JRP-v15

MetZeroPol: **Metrology to support zero pollution from industrial emissions**

Providing a measurement and reporting framework to enable monitoring and enforcement of the revised Industrial Emissions Directive (IED2.0)

Legislative Need

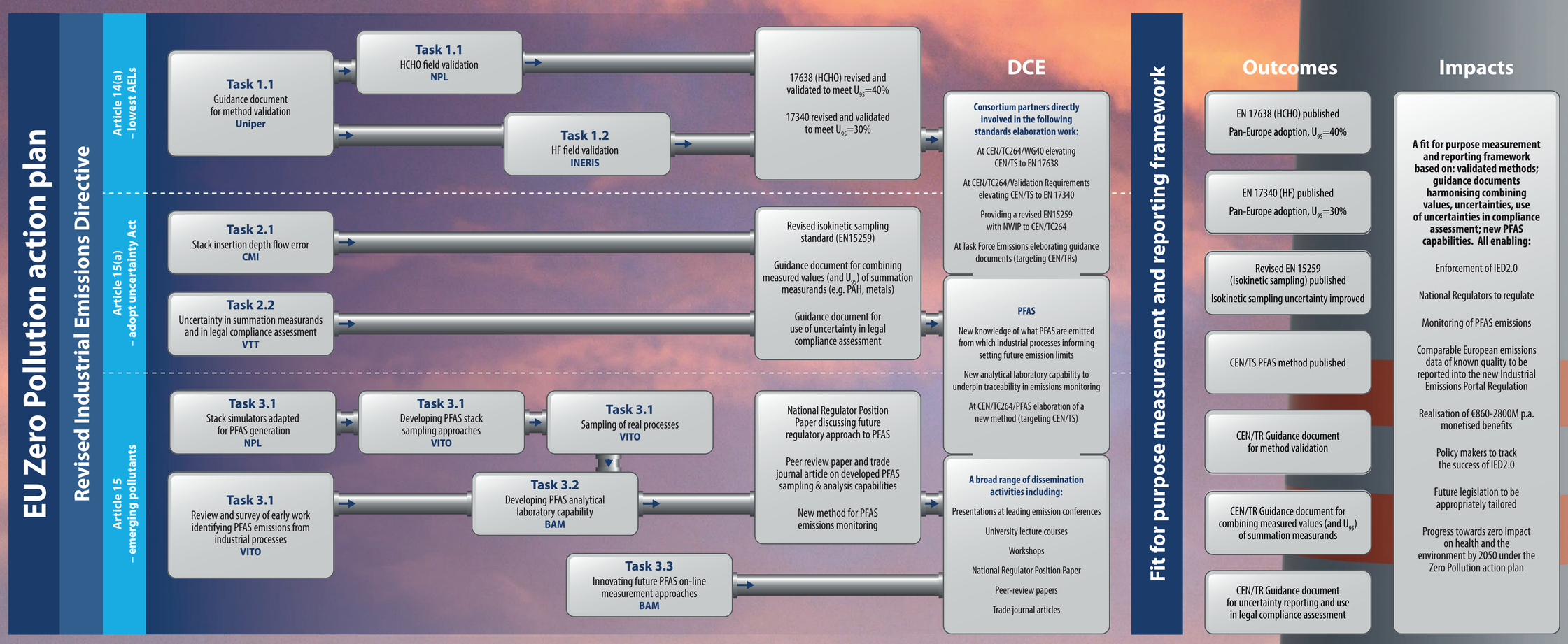
The Industrial Emissions Directive (IED) regulates emissions from 52000 industrial installations accounting for 20% of EU pollution.

The EU's Zero Pollution action plan is targeting reducing pollution to "levels no longer considered harmful to health and natural ecosystems" by 2050. Revision of the IED is a key pillar under this plan and is set to realise €860-2800 million p.a. in monetised benefits.*

IED2.0 was published in August 2024, however, changes to 3 key Articles will exacerbate / create issues in the emissions measurement and reporting framework hindering successful implementation.

