAS Soil treatment – State of the Art



Case study: Korsor (DK)

DANSKE REGIONER

Demo scale

2 batchs – 32t each

PFOS/PFOA/PFHxS/PFNA

200 – 1100 µg/kg

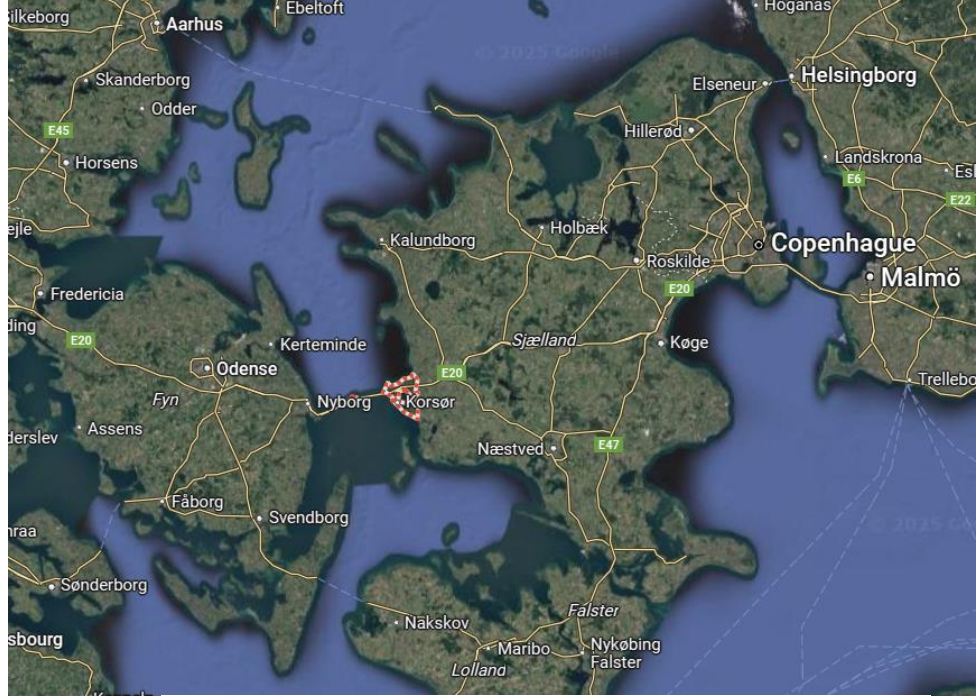
Containerized treatment (excavated soil)

Objectives :

PFAS in soil: nd

No PFAS in vapors

No short chains



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How it works: 400°C to release – 1400°C to destroy

