RESEARCH PROJECTS

Contaminants Monitoring Programme for Wild Caught Fish, Crustaceans and Cephalopods

Food Standards Agency, Fera Science Ltd.

Keywords: Regulating the changing food system, Chemical Risks, Emerging challenges and opportunities, Methods, National Reference laboratories, Products of animal origin, Wider consumer interests, Sampling

https://doi.org/10.46756/001c.127617

FSA Research and Evidence

This report is part of the 2022-23 wild caught fish, crustaceans and cephalopods survey for Great Britain and Northern Ireland. For more information on Chemical contaminants in wild caught fish and crustaceans in Northern Ireland you can see the corresponding report here.

1. Executive Summary

One hundred and fifty two samples of wild caught fish, crustaceans and cephalopods were purchased from fish markets across England and Wales and analysed for the contaminants: mercury, lead, cadmium, total arsenic and per- and polyfluoroalkyl substances (PFAS): perfluoro-n-nonanoic acid (PFNA), linear and branched perfluorohexanesulfonic acid (PFHxS), linear and branched perfluorooctanesulfonic acid (PFOS), perfluoro-n-decanoic acid (PFDA), linear perfluoro-1-butanesulfonate (PFBS), perfluoro-n-dodecanoic acid (PFDoA), perfluoro-n-heptanoic acid (PFHpA), perfluoro-n-hexanoic acid (PFHxA), perfluoro-n-pentanoic acid (PFPeA), perfluoro-n-butanoic acid (PFBA), perfluoro-n-octanoic acid (PFOA). A sub-set of these samples (n = 76) were analysed for inorganic arsenic and another sub-set (n = 51) were analysed for dioxins (2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,4,6,7,8-HpCDD, OCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDF) and PCBs (PCB 28, PCB 52, PCB 77, PCB 81, PCB 101, PCB 105, PCB 114, PCB 118, PCB 123, PCB 126, PCB 138, PCB 153, PCB 156, PCB 157, PCB 167, PCB 169, PCB 180, PCB 189).

- Cadmium was detected above the maximum level of 0.1 mg/kg in one of the mackerel samples at a concentration of 0.16 mg/kg.
- Mercury was detected above the maximum level of 0.5 mg/kg in four of the sea bass samples at concentrations of 0.74, 0.69, 0.66 and 0.87 mg/kg.

- Concentrations of dioxins and PCBs were below the GB and European Union (EU) limits for these compounds.
- Of the regulated PFAS analytes (linear and branched PFOS, PFOA, PFNA and linear and branched PFHxS) the following were detected above the EU limits (Comission Reguation 2022/2388) note there are currently no restrictions for these substances in fish in GB legislation):
    - Three cod samples (1.0, 1.5 and 1.0 µg/kg) exceeded the EU limit (0.5 µg/kg) for PFNA
    - Two cod samples (0.52 and 0.47 µg/kg) exceeded the EU limit (0.2 µg/kg) for PFHxS
    - Two crab samples (1.8 and 1.1 µg/kg) exceeded the EU limit (0.7 µg/kg) for PFOA
- One of the cod samples (2.6 µg/kg) exceeded the restriction for the sum of PFOS, PFOA, PFNA and PFHxS when the measurement uncertainty was taken into account (2.0 µg/kg for fish). There are currently no restrictions in the concentrations of inorganic arsenic in fish and shellfish.

2. Introduction

2.1. Background to the study

Fera Science Ltd (Fera) was contracted by the Food Standards Agency (FSA) to assess the occurrence levels of various contaminants in a specified number of species of wild caught fish, crustaceans and cephalopods landed in England and Wales between May 2022 and January 2023. The surveillance work primarily functions as a knowledge gathering initiative which forms part of the FSA's evidence-base for risk management of both emerging and pre-established contaminants in wild caught fish, crustacean and cephalopod products.

Secondary to this, the dataset may supplement the responsibilities of food businesses to comply with the provisions set out in legislation (Assimilated Regulation 181/2006).

The data has the potential to provide support to certifying officers in their attestation of the compliance of wild caught fishery products landed in England and Wales with contaminants legislation when signing Export Health Certificates for export to the European Union.

2.2. Aims and Objectives of the Study

To determine concentrations of defined chemical contaminants in wild caught fishery products providing occurrence data to the FSA to support exposure calculations for the UK population and associated risk assessment(s) as well as providing data to support exports.

3. Methodology

3.1. Samples

Sample purchase and collection was subcontracted to HallMark Veterinary & Compliance Services. To plan the purchase and collection of samples, a list of required products was designed by the Food Standards Agency to give, as far as possible, a representative sample set. Samples were allocated to species by considering the quantity of that species landed in each region as well as a split between species types (pelagic vs demersal, oily vs lean, predatory fish etc.); these were taken across four regions (South East England, South West England, North East England and Wales). The species to be sampled included: sardines, cuttlefish, monks & anglers, crab, hake, sole, plaice, skates & rays, gurnard, dogfish, lemon sole, sprats, mackerel, bass, herring, cod, haddock, lobsters and squid. When samples of a certain species were not available, e.g. not currently being caught in UK waters, then in consultation with the FSA these samples were replaced with alternative species/sampling locations. The planned versus actual sample numbers for each species/location are provided in Annex A. A full list of the sample details for the samples collected is given in Annex B. On receipt at the laboratory, each sample was assigned a unique laboratory reference number and the sample details were logged into a database.

