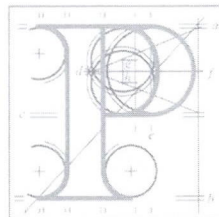


Our Case Number: ABP-318802-24



An
Coimisiún
Pleanála

Cobh Action for Clean Air
Gort Na Fleur
High Roadle
Cobh
Co. Cork

Date: 22 December 2025

Re: Proposed development of a resource recovery centre (including waste-to-energy facility) in Ringaskiddy, County Cork.

Dear Sir / Madam,

An Coimisiún Pleanála has received your recent submission in relation to the above mentioned proposed development and will take it into consideration in its determination of the matter.

The Commission will revert to you in due course with regard to the matter.

Please be advised that copies of all submissions / observations received in relation to the application will be made available for public inspection at the offices of the local authority and at the offices of An Coimisiún Pleanála when they have been processed by the Commission.

More detailed information in relation to strategic infrastructure development can be viewed on the Commission's website: www.pleanala.ie.

If you have any queries in the meantime please contact the undersigned officer of the Commission. Please quote the above mentioned An Coimisiún Pleanála reference number in any correspondence or telephone contact with the Commission.

Yours faithfully,

Kevin McGettigan

Kevin McGettigan
Executive Officer
Direct Line: 01-8737263

PA04

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64 Marlborough Street
Dublin 1
D01 V902

From: Mary Hurley <marykatrinahurley62@gmail.com>
Sent: Friday 14 November 2025 20:08
To: LAPS@pleana.ie
Cc: Kevin McGettigan <k.mcgettigan@pleanala.ie>
Subject: Case No 318802 Submission of Cobh Action for Clean Air

Caution: This is an **External Email** and may have malicious content. Please take care when clicking links or opening attachments. When in doubt, contact the ICT Helpdesk.

Dear Sir/ Madam enclosed find the observations of Cobh Action for Clean Air re case no 318802.

We have previously submitted in 2016 but we were unable to upload our observations to this current application. Suzanne Damery of the Ballymore Residents Association advised that I could send our observation to An Coimisiun using the above email address, I have also cc'd Kevin McGettigan.

Can you please confirm receipt of our submission on Monday next (as early as possible) as we want to make sure that our submission is included. If there is a problem we will pay the 50 euro fee if absolutely necessary.

My email is marykatrinahurley62@mail.com

Yours faithfully,

Mary Hurley

Chairperson for Cobh Action for Clean Air

Cobh Action for Clean Air,

Gort na Fleur,

High Road,

Cobh,

Co. Cork.

P24DF72

14/11/2025

Mobile 086 8162448

Email marykatrinahurley62@gmail.com

Case Number: ABP-318802-24

Re: proposed development of a resource recovery Centre (including waste-to-energy facility) in Ringaskiddy, County Cork

Dear Sir/Madam,

Please find enclosed observations from our group, Cobh Action for Clean Air on the above proposal. In our submission we make specific observations on the following: the climate impact assessment, air quality, impacts on human health, inadequacy of proposal facility design in the applicant's submission to the Coimisiun.

We have submitted observations rejecting this planning application since 2001. Three planning inspectors who assessed all the data and who convened the oral hearings rejected the applications on a wide range of grounds, and these are still valid. Given the life span of the proposed development, we ask that the Coimisiun give the communities of East Cork the opportunity to interrogate the applicant's submission in an oral hearing.

We have already submitted in 2016 so have paid prior fee.

Yours faithfully,

Mary Hurley

Chairperson for Cobh Action for Clean Air

Observation No.1

This observation is submitted on behalf of Cobh Action for Clean Air. It has been prepared by Dr Orla Kelleher, assistant professor of environmental and climate law at Maynooth University.

Gort na Fleur, High Road Cobh Co. Cork P24DF72

Email Orla.kelleher@mu.ie

Climate impact assessment

The technical summary of the EIAR describes the projected carbon dioxide and nitrous oxide emissions from the construction of the incinerator as 'not significant' in the context of Ireland's total GHG emissions. At the operational phase, it claims that 'the contribution to total greenhouse gas emissions is minor in the context of strategic infrastructure. In addition, the export of surplus electricity to the national grid (18.5MW) will have a direct benefit in terms of preventing greenhouse gas emissions from the production of that electricity in fossil fuel based power stations. Some of the energy generated is renewable and will displace energy currently generated via fossil fuels'. At the operational phase, emissions are estimated at between 69,096-124,699 tonnes of CO₂eq per annum taking into account factors such as emissions savings due to diversion from landfill and energy generation.

The Climate Chapter of the EIAR asserts that the proposed development 'is aligned with... plans, strategies and objectives' outlined in section 15 of the revised Climate Act. This is patently incorrect. There are at least two major concerns here. First, the assumptions in the EIAR seems to place strong reliance on the EPA's *With Additional Measures* (WAM) rather than the more conservative and realistic *With Existing Measures* (WEM) scenarios presented in the EPA's Ireland publication "Ireland's Greenhouse Gas Emissions Projections 2024-2055". This is to give the impression that the proposed development is compatible with Ireland's national climate objective and the objective of mitigating GHG emissions and adapting to the effects of climate change in the State. **The EIAR selectively quotes from the EPA's Emissions Projects report.** It does not mention that Ireland is projected to significantly exceed its first two carbon budgets based on both the WAM and WEM scenarios. As the EPA notes:

- Budget period 1 (2021-2025) of 295 Mt CO₂eq is projected to be exceeded by between 8 to 12 Mt CO₂eq. Budget period 2 (2026-2030) of 200 Mt CO₂eq is also expected to be exceeded by a significant margin of 77 to 114 Mt CO₂eq (with carryover from Budget period 1).
- Additional measures and accelerated implementation of existing measures is necessary to meet both National and EU targets. Projected gaps to National and EU 2030 targets reported this year are larger than last year due to more conservative delivery of measures and associated estimates of emission reductions by 2030.

This is the climate governance context in which the application for development consent is being sought. Put simply, Ireland is projected to exceed its first two carbon budgets based on both WEM and WAM scenarios. This is significant in the context of the proposed development because it shows that **there is effectively no GHG emissions headroom in the first two carbon budgets to allow for the development of the Ringaskiddy Resource Recovery Centre.**

Furthermore, the Joint Oireachtas Committee on Climate, Environment and Energy has recently advised that the Minister should ensure that the carbon budgets 3 and 4 align with 'Paris Test' and not temperature neutrality as proposed in the draft budget. If followed, this will likely lead to smaller budgets for the 2031-2040 period. In the context of a shrinking carbon budget, the proposed development, which is a project that causes emissions, would end up taking an ever-larger share of the remaining carbon budget.

The EIAR selectively quotes from the Waste chapter of the Climate Action Plan 2025 (CAP 2025) to suggest that the proposed development is consistent with it. The EIAR refers to general waste policies like levies on landfill and widespread segregation of waste in CAP2025. However, it omits that **one of the key measures identified as 'critical to success' for delivering the sectoral emissions ceiling for waste ('other'), the commitment to 'Reduce Waste sent to Landfill and/or Incineration' (pg 156 of CAP25).** This makes clear that contrary to what the EIAR suggests the proposed development is not compatible with CAP 2025 or Ireland's climate objectives.