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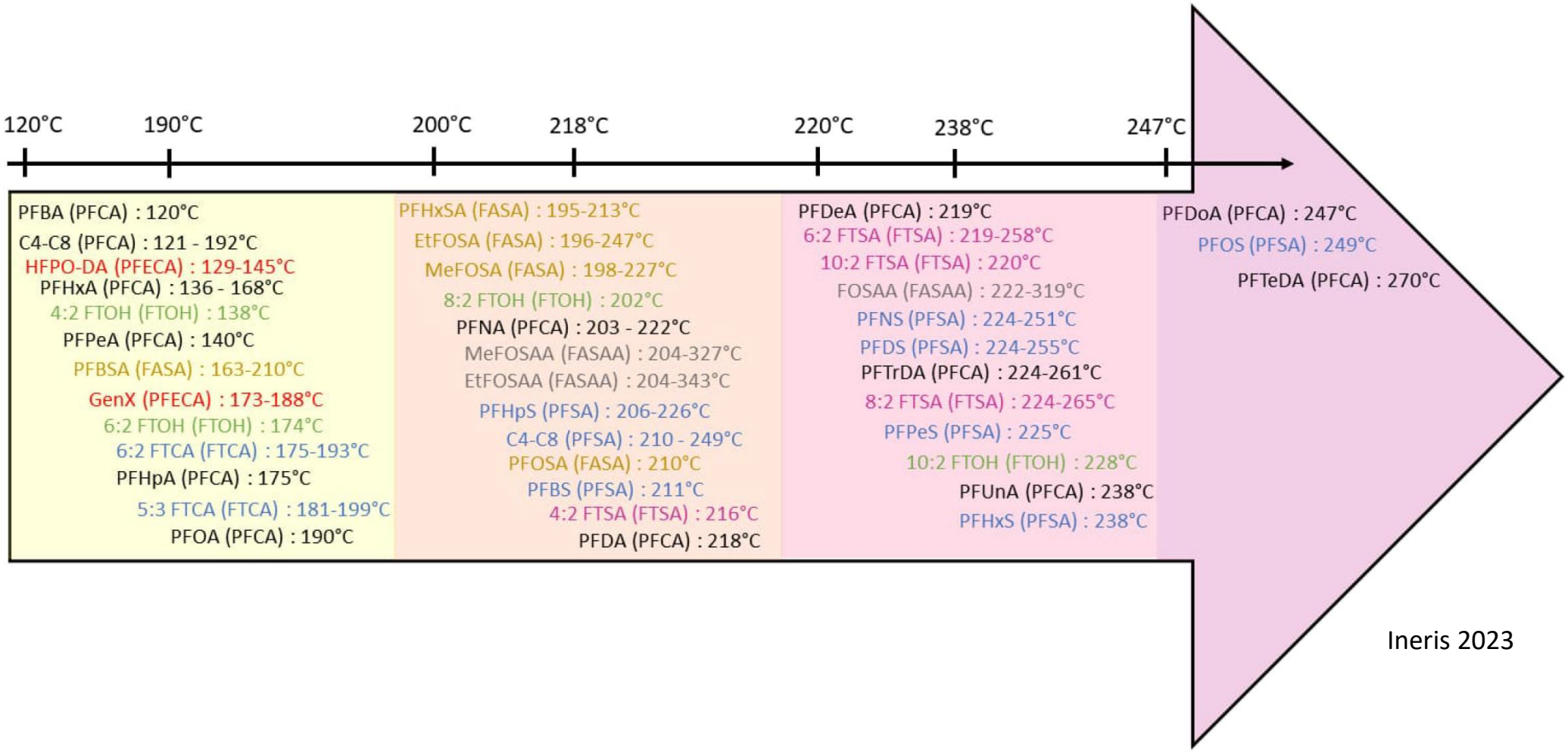
Why it works? PFAS are volatile above 350°C