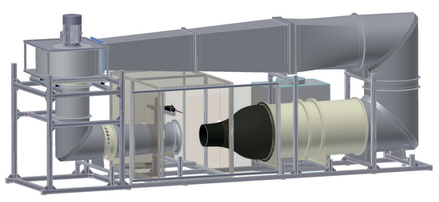
**European Commission, SWD(2022) 112 final.*

Legislative change	Issues	Solution
Article 14a: all emission limits set to lowest end of associated emission level (AEL) ranges	• 75%-85% of all emission limits are currently set at the highest end of the AEL ranges • Some CEN standard reference methods (SRMs) have not been formerly validated - *Can not be published as full EN standards or adopted by all CEN member nations* - *European emission data not comparable or traceable*	Formerly validate and revise • CEN/TS 17638 (formaldehyde - HCHO) to meet required U_{95} of 40% • CEN/TS 17340 (HF) to meet required U_{95} of 30% Fulfilling EC Mandates in both cases Enabling publication as full standards (EN designation), pan-European adoption and mandated use
Article 15a: use of uncertainty when comparing measurements to emission limits	Across Europe • Emission measurement values and uncertainties are not combined consistently for summation measurands (PAH's, heavy metals, dust) • Uncertainty is not used consistently (if at all) in legal compliance assessment	• Improve understanding of isokinetic sampling uncertainties for pollutants with a particulate phase • Revise EN 15259 to provide improved future isokinetic sampling uncertainties • Guidance documents for - *combining measured values and uncertainties* - *use of uncertainty in legal compliance*
Article 15: greater requirement to regulate pollutants of emerging concern (not specifically listed in IED2.0)	• Per- and poly-fluoroalkyl substances (PFAS) are a key class of emerging pollutants, but - *there is little knowledge of which compounds are emitted from which processes and at what concentrations* - *there is no European measurement method for monitoring compliance*	• Extend European stack simulator capabilities for PFAS generation • Develop European sampling approach and European analytical capabilities • Identify and quantify PFAS from samples collected from industrial processes to inform National Regulators for future site permits and emission limits • Author European PFAS sampling and analysis method

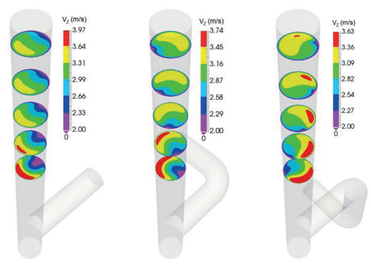


	HF	HCHO	PAHs	Heavy metals	Dust	PFAS
SRM	CEN/TS 17340	CEN/TS 17638	ISO 11338	EN 14385	EN 13284-1	None exists
AEL range ($mg.m^{-3}$)	n/a-<1	0.2[a]-10[b]	n/a-<1[c]	0.01-0.30	<2-7	None yet
SRM validation range ($mg.m^{-3}$)	Not validated	Not validated	Not validated	0.005-0.5	0.3-19	Not validated
Required uncertainty (k = 2) as % of emission limit (emission limit being taken from AEL range)	30%	40%	(no pan-European requirement, 25% in some nations)	30%	20%	None yet

[a] from non-ferrous metals Best Available Techniques Conclusions (BATC) legislation. [b] from wood-based panels BATC. [c] from organic solvents BATC.



CMI stack flow simulator facility



CFD model of swirling stack flow

Stakeholder Outcomes and Impact

Stakeholder	Impact
Public	• Progress towards zero impact on health and the environment from pollution • Lessened burden on tax payers (realising €860-2800M monetised benefits) • Confidence that the regulatory system is fit for purpose
National Regulators	• Confidence when a breach is real and that any punitive action taken will stand up to scrutiny • New knowledge of which PFAS are emitted facilitating setting future site permits and emission limits
Process plant operators	• Emissions assessed against validated methods • Harmonised reporting and assessment of legal compliance • Confidence in the measurement and reporting framework
Emission monitoring organisations	• Able to offer services fit for enforcement of IED2.0 • New revenue streams based on new PFAS method
Proficiency testing providers / national accreditation bodies	• Participants fairly assessed against justifiable scheme pass/fail criteria based on method validation uncertainties
Science / Metrology	• Peer review papers (incl. National Regulator Position Paper), new infrastructure available for PFAS experiments, university lecture courses for the next generation of emission scientists
Policy makers	• Comparable data of known uncertainty reported into the Industrial Emissions Portal Regulation • Tracking of progress under IED2.0 and formulation of future legislation
CEN/TC 264 & Task Force Emissions	• Formerly validated methods for HCHO (17638) and HF (17340) published as full standards (EN designation) and therefore adopted across all CEN member nations • New method for monitoring PFAS • Revision of EN 15259 • New guidance documents for - *combining measured values and uncertainties for summation measurands* - *use of uncertainty in legal compliance*

Partners

Letters of support