In *Friends of Killymooney Lough v An Coimisiún Pleanála* [2025] IEHC 407, the High Court identified some potential considerations for projects that cause emissions like the proposed development. Humphreys J notes at para 172 that:

- (i) **All consent functions have to be exercised as far as practicable in a manner consistent with climate goals** – as required by s. 15 of the 2015 Act as amended by the 2021 Act.
- (ii) **Compatible essentially means contributing to the goals set out.** Thus a project has to be either climate-neutral (not causing emissions, or any emissions being balanced by off-sets), or else provided for in the relevant climate action plan (either as a specific project or as part of a category of projects which are sufficiently identifiable by size and number such that the commission can determine whether any individual grant of permission would be compatible with the plan). The commission is not a catch-all national policy-making body – Government has to be specific enough to allow the commission to make individual decisions. In the absence of specificity the commission may not be able to come lawfully to a conclusion of consistency.
- (iii) **The commission's conclusion that the project is compatible with such goals can be challenged if irrational or unreasoned, or if based on flawed reasons.**
- (iv) **Only the additional GHG emissions of the project are crucial,** bearing in mind that the scenario of no consent is not normally one of no emissions but of an alternative (sometimes higher) level of emissions. Displacement effects such as relocation of projects may be relevant in some cases but in other cases relocation may not lead to higher emissions given the continually intensifying global focus on renewable energy and the many areas of the world where renewables are more readily accessible than here (solar energy in the tropics, geothermal power in Iceland, and so on).

- (v) **Consistent with the 2015 Act, the commission may determine that it is not practicable to ensure compliance with climate goals. This may arise by virtue of imperative requirements of social order such as energy security or other essential infrastructure, or even where energy projects based on fossil fuels are required to stabilise the grid during periods when the winds are not blowing, to put it colloquially. All that is a matter to be debated in an appropriate case.**
- (vi) Emissions can also be challenged on any other legally cognisable basis, such as the polluter pays principle, which potentially applies even if the project is accounted for in a climate plan or is required by imperative reasons of public policy. **Subject to argument in the appropriate case, there is no immediately obvious reason why promoters of projects that cause emissions should not be required to put in place all necessary offsets – failure to condition that would arguably be a breach of the EU law principle that the polluter pays, which is one of the pillars of EU environmental law.** Otherwise, the commission would be facilitating carbon fly-tipping on the atmospheric commons.

In *Friends of Killymooney Lough v An Coimisiún Pleanála & Ors* (No 2) [2025] IEHC 576, Humphreys J refused leave to appeal to the Court of Appeal but provided further guidance on the steps to be taken by the planning authority / the Commission when deciding on an application for permission for development which would cause carbon emissions.

'The 2015 Act obligations are due to be clarified by the Supreme Court, at least insofar as they relate to projects that assist in reduction of emissions, in the appeal in *Coolglass*, but subject to such clarification there appear to be **three essential steps involved in assessing a project that causes emissions:**

- (i) **identification of net emissions** – the budgetary nature of the process implies a need to quantify net greenhouse gases (GHGs) attributable to the project, including what would be scope 3 in EIA terms, net of mitigation and offsets (including mitigation/offsets proposed to be conditioned), as compared with a counterfactual baseline scenario of no project (and thus a baseline scenario which may well not involve no emissions but rather an alternative level of emissions);
- (ii) **evaluation against targets** – in the event that there are net GHG emissions, a determination of whether the emissions so identified come within the available headroom both nationally and sectorally as provided for in relevant climate policy instruments; and
- (iii) **evaluation of practicability of compliance** – in the event of any excess of emissions over available headroom, a determination as to whether the noncompliance involved is justified by considerations of practicability, such as for example by imperative needs of energy security'.

In considering this recent guidance from the High Court, it is noteworthy that **the proposed development is not climate neutral nor is it provided for within Climate Action Plan 2025. On the contrary, the only mention of this category of project (incineration) in CAP2025 is to refer to the need to reduce waste that is sent to incineration.**

Experience in the UK suggest that investing in more energy to waste facilities can undermines recycling rates.¹ This is because local authorities responsible for disposing of waste become locked into contracts with waste to energy providers with 'deliver or pay' clauses that demand a minimum amount of waste to be sent to incinerators for burning. These contracts have left councils unable to explore the use of more environmental solutions, such as recycling, for fear of a fine for breach of contract. Data from the UK shows a correlation between higher rates of incineration and lower recycling rates.²

As already mentioned, given how significantly off course Ireland already is to meet its carbon budgets (and several sectoral emissions ceilings), there is simply no available headroom nationally or sectorally for the proposed development.

There is significant emphasis put in the EIAR on the fact that the thermal energy generated by the burning of waste will be recovered and will give an electrical output of about 21 MWe with a net electrical output from the plant for export to the national grid of 18.5Mwe. It is suggested that the export of 18.5MWe will give a direct benefit in terms of GHG emissions which would have been released in the production of 18.5MWe from fossil-fuel burning power stations. Recent analysis from the UK suggests that burning household rubbish to generate electricity has a similar amount of greenhouse gases for each unit of energy as coal power (the most emissions intensive form of energy).³ This analysis found that 'energy produced from waste is five times more polluting than the average UK unit of electricity'. This is because increasing the proportion of hard-to-recycle plastic waste sent to incinerators will increase the carbon impacts of incineration. The same analysis found that burning plastic produces 175 times more CO₂ than burying it in landfill. Of course, the answer to the plastics crisis is not incineration or landfill but reducing single-use plastics in the first instance and moving towards more reusable options.

Friends of the Earth Limited v Secretary of State for Levelling Up, Housing and Communities, West Cumbria Mining Limited, Cumbria County Council [2024] EWHC 2349 (Admin) is highly instructive for the 'displacement effect' or 'market substitution' argument. The developer had argued that combustion emissions from Whitehaven coal mine would not give rise to a net increase in emissions because it would replace coal being supplied from US coal mines to the UK and European steel-making market. Holgate J clarified that the developer bears the burden of establishing that there would be no net increase in emissions as a result of the US substitution effect and needed to produce 'full information' on how the two effects balanced each other out to enable the public to respond to such material. The developer would have had to show a very high degree of substitution not far short of perfect substitution and that there would be no demand for US coal substituted by that Whitehaven coal. On the facts, neither of these had been addressed by the developer in their environmental statement materials.

This issue has yet to be fully considered by the Irish courts. However, there is a strong argument that a similar approach should be taken to the issue of substitution here where it is claimed that electricity generated from burning waste will have a direct benefit in terms of preventing greenhouse gas emissions from the production of that electricity in fossil-fuel based power stations and benefits from the replacement of landfilling. The developer does not appear to have

¹ Esme Stallard, Matt McGrath, Patrick Clahane & Paul Lynch, 'Burning rubbish now UK's dirtiest form of power' (BBC, 15 October 2024) <https://www.bbc.com/news/articles/cp3wxgie5pwo>

² Maja Darlington, Shlomo Downen and Josh Downen, 'Why burning plastic won't solve the plastic crisis' (Greenpeace, 28 July 2022) <https://www.greenpeace.org.uk/news/incineration-burning-plastic-crisis/>

³ Ibid.

discharged the evidentiary burden of showing a very degree of substitution to show that burning waste for electricity would actually reduce emissions from fossil fuel generated electricity.

It is finally worth noting that there has been a moratorium on new incinerators in Wales (since 2021), Scotland (since 2024) and growing pressure to adopt one in England due to concerns that they act as a barrier to achieving zero waste, net zero and a circular economy. These are all jurisdictions that are significantly outperforming Ireland in their efforts to achieve net zero emissions by the second half of the century. It is difficult to see how a new incinerator in a jurisdiction like Ireland - that is much further behind its nearest neighbours on its decarbonisation journey – could permit an emissions generating incinerator where there is clearly no available headroom for it within its carbon budgets.