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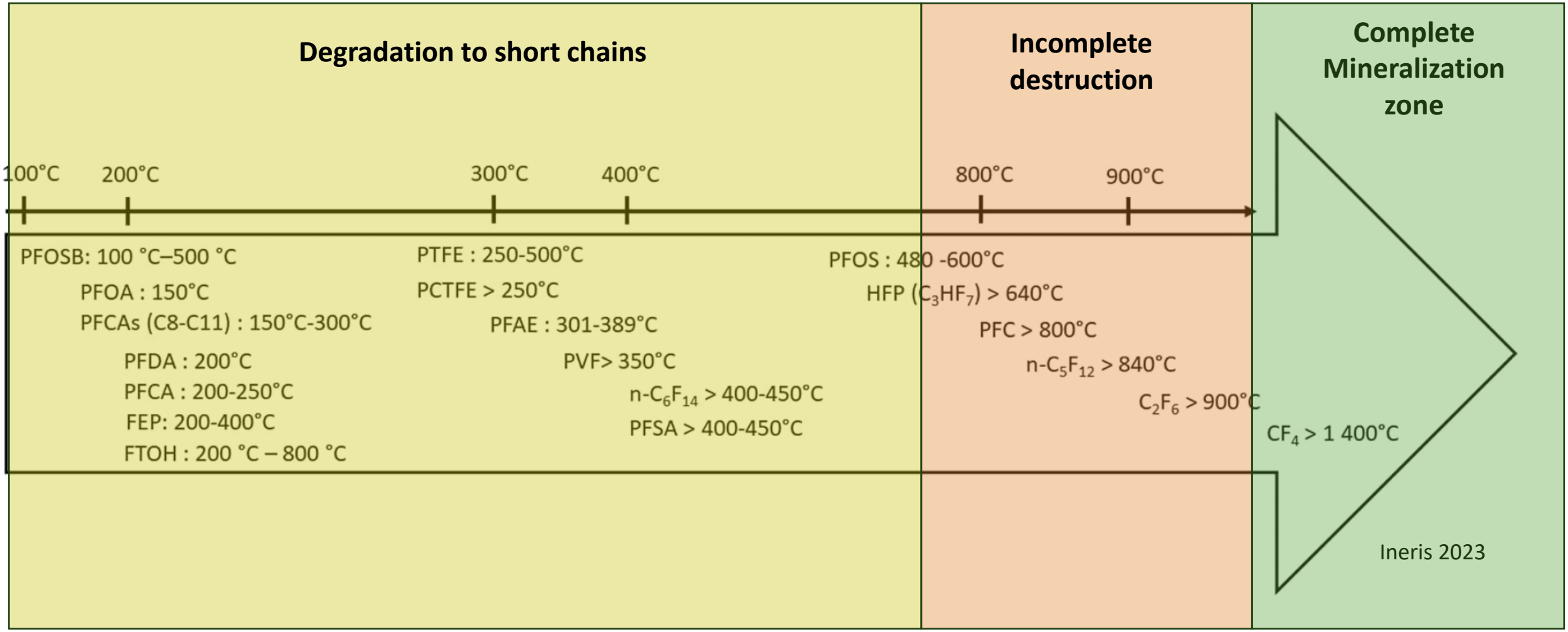
PFAS thermal mineralization: Why 1400°C matter



