Water, Energy and Carbon Nexus management within circular territories and industries

3 JUNE 2022

NEXT GEN EU

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EU Project: ZeroPM

- Zero Pollution from Persistent, Mobile Substances
- EU-Call: Zero-Pollution solutions
  - 94 projects submitted
  - 3 projects funded
- 15 partners, focus North-West-Europe; Coordinator: NGI Norway
- 12 Mio. €
- runtime: 5 years (10/21-09/26)

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PROJECT PARTNER

Participant No.	Participant organisation name	Country
1 (Coordinator)	STIFTELSEN NORGES GEOTEKNISKE INSTITUTT	Norway
2	STOCKHOLMS UNIVERSITET	Sweden
3	STICHTING VUA	The Netherlands
4	DVGW DEUTSCHER VEREIN DES GAS- UND WASSERFACHES – TECHNISCH WISSENSCHAFTLICHER VEREIN EV :TZW	Germany
5	MILIEU CONSULTING SPRL	Belgium
6	International Chemical Secretariat	Sweden
7	UMWELTBUNDESAMT	Germany
8	UNIVERSITE DU LUXEMBOURG	Luxembourg
9	EMPA – SWISS FEDERAL LABORATORIES FOR MATERIALS SCIENCE AND TECHNOLOGY	Switzerland
10	PANEPISTIMIO AIGAIOU	Greece
11	GOUIN TODD	United Kingdom
12	CHALMERS TEKNISKA HOEGSKOLA AB	Sweden
13	NORSK INSTITUTT FOR VANNFORSKNING	Norway
14	UNIVERSITAT WIEN	Austria
15	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWWANDTEN FORSCHUNG E.V.	Germany

- Interdisciplinary
- Scientific „top class“ in the field of PM substances

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PROJECT PHILOSOPHY

- EU-Goal: Toxic-free Environment
- The toxic-free hierarchy – a new hierarchy in chemicals management

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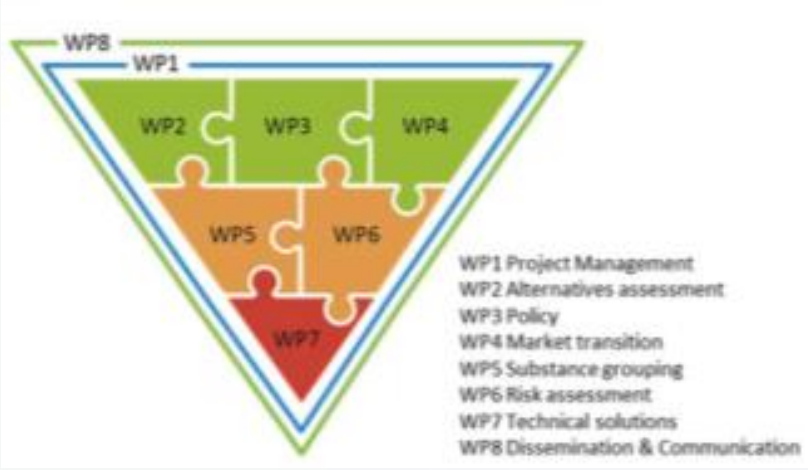
PROJECT PHILOSOPHY



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PROJECT OBJECTIVES

PREVENT

- Provide safer chemical alternatives to non-essential uses of PM substances
- Stimulate and support policy changes to more effectively tackle PM substances
- Assist a market transition away from harmful PM substances

PRIORITIZE

- Prioritize PM substances and substance groups on the global chemical market for prevention and removal
- Characterise and quantify impacts of PM substances on human health and the environment

REMOVE

- Demonstrate how and if legacy PM substance pollution can be remediated

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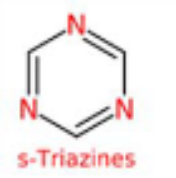
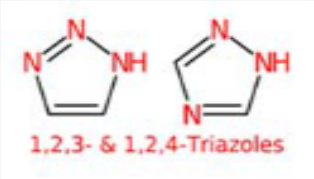
PM SUBSTANCES

PFAS, short and long chain		PFOS, PFHxA (EFSA) PFBA, PFPeA
Triazine		Melamine Atrazine
Triazole		Benzotriazole Complex parent substances and degradation products

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WP 7: TECHNICAL SOLUTIONS (Lead: DVGW:TZW)

Objectives

- Innovative analytical methods for monitoring
- Demonstration of removal of PM pollution by new technical remediation solutions
- Evaluation of these technical solutions
- Fate of PM substances during waste water sludge treatment

NIVA Norwegian Institute for Water Research

UNIVERSITY OF THE AEGEAN

Technische Universität Chalmers, Göteborg

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Task 7.2 / Water treatment (Lead: TZW)

- Process 1: hybrid process: GAC + IEX
- Process 2: enhanced ad- and desorption from GAC by polarization
- Retention of dense membranes (NF and RO)
- Monitoring program at two full-scale waterworks (test site 2)
- Biotransformation microcosm studies
- Technical Evaluation