Air quality assessment

The EIAR chapter on air quality states that at the operation phase modelling results indicate that the ambient ground level concentrations will be below the relevant air quality standards for the protection of human health for all parameters under maximum and abnormal operation of the facility. It states that number of measures have been incorporated into the design of the proposed development to ensure that emissions from the plant do not exceed regulatory emission limit values as outlined in Industrial Emissions Directive 2010/75/EU. The EIAR does refer to the 2026-2030 limit values under Directive (EU) 2024/2881 of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe (recast). However, it does not benchmark the likely effects of the proposed development on air quality against the WHO 2021 Guidelines, despite the fact that Ireland's Air Quality Strategy commits Ireland to achieving the final WHO Guideline Values by 2040. This is particularly relevant for air pollutants such as particular matter and nitrous oxide.

In light of the novel issues raised Dr Orla Kelleher would be happy to brief the Commission on any of the above at an oral hearing.

Observation No.2

OBSERVATION ON SID APPLICATION - Case reference: PA04.318802, Ringaskiddy Co Cork
Proposed development of a resource recovery centre (including waste-to-energy facility) by
Indaver NV t/a Indaver Ireland

Observer Name: Joseph Weston, BSc Chemistry, MRes Science of the Environment, Senior
Consultant, Energy Strategy Advisory

Gort na Fleur, High Road Cobh Co. Cork P24DF72

Email josephweston8@gmail.com

The Indaver submission is deficient because it does not address the environmental and human health impacts of incomplete degradation of toxic PFAS compounds, which is emerging as an internationally recognised concern regarding municipal incineration

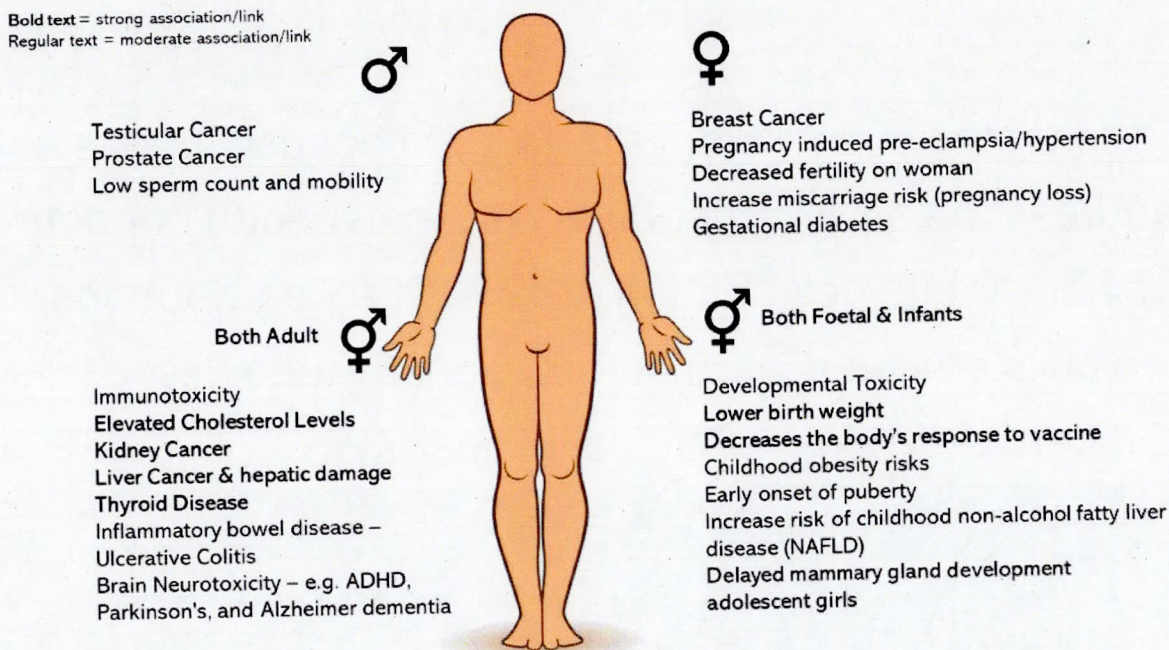


1. Executive Summary

- In addition to non-hazardous waste, the proposed Indaver incinerator will process 24,000 tonnes of hazardous waste per year [EIA 1.1.1](#).
- The combustion temperature of the facility is stated as 850C to 1000C [EIA 4.7.3.1](#), lower than typical hazardous waste incinerators which have combustion temperatures between 1100C and 1450C [EURITS](#), [WikiWaste](#).
- Per- and polyfluoroalkyl substances (PFAS) are a class of over 10,000 widely used chemicals. So significant are the environmental and human health concerns regarding

PFAS [EEA](#) that authorities from Denmark, Germany, the Netherland, Norway, and Sweden have formally initiated a process to restrict the entire class of chemicals under EU REACH legislation. [ECHA](#)

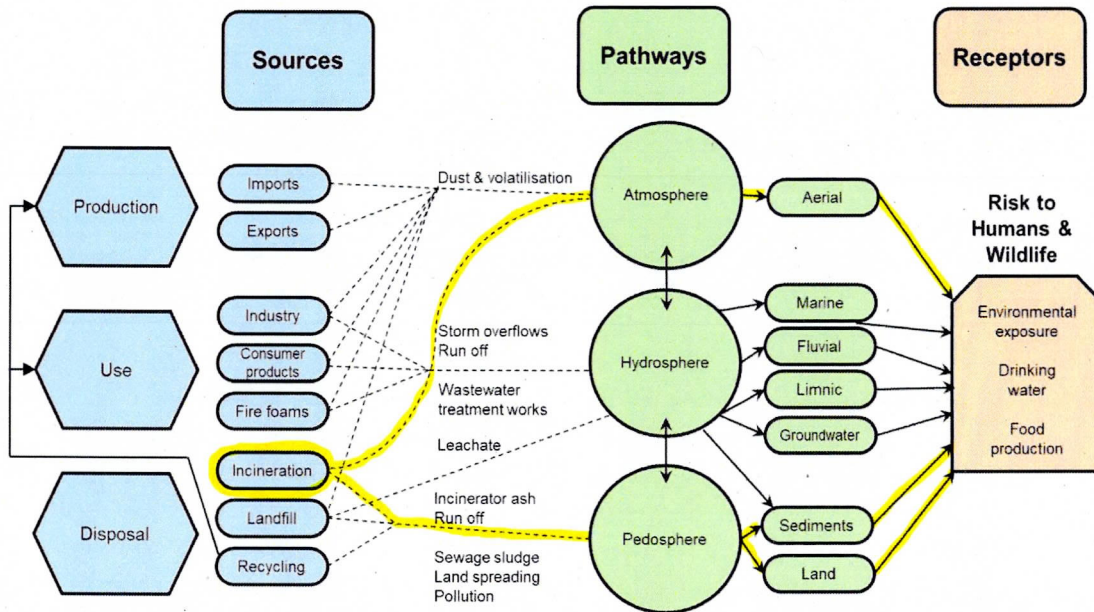
Figure 1: Effects of certain PFAS on human health, [UK Environment Agency](#)