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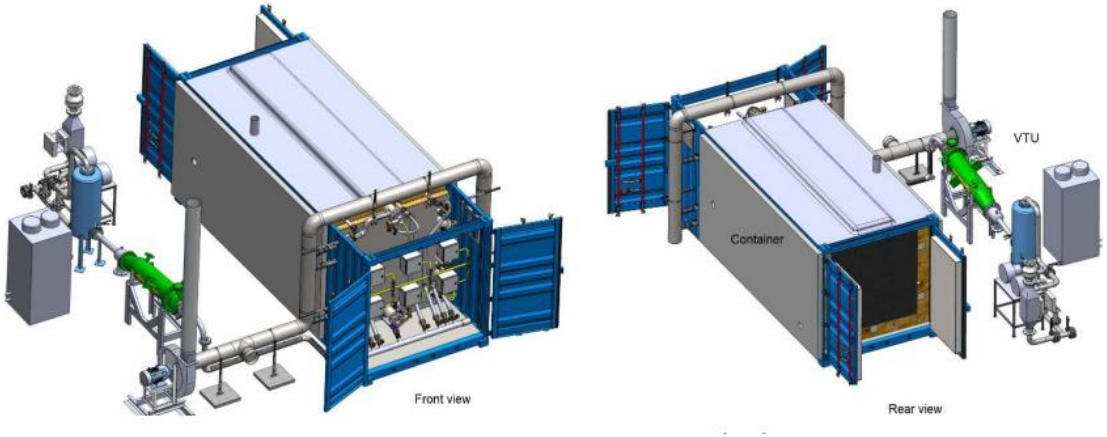
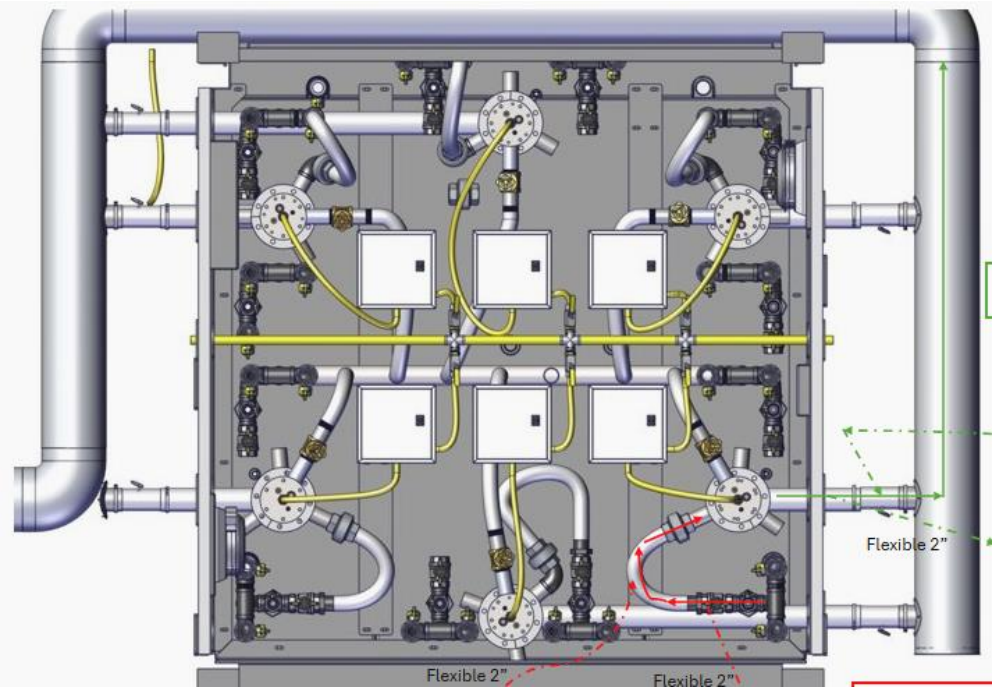
Container Design





