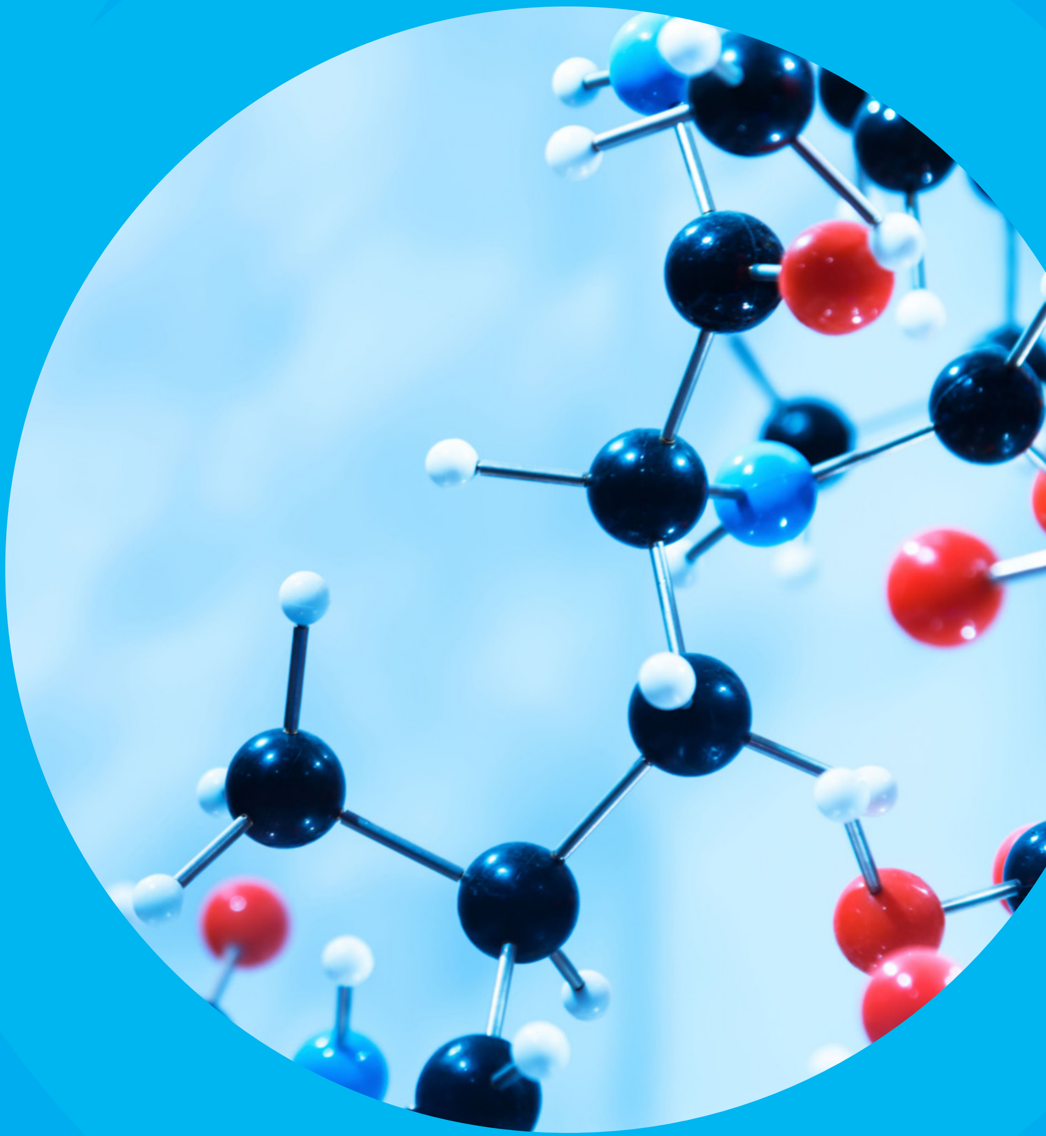
IRIDE
ACQUE



STUDIES AND ANALYSES

The PFAS Challenge

EMER for PFAS Removal

PROBLEM

PFAS (per- and polyfluoroalkyl substances) are fluorinated chemical compounds known for their resistance to degradation and persistence in the environment. These compounds are frequently found in everyday products such as waterproof coatings and fire-fighting foams. The primary concern lies in their toxicity and ability to accumulate in organisms, with potential negative impacts on human health and the environment. Recently, regulations requiring the treatment of wastewater are increasingly focusing on the elimination of such chemical compounds.

ONGOING ACTIVITIES

→ **THE EMER TECHNOLOGY** To address this issue, Iride Acque has tested, with excellent results as evidenced by the data presented, the EMER technology. The aim was to effectively reduce PFAS in industrial wastewater.

→ **ONGOING STUDIES** In December 2023, industrial wastewater containing significant levels of perfluoroalkyl substances was treated using the EMER technology, in combination with traditional technologies.

COMPOUND	PFPeA	PFHxA	PFBS	PFOA
Concentration µg/kg	<0,25	0,85	0,33	<0,25

COMPOUND	PFOS	PFBA	PFNA
Concentration µg/kg	<0,25	0,61	0,72

The results of the reductions are shown below:

Compound	Legislative Proposal 2392 - Table 5-bis Emission Limit Value for Surface Water and Sewer Discharge	Pre Treatment	Post Treatment	reduction (%)
	µg/l	µg/kg	µg/l	*estimate
PFPeA	0,5	<0,25	<0,05	80*
PFHxA	0,5	0,85	0,24	72
PFBS	0,5	0,33	0,13	61
PFOA	0,5	<0,25	<0,05	80*
PFOS	0,5	<0,25	<0,01	96*
PFBA	0,5	0,61	0,06	90
PFNA	0,5	0,72	<0,5	31*
average				**74**

CONCLUSIONS

Currently, providing specific discharge limits for each PFAS in Italy is challenging, as these details may vary depending on regional or national regulations. Key regulatory references include::

- **Legislative Proposal 2392 - Table 5-bis** - Emission Limit Value for Surface Water and Sewer Discharge *(used in this document)*
- **Regional laws such as Piemonte's Law 25/2021** - Emission Limit Values (ELVs) for Discharges into Surface Water
- **Veneto's Decree 41/2019** - Experimental discharge values

The monitoring and regulation of PFAS are gaining international importance due to their persistent, bioaccumulative nature and potential harm to human health and the environment.

Iride Acque's preliminary study demonstrated that the advanced catalytic oxidation method is effective in reducing PFAS levels below legal limits, highlighting the potential of this technology in mitigating environmental impacts. The EMER process stands out as a promising solution to tackle the diffusion of PFAS by intercepting them directly at production sites and safeguarding surface waters, the environment, and communities.