- Although the facility will not accept PFAS restricted under POPs regulations, this restricts is only 3 chemicals out of a class of over 10,000 chemicals. PFAS chemicals are ubiquitous in municipal and industrial waste streams, it is inevitable that both the non-hazardous and hazardous waste streams that would be processed by the facility will contain PFAS [Björklund et al., UK Environment Agency](#). Based on analysis of Indaver's Lists of Wastes (LoW) (see [Section 2](#)) to be treated by the facility, PFAS will likely be present in high-very-high concentrations in many of the hazardous industrial waste streams which would be accepted by the facility.
- At 850C-1000C the combustion temperature of the facility is too low to fully break down PFAS. According to Indaver's own website temperatures of 1150C should be used to ensure that PFAS are safely treated [Indaver](#). The UK Environment Agency recently published a review of the evidence on incineration of PFAS and concluded that temperatures of at least 1100C should be used.
- Incomplete breakdown of PFAS results in emissions to air of uncombusted PFAS and Products of Incomplete Combustion (PICs) - many of which are also known of suspected to be toxic and some of which are known to have global warming potentials tens of thousands of times higher than CO₂ [UK Environment Agency](#). Two prominent examples are:
 - Tetrafluoromethane (CF₄) which has a 50,000-year atmospheric lifetime ([Say et al., 2021](#))
 - Trifluoro-acetic acid (TFA): which poses a "global threat from irreversible accumulation" ([Arp et al., 2024](#))

- Emissions to air can contaminate a wide area surrounding the facility, as well as producing contaminated fly ash. Therefore, the proposed facility will result in significant pollution impacting human and environmental health.

Figure 2: Source, Pathway, Receptor analysis of PFAS contamination, adapted from [UK Environment Agency](#) to highlight Incineration pathway



- Indaver's submission is deficient in that it:
 - Does not consider the certain presence of PFAS in incoming waste streams
 - Does not consider to what extent the combustion process will degrade PFAS or modify PFAS into PICs, and the presence of PFAS and PICs in effluents (whether solid, liquid, or gaseous)
 - Does not consider the effectiveness of the scrubber system to remove PFAS and PICs
 - Does not consider the formation and impact of PICs having high global warming potential on the facilities CO₂e emissions
 - Does not consider the widespread environmental pollution and human health impacts PFAS and PICs released from the incinerator and deposited in the surrounding towns, villages, farmland, and watercourses.
- Based on the precautionary principle, the criteria for which are met in this case, An Coimisiún Pleanála should refuse planning permission for the facility.

2. PFAS are a large group of chemical compounds of significant concern to the environment and human health

Per- and polyfluoroalkyl substances (PFAS) are a large group of thousands of synthetic chemicals. These chemicals have been widely used in industrial and consumer products since the 1950s due to their physical and chemical properties, including water and oil resistance, chemical and heat stability [Environmental Protection Agency](#), friction reduction and surface tension lowering. The European Chemicals Agency has described PFAS as "very persistent in the environment," with some forms taking more than 1000 years to degrade. [Pinsent Masons](#) This exceptional persistence has earned them the nickname "forever chemicals." PFAS can be found in many everyday products including outdoor clothing and equipment, textiles, paints, food packaging, photographic coatings, non-stick coatings on cookware, as well as fire-fighting foam. [Environmental Protection Agency](#)

The environmental concerns surrounding PFAS are substantial and widespread. PFAS are extremely persistent, resisting breakdown over extended periods once introduced into the environment, and one of the main ways in which PFAS contaminate food is by gradually accumulating in water, fish, shellfish, plants and animals. [EFSA](#) Scientists from the University of York have found trifluoroacetic acid (TFA), a breakdown product of other PFAS compounds, in almost every river they tested across the UK, from Scotland down to Wales and Northern Ireland. [Waterwise Pumps](#) The EPA's ELEVATE study in Ireland investigated human exposure to PFAS, with PFAS being identified in indoor air and dust, drinking water and human milk samples. [Environmental Protection Agency](#) The contamination is particularly severe near sites where PFAS have been heavily used, such as military bases, airports, and manufacturing facilities. In Ireland, a number of PFAS are on the REACH candidate list of substances of very high concern, with the European Chemicals Agency having submitted a proposal to restrict the use of PFAS in fire-fighting foams. [Environmental Protection Agency](#)

The health concerns associated with PFAS exposure are significant and growing as research continues.

Human exposure to PFAS is widespread across the developed world. In a 2012 study reported by the US National Institute of Environmental Health Sciences, 97% of Americans were found to have PFAS in their blood. [World Economic Forum](#) Recently 24 of the EU's top politicians were tested and found to be contaminated with PFAS, for half of the EU leaders, contamination exceeded levels beyond which health impacts cannot be ruled out, showing that the impacts of PFAS contamination affect us all. [EU leaders contaminated with PFAS "forever chemicals"](#)

PFAS are known to 'bioaccumulate' in people, animals and plants and some PFAS have been linked to an increased risk of cancer, high cholesterol, reproductive disorders, hormonal disruption (also known as endocrine disruption) and weakening of the immune system. [Environmental Protection Agency](#) Studies suggest the toxic effects of PFAS on humans, particularly on the liver, kidney, thyroid and immune system, even at low doses, with these toxic effects thought to negatively impact a range of human functions including metabolism, respiration and cognition. [European Commission](#)

Given the widespread contamination and health risks, disposal and destruction of PFAS-containing materials has become a critical issue, with incineration emerging as one potential

treatment method. However, significant concerns exist regarding the incineration of PFAS-contaminated waste given uncertainty as to whether this adequately eliminates PFAS, since the suitability of municipal incinerators for complete destruction is uncertain, and there is limited capacity of high-temperature incineration (1100-1450C) in Europe. [European Environment Agency](#).

Certain PFAS compounds are restricted under two categories of EU chemicals legislation:

Restricted under EU's Persistent Organic Pollutants (POPs) Regulations:

- PFOS (perfluorooctanesulfonic acid) and its derivatives since 2009/2010.
- PFOA (perfluorooctanoic acid), its salts and related compounds.
- PFHxS (perfluorohexane sulfonic acid), its salts and PFHxS-related compounds.

Restricted under EU REACH regulations:

- Perfluorocarboxylic acids (C9-14 PFCAs), their salts and related substances
- Undecafluorohexanoic acid (PFHxA), its salts and related substances (from April 2026)

Classed as Substances of Very High Concern under EU REACH regulations:

- 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (HFPO-DA), a short-chain PFAS substitute for PFOA in fluoropolymer production, was the first substance added to the Candidate List. Its ammonium salt is commonly known as GenX.
- perfluorobutane sulfonic acid (PFBS) and its salts, a replacement of PFOS; and
- perfluoroheptanoic acid (PFHpA) and its salts.

3. The facility will process waste streams certain to contain PFAS, potentially in high concentrations

The proposed Indaver facility will process both non-hazardous municipal wastes, as well as hazardous industrial and municipal waste. Given the ubiquity of PFAS compounds there can be no doubt that the nonhazardous and hazardous waste streams to be processed by the facility will contain PFAS. The presence of hazardous waste fractions means that highly concentrated PFAS waste is considerably more likely to be present. The facility will not treat waste known to contain restricted Persistent Organic Pollutants in concentrations above limits defined in Annex IV to Regulation (EC) No 850/2004. Therefore only three PFAS out of a class containing more than 10,000 compounds are not permitted to be disposed of in the Indaver facility.

Unlike halogenated compounds which have a dedicated waste code to aid in safe disposal, there is no dedicated waste code for PFAS containing wastes, therefore PFAS can be found in wastes across a wide range of waste codes. Waste from two different facilities, categorised under the same hazardous waste code, could contain no PFAS, or could contain very high concentrations of toxic PFAS.