GAC…granular activated carbon
IEX…Ionexchange

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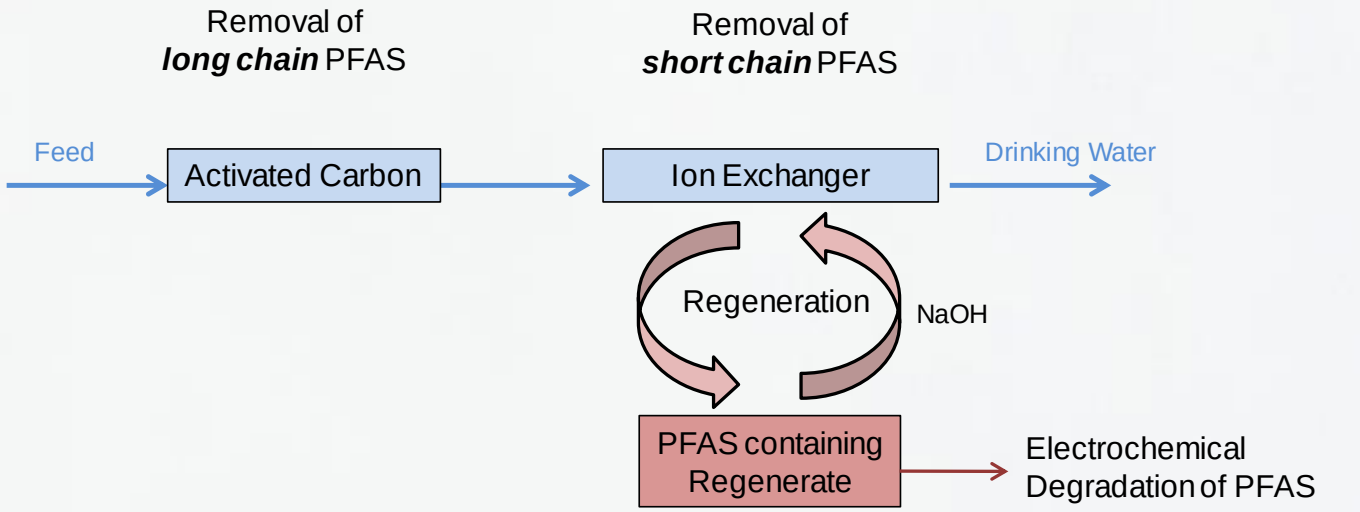
Task 7.2 / Water treatment Process 1



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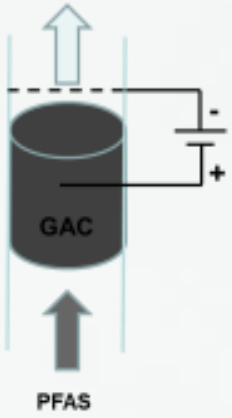
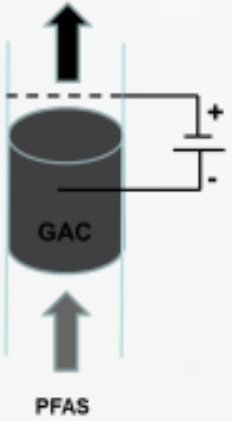
Task 7.2 / Water treatment Process 2

1. Step: Electrosorption



2. Step: Electrodesorption



3. Step: Electrochemical Degradation of PFAS

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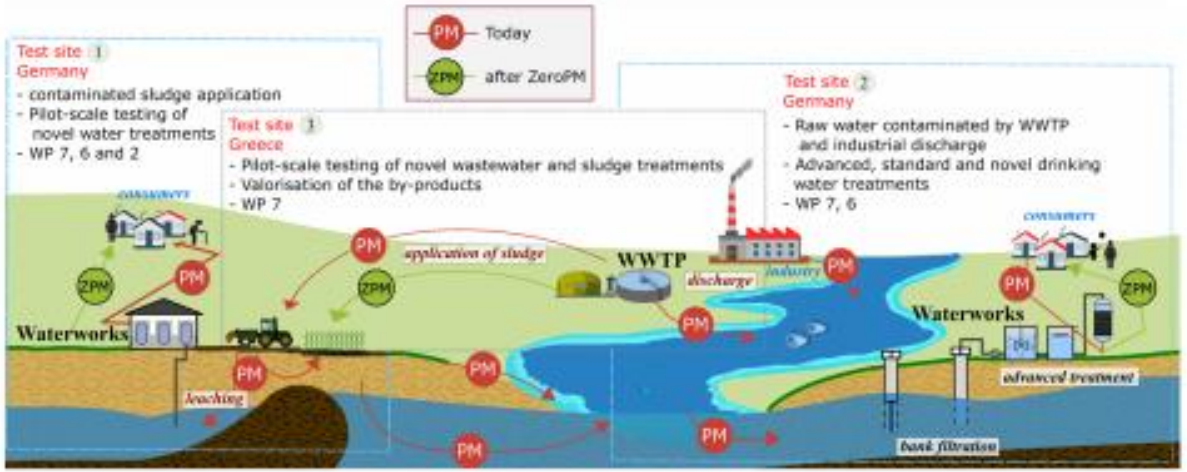
ZeroPM's test sites



Rastatt **Mytilene** **Upper Rhine**

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More information: https://zeropm.eu/

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