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Results: Protocol – all results are good

Soil

- Direct soil sampling
- Leachate tests

Vapors

- OTM 45
- OTM 50
- XAD
- Before reburn
- After reburn
- After GAC
- Temperatures in burners

SCAN ME

GAC

- Direct sampling after 2 batches

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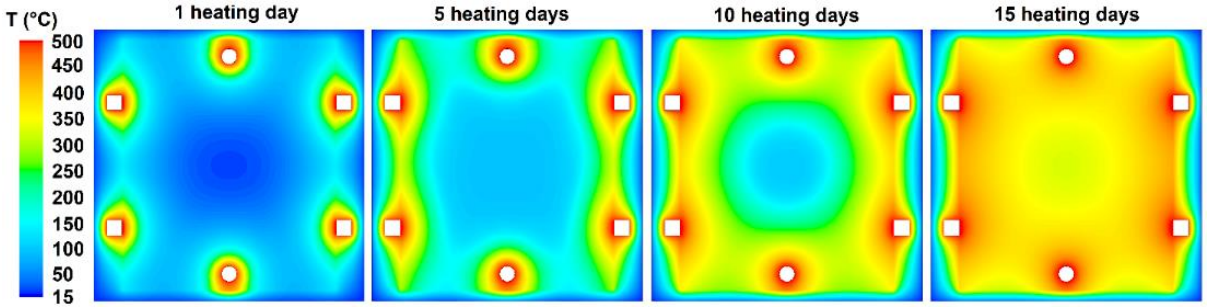
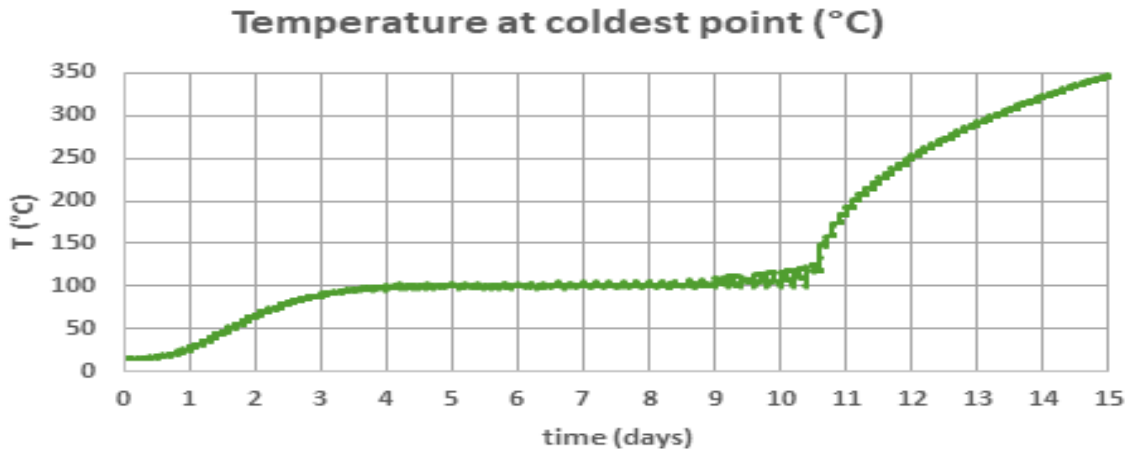
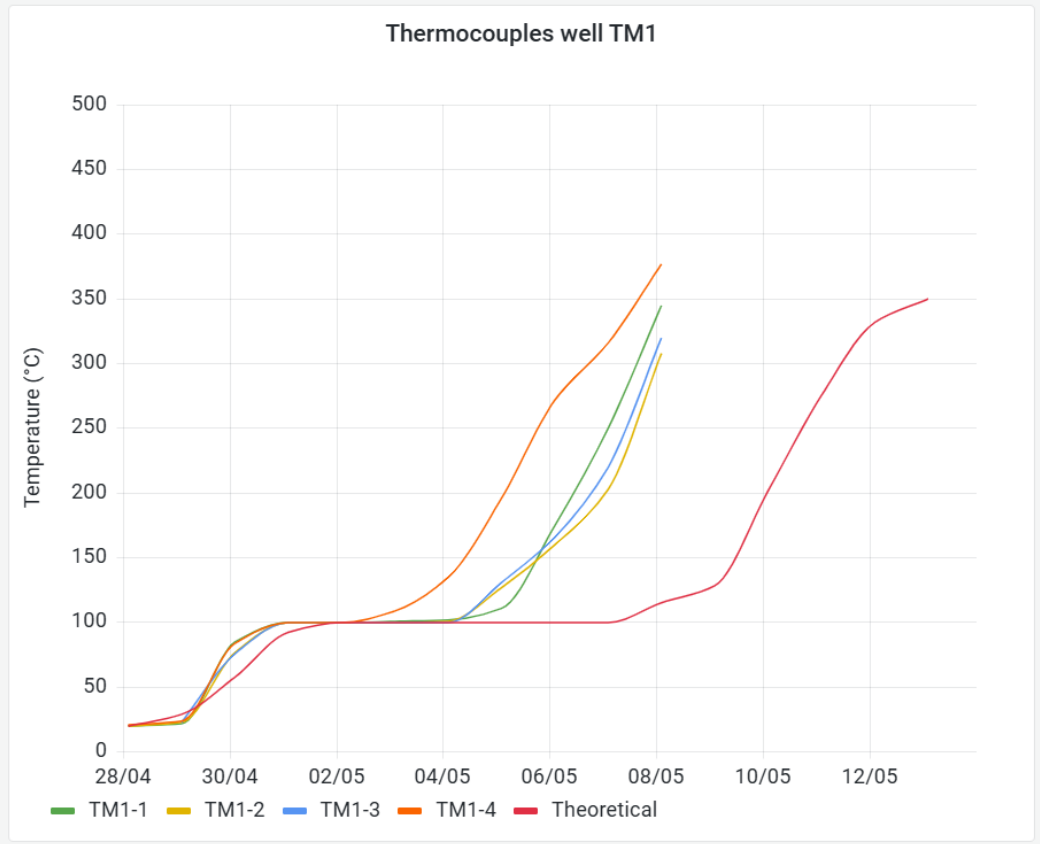
Heating