Listed below are categories of hazardous waste which will be accepted by the Indaver facility according to [Appendix 4.1 List of Waste \(LoW\) Codes Proposed by Indaver for Acceptance](#). The Indaver facility will process up to 24,000 tonnes per annum of these hazardous waste streams.

For each hazardous LoW code which will be processed by the facility, evidence is provided that this waste fraction is highly likely to contain PFAS compounds.

LoW Chapter 06 - Inorganic Chemical Processes

WASTE CODES:

06 13 02 - Spent activated carbon**

Evidence for presence of PFAS:

- Activated carbon is extensively used throughout Europe for removing PFAS from drinking water and wastewater, resulting in spent carbon that contains concentrated PFAS. Granular activated carbon (GAC) filtration is the most widely implemented and studied technology for PFAS removal in European water treatment facilities. Treatment facilities regularly replace spent activated carbon that has reached maximum PFAS adsorption capacity, creating a waste stream with high concentrations of these persistent substances. Given concerns over disposal of these highly concentrated waste streams in landfills where they can leach back into the environment, hazardous waste incineration is the typically considered a more suitable disposal route. Agency Environmental.

LoW Chapter 07 - Organic Chemical Processes

WASTE CODES:

07 01 01 - Aqueous washing liquids and mother liquors*

07 01 04 - Other organic solvents, washing liquids and mother liquors*

07 02 01 - Aqueous washing liquids and mother liquors*

07 02 04 - Other organic solvents, washing liquids and mother liquors*

07 02 11 - Sludges from on-site effluent treatment containing dangerous substances*

07 04 01 - Aqueous washing liquids and mother liquors*

07 04 04 - Other organic solvents, washing liquids and mother liquors*

07 05 01 - Aqueous washing liquids and mother liquors*

07 05 04 - Other organic solvents, washing liquids and mother liquors*

07 05 10 - Other filter cakes and spent absorbents*

07 05 11 - Sludges from on-site effluent treatment containing dangerous substances*

07 05 13 - Solid wastes containing dangerous substances*

07 06 01 - Aqueous washing liquids and mother liquors*

07 06 04 - Other organic solvents, washing liquids and mother liquors*

07 06 11 - Sludges from on-site effluent treatment containing dangerous substances*

07 07 01 - Aqueous washing liquids and mother liquors*

07 07 04 - Other organic solvents, washing liquids and mother liquors*

07 07 10 - Other filter cakes and spent absorbents*

07 07 11 - Sludges from on-site effluent treatment containing dangerous substances*

Evidence for presence of PFAS:

- Organic chemical manufacturing processes that produce or use PFAS generate multiple waste streams including washing liquids, solvents, mother liquors, reaction residues, and process sludges. These wastes contain PFAS compounds across the entire spectrum of approximately 10,000 synthetic organic fluorinated substances regulated under European chemicals legislation. [ECHA](#)
- Important uses of PFAS in the chemical industry include their uses as processing aids in the polymerization of fluoropolymers, the production of chlorine and sodium hydroxide, and the production of other chemicals including solvents [RSC Publishing](#). Washing liquids, spent solvents, distillation residues, and sludges from facilities

producing or using PFAS-containing products would therefore contain these compounds in significant concentrations.

- Ireland’s extensive pharmaceutical, biologics, and chemical manufacturing sector is a large user of PFAS compounds [ispe](<https://ispe.org/pharmaceutical-engineering/ispeak/navigating-pfaschallenge-pharma#:~:text=Ester Lovsin Barle%2C PhD,supply disruption of critical materials.>) (Pfizer, Johnson & Johnson, etc.)

LoW Chapter 08 - Coatings, Adhesives, Sealants and Printing Inks

<p>WASTE CODES: 08 01 13* - Sludges from paint or varnish containing organic solvents or other dangerous substances</p>	<p>08 03 14* - Ink sludges containing dangerous substances 08 03 17* - Waste printing toner containing dangerous substances</p>
<p>08 01 15* - Aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances 08 01 19* - Aqueous suspensions containing paint or varnish containing organic solvents or other dangerous substances 08 03 12* - Waste ink containing dangerous substances</p>	<p>08 04 09* - Waste adhesives and sealants containing organic solvents or other dangerous substances 08 04 13* - Aqueous sludges containing adhesives or sealants containing organic solvents or other dangerous substances 08 04 15* - Aqueous liquid waste containing adhesives or sealants containing organic solvents or other dangerous substances</p>

Evidence for presence of PFAS:

- Wastes from coatings, paints, adhesives, sealants and printing inks manufacturing and use where PFAS are employed as functional additives for flow improvement, levelling, wetting, and performance enhancement.
- The proposed EU PFAS restriction affects a wide range of coating raw materials including fluorinated surfactants, waxes, binders, and additives, with every fluorinated raw material in existing formulations requiring careful re-evaluation [European-coatings](#). PFAS have found extensive applications in the manufacturing of paints, adhesives, waxes, and polishes due to their specific chemical and physical properties that make them ideal surfactants [RSC Publishing](#). During the manufacturing phase, emissions occur when PFAS polymers are applied as surface coatings, which can expose workers or be released via insufficiently cleaned wastewater or spills [European Environment Agency](#).

LoW Chapter 11 - Chemical Surface Treatment and Coating of Metals

<p>WASTE CODES: 11 01 09 - Sludges and filter cakes containing dangerous substances*</p>	
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Evidence for presence of PFAS:

- The UK Environment Agency and Norwegian Environment Agency identified PFBS-related substances used as mist suppressants for metal electroplating, with PFAS present in landfill leachate, wastewater and biosolids [Publishing Service](#)
- ECHA's evaluation reached provisional conclusions on metal plating and manufacture of metal products as one of the priority sectors for PFAS restrictions [Pinsent Masons](#)

- Chrome electroplating is the most significant contributor as it relates to PFAS use, with PFAS used as surfactants to reduce the surface tension of the electrolyte solution, historically at concentrations of 5-10% to limit bubble development and emission of hexavalent chromium aerosols
- [ITRC](#) • Treatment of wastewater at surface finishing facilities may result in PFAS accumulation in wastewater treatment sludges, which are then sent offsite for land disposal or incineration [PFOnline](#)

LoW Chapter 13 - Oil wastes and wastes of liquid fuels

<p>WASTE CODES:</p> <p>13 05 01* - Solids from grit chambers and oil/water separators</p> <p>13 05 02* - Sludges from oil/water separators</p> <p>13 05 03* - Interceptor sludges</p> <p>13 05 07* - Oily water from oil/water separators</p>	<p>13 05 08* - Mixtures of wastes from grit chambers and oil/water separators</p> <p>13 07 01* - Fuel oil and diesel</p> <p>13 07 03* - Other fuels (including mixtures)</p> <p>13 08 99* - Wastes not otherwise specified</p>
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Evidence for presence of PFAS:

- Oil wastes and liquid fuel wastes that may contain PFAS from contamination by firefighting foam, PFAS-containing lubricants and additives, or contact with PFAS-treated materials and equipment.
- The National Consortium of Waste Oils (CONOU) in Italy launched research in 2024 to investigate the presence of PFAS in recovered waste oils and their impact on circularity, noting that while debates often centre around production sites, PFAS are highly mobile and can spread into both industrial and drinking water through emissions from user sites [Renewable Matter](#). Less is known about potential releases of PFAS from uses such as oil extraction and mining, though PFAS applications in these sectors have been documented [European Environment Agency](#).

LoW Chapter 15 - Packaging and Protective Materials

<p>WASTE CODES:</p> <p>15 01 10* - Packaging containing residues of or contaminated by dangerous substances</p> <p>15 02 02* - Absorbents, filter materials, wiping cloths and protective clothing contaminated by dangerous substances</p>	
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Evidence for presence of PFAS:

- Food-contact packaging materials and protective absorbents contaminated with PFAS represent a significant waste stream in Europe. PFAS have been widely used in packaging for their water and grease resistance properties, particularly in food service applications. PFAS are valued for their water and grease resistance and thermal stability, making them useful in packaging applications such as fast-food wrappers, pizza boxes, microwave popcorn bags, takeaway containers, and pharmaceutical blister packs [Anthesis Global](#).

- The EU Regulation (EU) 2025/40, the Packaging and Packaging Waste Regulation (PPWR), published in January 2025, will from 2026 prohibit PFAS in food packaging in concentrations greater than 25 parts-per-billion for any PFAS measured with targeted PFAS analysis, 250 ppb for the sum of PFAS, and 50 parts-per-million for all PFAS including polymeric PFAS [Food Safety](#).

LoW Chapter 16 - Wastes Not Otherwise Specified

<p>WASTE CODES:</p> <p>16 01 07 - Oil filters*</p> <p>16 03 03 - Inorganic wastes containing dangerous substances*</p> <p>16 03 05 - Organic wastes containing dangerous substances*</p> <p>16 05 07 - Discarded inorganic chemicals consisting of or containing dangerous substances*</p>	<p>16 05 08 - Discarded organic chemicals consisting of or containing dangerous substances*</p> <p>16 07 09 - Wastes containing other dangerous substances*</p> <p>16 10 01 - Aqueous liquid wastes containing dangerous substances*</p> <p>16 10 03 - Aqueous concentrates containing dangerous substances*</p>
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Evidence for presence of PFAS:

- These catch-all waste categories could include PFAS-contaminated wastes from diverse industrial processes across Ireland. Oil filters, inorganic and organic industrial wastes, discarded chemicals (both inorganic and organic), aqueous liquid wastes, aqueous concentrates, and other wastes containing dangerous substances may contain PFAS from facilities that use or manufacture products containing these compounds. PFAS are employed across a wide range of industrial and consumer sectors. Industrial waste sites are a source of PFAS emissions. [European Environment Agency](#).
- Oil filters from facilities using PFAS-containing lubricants or maintaining firefighting systems with PFAS-based foams could contain these substances. Inorganic and organic industrial wastes from PFAS manufacturing or use sites would contain these compounds.
- Discarded inorganic and organic chemicals from facilities transitioning away from PFAS or from closed facilities would represent additional sources.
- Aqueous liquid wastes and aqueous concentrates from industrial processes involving PFAS would concentrate these compounds.

LoW Chapter 17 - Construction and Demolition Wastes

<p>WASTE CODES:</p> <p>17 01 06* - Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances</p> <p>17 02 04* - Glass, plastic and wood containing or contaminated with dangerous substances</p>	<p>17 05 03* - Soil and stones containing dangerous substances</p> <p>17 05 05* - Dredging spoil containing dangerous substances</p> <p>17 06 03* - Other insulation material consisting of or containing dangerous substances</p> <p>17 09 03* - Other construction and demolition wastes containing dangerous substances</p>
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Evidence for presence of PFAS:

- The EU Joint Research Centre reports that construction and demolition waste represents about 40% of waste generated in the EU, consisting of materials including

plastics, insulation and wood among others [European Commission European Circular Economy Stakeholder Platform](#)

- The European Commission identified construction products as one of the priority categories for action under the Circular Economy Action Plan where PFAS are used and present “PFAS are used in many of the priority categories for action of the CEAP (textiles, construction products, electronics, packaging and plastic).” [EUR-Lex](#)
- PFAS have been used in building materials including furniture and construction products for their water and stain-resistant properties [Compliance Gate](#)

LoW Chapter 19 - Waste Management Facilities

<p>WASTE CODES: 19 02 05 - Sludges from physico-chemical treatment containing dangerous substances* 19 07 02 - Leachate from landfills containing dangerous substances* 19 08 11 - Sludges from biological treatment of industrial wastewater*</p>	<p>19 11 05 - Sludges from on-site effluent treatment* 19 13 01, 19 13 03, 19 13 05*, 19 13 07* - Wastes from soil and groundwater remediation**</p>
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Evidence for presence of PFAS:

- The UK Environment Agency identified PFAS in landfill leachate, wastewater, sludges and biosolids as sources of environmental contamination [Publishing Service](#)
- Irish EPA research through the FUEL study investigated PFAS in landfills, identifying potential risk of PFAS contamination from landfills to surrounding groundwater and waterways from disposal of leachate via wastewater treatment plants [Environmental Protection Agency](#)
- PFAS can be released to the environment from industrial and municipal wastewater treatment plants, landfills, recycling and incineration plants in Europe [EUR-Lex](#)

LoW Chapter 20 - Municipal Wastes

<p>WASTE CODES: 20 01 27 - Paint, inks, adhesives and resins containing dangerous substances* 20 01 29 - Detergents containing dangerous substances* 20 01 37 - Wood containing dangerous substances*</p>	
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Evidence for presence of PFAS:

- The European Environment Agency reports that textiles are one of the biggest sources of PFAS pollution in Europe, with PFAS widely used in textile-based products for waterproofing, oil, dirt and heat protection Agency European
- The EEA identifies PFAS-coated textiles and consumer products as major exposure pathways, with people mainly exposed through drinking water, food packaging, dust, creams, cosmetics and PFAScoated textiles [European Environment Agency](#)
- The EEA assessment reports that over half of disposed textiles in Europe go to landfill or incineration, leading to significant PFAS entering the waste stream [European Environment Agency](#)

4. The combustion temperature of the proposed facility is too low to fully degrade PFAS and will result in contamination of the surrounding environment and impact human health

The Indaver facility would operate at a temperature below that necessary to safely remove PFAS

Extensive research, including by Indaver, shows that the proposed combustion temperature range of 850-1000°C for the incinerator falls below the scientifically established threshold for complete PFAS mineralisation, which requires temperatures of approximately 1,100°C with appropriate residence times [Indaver](#), [European Environment Agency](#), [UK Environment Agency](#). The chemistry of PFAS and the strength of the carbon-fluorine (C-F) bond, which has a high bond dissociation energy, explains why high temperatures are essential.