Modeling

Results



- Onsite heating
- 12 to 14 days treatment time

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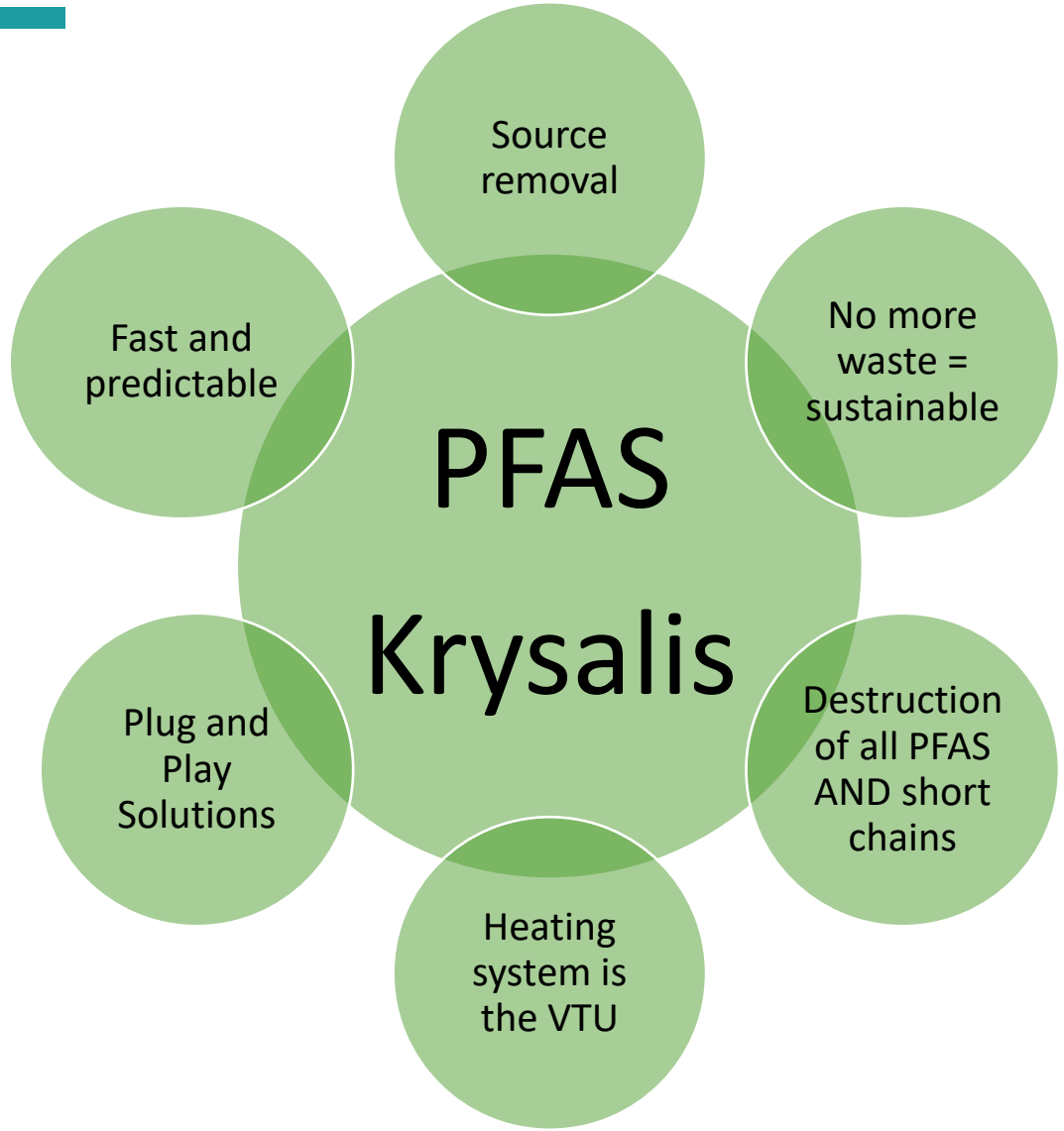
Take-home message



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