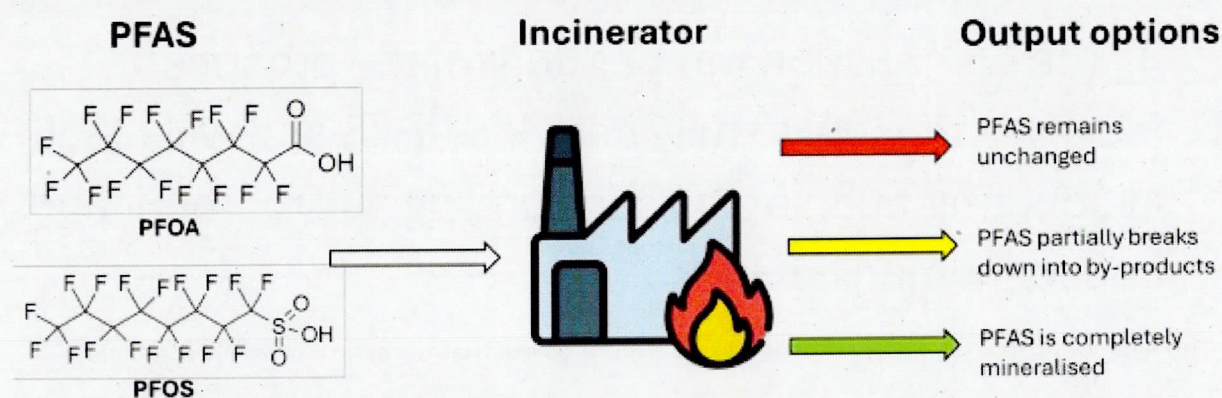
Figure 3: Indaver website on required temperature to remove PFAS

Destruction of PFAS in rotary kilns highly efficient with low deposition rates

For 35 years now, Indaver has been offering a solution for waste flows generated in industry or in wider society, for example in hospitals. In the rotary kiln many different molecules are broken down or destroyed. Three elements guarantee this decomposition: **the high temperature of at least 950°C (and average of 1050°C)**, combined with a long time in the furnace and good turbulence (the turning of the drum) that ensures that the waste comes into contact with fire from all sides. The installation is also equipped with an extensive flue gas cleaning system. We monitor and control numerous

Facilities of the type proposed by Indaver, operating at the temperature range 850-1,000°C, have been identified as problematic throughout the UK because they are unsuitable for complete PFAS mineralisation. [UK Environment Agency](#). Municipal waste incinerators may achieve destruction rates exceeding 99.9% for some PFAS, but their typical operating temperatures are insufficient for complete mineralisation (i.e. breaking all of the Carbon-Fluorine bonds) of PFAS compounds. This shortfall creates significant environmental and public health risks through the incomplete removal of PFAS and the formation of products of incomplete combustion (PICs), including both toxic compounds and potent greenhouse gases. [UK Environment Agency](#)

Figure 4: Pathways of PFAS destruction during incineration, [UK Environment Agency](#)



Multiple authoritative sources recommend minimum temperatures of 1,000-1,100°C for PFAS destruction [UK Environment Agency](#):

- **US EPA (2024)**: Hazardous waste incinerators may effectively destroy PFAS and minimise PICs at temperatures of approximately 1,100°C with sufficient mixing and residence time
- **UNEP (2019)**: Recommended parameters of 1,100°C with 2-second residence time for hazardous waste incineration to handle PFOS waste
- **European Chemicals Agency (ECHA, 2023)**: Literature indicates that hazardous waste incinerators at temperatures of 1,100°C are able to destroy PFAS at more than 99%
- **Environment and Climate Change Canada (ECCC, 2024)**: PFAS may not fully degrade from incineration at temperatures below 1,000°C, which may result in the formation of other volatile fluorinated compounds

Specific PICs and Their Environmental Impacts:

Greenhouse gases: The formation of perfluorocarbons such as CF_4 (carbon tetrafluoride) and C_2F_6 (hexafluoroethane) is particularly undesirable due to their: [UK Environment Agency](#)

- **High global warming potentials:** Approximately 5,700 and 11,900 CO_2 equivalents, respectively
- **Long atmospheric lifetimes:** Effectively permanent in the atmosphere
- **Strong infrared absorption:** Contributing significantly to radiative forcing

Toxic Short-Chain PFAS:

Studies indicate that at temperatures around 800°C, short-chain PFAS, such as Trifluoroacetic acid (TFA), form during incineration. TFA is possibly the most abundant PFAS in the environment and is frequently detected in water, soil, and plant tissues, raising questions about its long-term environmental accumulation and potential ecological and human health impacts. [Arp et al., 2024](#), [UK Environment Agency](#):

Atmospheric Transport and Long-Range Pollution

Many PICs are likely to be highly mobile due to their low molecular weight and are likely to partition into the atmosphere. Once released, these compounds undergo long-range transport, contributing to regional and global contamination. Knowledge gaps remain regarding PFAS atmospheric behaviour, including transport, transformation, and long-range impacts. [UK Environment Agency](#)

Detection Challenges

PIC formation during PFAS thermal degradation is highly complex and variable, with many combustion byproducts likely still unmeasured and unquantified. Most studies only assess a limited subset of PFAS, such as PFOA and PFOS, often neglecting key by-products, which can lead to underestimated emissions and an inaccurate assessment of overall destruction efficiency.

Scientists acknowledge that "there are no proven analytical technologies which have been demonstrated to detect all potential fluoro-organic by-products." [Horst et.al.](#) Of particular concern are PFAS that get volatilised or transformed into volatile organofluorine compounds and escape detection. [UK Environment Agency](#)

Atmospheric Emissions and Deposition

PFAS thermal destruction at inadequate temperatures can lead to the release of perfluoroalkyl substances and other compounds into the atmosphere. Many PICs partition into the atmosphere and undergo longrange transport. In suboptimal conditions, intermediates may recombine into stable, persistent by-products, such as perfluoroalkyl carboxylic acids (PFCAs) in the atmosphere, thereby increasing the risk of environmental contamination by wet and dry deposition. [UK Environment Agency](#)

Ash and Residue Contamination

Beyond atmospheric emissions, residual ash may contain inorganic fluoride and PFAS bound to calcium, while hydrogen fluoride (HF), a highly toxic and corrosive gas, also requires careful management. Studies have detected PFAS in slag, fly ash, and liquid waste streams from incinerators, indicating incomplete destruction and transfer of contamination to solid and liquid waste streams. [UK Environment Agency](#)

Cumulative Environmental Impact

The energy-intensive nature of incineration combined with the release of potent greenhouse gases (CF_4 and C_2F_6) means that inadequate PFAS destruction contributes both to persistent organic pollution and to climate change. The environmental and climate impacts of PFAS remediation must be considered, particularly given the energy-intensive nature of incineration. [UK Environment Agency](#)

5. The Indaver submission is deficient because it does not address the certain presence of PFAS in the waste streams to be processed by the facility and the resulting environmental and human health impacts

The Indaver submission does not make any mention of the risks of PFAS pollution resulting from the facility, despite the issue of PFAS pollution from incinerators having received growing recognition in the previous 10 years, with a recent UK Environment agency review of available research on the conditions needed to break down PFAS in incinerator facilities identifying 193 publications [UK Environment Agency](#). Given the presence of PFAS related content on Indaver's website this is not an issue that Indaver can claim to be ignorant of. Therefore, Indaver need to explain why, despite having full knowledge of this issue and full knowledge that the facility will treat waste streams containing PFAS, the EIA does not address the environmental contamination, human health impacts, and increased CO₂e equivalent emissions that will result from incomplete combustion of PFAS.

Indaver's literature review of human health impacts [Indaver](#) is especially inadequate because it seems to focus on the impacts of non-hazardous municipal waste incineration, whilst the facility will process hazardous waste in addition to municipal waste. The Literature only provides references for municipal waste incinerators in the case of references *SAHSU 2018*, *UK Health Security Agency, Vinti 2021*; or it does not specify the type of incinerators which were assessed in other references. The literature review makes one reference to hazardous waste in *Sharma 2013*, however the adverse impacts described in this study are dismissed as "much less relevant for a facility such as is proposed", despite the fact that the proposed facility will process up to 24,000 tonnes per year of hazardous industrial waste in a region where significant volumes of hazardous waste streams from the pharmaceutical and medical devices sectors are likely to be accepted.

6. The criteria to apply the precautionary principle are met in this case

The precautionary principle provides that where there are threats of serious or irreversible environmental damage, lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation. This principle is enshrined in Article 191 of the Treaty on the Functioning of the European Union (TFEU), which is directly applicable in Irish law, and is reflected in Irish planning and environmental legislation including the Planning and Development Act 2000 (as amended) and the European Communities (Environmental Impact Assessment) Regulations. The principle has been recognized and applied by An Bord Pleanála and the Irish courts in determining planning applications where significant environmental concerns arise. It requires decision-makers to adopt a cautious approach when assessing proposed developments that may cause significant harm to the environment, public health, or community wellbeing, placing the burden on project proponents to demonstrate that their proposed activities will not cause unacceptable harm, rather than requiring objectors to prove definitively that harm will occur.

This principle is not merely advisory but constitutes a binding legal obligation on EU Member States, including Ireland. The Court of Justice of the European Union (CJEU) has confirmed that the precautionary principle is a general principle of EU law that applies across environmental, health, and consumer protection policies [European Union](#).

The precautionary principle should be applied when the following criteria are met:

Criterion 1: identification of potentially adverse effects

There must be identification of potentially adverse effects on the environment or human health

Criterion 2: evaluation of the scientific data available

Evaluation of scientific evidence must suggest reasonable grounds for concern. The harm need not be certain or imminent.

Criterion 3: the extent of scientific uncertainty.

There must be insufficient scientific data to permit complete evaluation of the risk. This means the available evidence is inconclusive or contradictory regarding the extent or probability of harm.

Burden of proof under may be placed on those proposing the activity in question

The precautionary principle may shift the burden of proof from those alleging potential harm to those proposing the activity.

Criterion 1: Identification of potentially adverse effects — SATISFIED

The proposed facility presents multiple identified risks of environmental and public health harm:

Formation of Toxic Products of Incomplete Combustion

Scientific evidence demonstrates that combustion at 850-1,000°C produces:

- Volatile short-chain PFAS compounds with unknown toxicity
- Trifluoroacetic acid (TFA), the most abundant PFAS in the environment with unresolved questions about ecological impacts
- Other fluorinated organic compounds of unknown toxicity

b) Release of Potent Greenhouse Gases

The temperature range will lead to formation of:

- CF₄ (carbon tetrafluoride) with global warming potential 5,700 times CO₂
- C₂F₆ (hexafluoroethane) with global warming potential 11,900 times CO₂
- These compounds have atmospheric lifetimes measured in thousands of years

c) Long-Range Atmospheric Transport

PICs are highly mobile due to low molecular weight and partition into the atmosphere, enabling long-range transport and regional contamination. This affects not only Cork but potentially the wider region through atmospheric deposition.

d) Incomplete Mineralisation of PFAS

Evidence demonstrates that temperatures below 1,100°C result in:

- Incomplete PFAS destruction across the full spectrum of compounds
- Persistence of PFAS in residual fly ash
- Release of parent PFAS compounds alongside degradation products

Criterion 2: Evaluation of Scientific Data indicates reasonable grounds for concern — SATISFIED

The concern regarding PFAS incineration in the temperature range of municipal incinerators (850-1,000°C) is not isolated but represents scientific consensus from multiple international regulatory bodies referenced in this document (UK EA, USEPA, ECHA, ECCC).

1. **Formation of harmful byproducts is observed, not speculative:** Short-chain PFAS, TFA, CF₄, C₂F₆ repeatedly measured at 850-1,000°C ([Shields et al., 2023](#); [Mattila, 2024](#))
2. **Expert consensus supports 1,100°C minimum:** All major authorities converge on this threshold ([US EPA, 2024](#); [UK Environment Agency, ECHA](#))
3. **Legislative action reflects scientific concern:** US Department of Defense moratorium on PFAS incineration recognizing ([US DoD, 2023](#); [National Defense Authorization Act, 2022](#))
4. **Scale of potential harm is enormous:**
 - CF₄: 50,000-year atmospheric lifetime ([Say et al., 2021](#))
 - TFA: "global threat from irreversible accumulation" ([Arp et al., 2024](#))
 - Effects accumulate over decades of facility operation

Criterion 3: Scientific Uncertainty — SATISFIED

Despite extensive research, scientific uncertainties remain:

a) Uncertainty of effectiveness of incineration to treat PFAS

According to US EPA's latest guidance: "Research suggests that the use of higher temperatures, well mixed combustion environments, and longer residence times may be more conducive to destroying PFAS and controlling related products of incomplete combustion. Although limited data have been obtained since the 2020 version of the interim guidance (including data suggestive of adequate temperature ranges to break down PFAS), **uncertainties remain about the effectiveness of thermal treatment.**" [US EPA](#)

b) Inability to Predict PIC Formation

"Reliable prediction of which PICs form under suboptimal conditions or in what quantities is not yet possible" [UK Environment Agency](#). The complex chemistry of PFAS thermal degradation

means that the specific byproducts, their quantities, and their environmental fate cannot be determined with certainty for the proposed operating conditions.

c) Inadequate Analytical Methods

Scientists acknowledge that "there are no proven analytical technologies which have been demonstrated to detect all potential fluoro-organic by-products." [Horst et.al](#) Most studies assess only a limited subset of PFAS and often neglect key by-products, leading to underestimated emissions.

d) Absence of Real-World Testing

Most data comes from laboratory studies at pilot scale that do not replicate real-world waste variability, temperature fluctuations, or mixed waste stream conditions. [UK Environment Agency](#) The performance of municipal waste incinerators specifically for PFAS destruction at 850-1,000°C remains inadequately characterised.

e) Unknown PFAS Content of Waste

The volume of PFAS entering waste management systems remains unknown. [UK Environment Agency](#) The Indaver facility would process unknown quantities and types of PFAS because the Indaver EIA includes no monitoring for PFAS content in input waste streams or resulting effluents. The US EPA guidance on incineration of PFAS states "EPA encourages additional testing with EPA-approved or EPA evaluated methods by waste managers of thermal treatment operations, including for products of incomplete combustion and the presence of PFAS in all associated waste streams, to evaluate whether thermal treatment technologies are minimizing potential environmental releases." [US EPA](#)

f) Long-term Environmental Fate Unknown

Knowledge gaps remain regarding PFAS atmospheric behaviour, transport, transformation, and long-range impacts. [UK Environment Agency](#) The cumulative effect of continuous low-level PIC emissions over decades cannot be predicted with confidence.

This is precisely the type of scientific uncertainty contemplated by the precautionary principle: substantial evidence of potential harm exists, but the magnitude, probability, and mechanisms cannot be determined with sufficient certainty to conduct a complete risk assessment.

5. Conclusion

Based on application of the precautionary principle and inadequacy of the proposed facility design, An Coimisiún Pleanála should **refuse planning permission** for the Indaver Ringaskiddy facility as currently proposed.

Grounds for refusal include:

1. Failure to demonstrate adequate PFAS destruction capacity at proposed operating temperatures
2. Non-compliance with EU precautionary principle as enshrined in Article 191(2) TFEU
3. Inadequate environmental impact assessment regarding PFAS and PIC formation

4. Inconsistency with scientific consensus on temperatures required for PFAS mineralisation
5. Risk of long-term environmental contamination through PIC emissions

I would like to request an oral hearing to challenge the application in person. Regards,

Joseph Weston