3.2. Sample preparation

For fin fish, samples were filleted to collect edible muscle tissue and exclude skin, bones and organs except for sardines, which had the heads, tails and fins removed. For cephalopods, only the mantle meat was retained for analysis and for crustacea, only the white meat was taken to represent the sample.

The selected tissue was homogenised in a blender. Aliquots of the blended tissue were taken for each of the analyte suites: metals (including inorganic arsenic), PFAS, and dioxins/PCBs if required. An extra portion was retained as a spare. The aliquots requiring dioxins/PCBs analysis were also freeze-dried and further homogenised in a blender. Aliquots were stored in a freezer until required for analysis except for the freeze-dried material used for dioxins/PCB analyses which was stored at room temperature.

3.3. Metals analysis

Samples were analysed for total arsenic, cadmium, mercury and lead by following In-house Methods; FSG 461, FSG 457, FSG 463. Aliquots of homogenised test sample were digested in a mixture of concentrated nitric acid and hydrochloric acid using a high-pressure microwave system. Quantification was by inductively coupled plasma-mass spectrometry (ICP-MS) with collision cell. Quality checks included blanks, spikes and certified reference materials.

All data were corrected for reagent blank and spike recovery. The Reporting Limit was equal to, or exceeded, 10 x standard deviation of reagent blank values adjusted for dilution and sample weight. Reference material results were all satisfactory. Results are UKAS accredited (ISO 17025).

3.4. Dioxin and PCB analysis

The following analytes were determined:

Dioxins - all 17, 2,3,7,8-Cl substituted PCDDs and PCDFs.

Dioxin-like PCBs - IUPAC numbers 77, 81, 105, 114, 118, 123, 126, 156, 157, 167, 169, and 189.

Non Dioxin-like PCBs - IUPAC numbers 28, 52, 101, 138, 153, 180.

The method used for the preparation, extraction and analysis of samples has been reported previously (Fernandes et al., 2004, 2008) and forms part of the CEN method – EN16215:2012 for PCDD/F and PCB analysis. In brief, samples were fortified with ^{13}C-labelled analogues of target compounds and exhaustively extracted using mixed organic solvents. Ortho substituted PCBs were separated from non-ortho substituted PCBs and PCDD/Fs by fractionation on activated carbon. The two fractions were further purified using adsorption chromatography on alumina. Analytical measurement was carried out using gas chromatography-high resolution mass spectrometry (GC-HRMS).

The analysis is accredited (UKAS) to ISO 17025, with the inclusion of an in-house reference material and method blanks which were evaluated prior to the reporting of sample data and were used to determine the limits of detection. Further quality assurance measures included the successful participation in available international inter-comparison exercises such as European Union Reference Laboratory (EURL) and Food Analysis Proficiency Assurance Scheme (FAPAS) run proficiency test (PT) exercises on dioxins, dioxin-like PCBs, ICES-6 PCBs. Additionally, quality control evaluation for the accompanying data follows the criteria specified for chlorinated dioxins and PCBs (Assimilated Regulation 2017/644).

3.5. PFAS analysis

Samples were analysed for the following:

Analyte	Acronym
Perfluoro-n-nonanoic acid	PFNA
Perfluorohexanesulfonic acid	PFHxS (Linear)
Perfluorohexanesulfonic acid	PFHxS (Branched)
Perfluorooctanesulfonic acid	PFOS (Linear)
Perfluorooctanesulfonic acid	PFOS (Branched)
Perfluoro-n-decanoic acid	PFDA
Perfluoro-1-butanesulfonate	PFBS (Linear)
Perfluoro-n-dodecanoic acid	PFDoA
Perfluoro-n-heptanoic acid	PFHpA
Perfluoro-n-hexanoic acid	PFHxA
Perfluoro-n-pentanoic acid	PFPeA
Perfluoro-n-butanoic acid	PFBA
Perfluoro-n-octanoic acid	PFOA

Aliquots of homogenised test samples were spiked with isotope standards (internal standards) and extracted using methanol. The resulting solvent extracts were solvent exchanged into potassium hydroxide and passed through WAX SPE columns. WAX columns allow for the retention of both short and longer chain PFAS analytes due to the ionic exchange and reverse phase properties. Non-specific interferences were retained on the column whilst PFAS analytes were eluted using ammonia in methanol.

Samples were concentrated and reconstituted in 50:50 methanol:water and analysed by HPLC-MS/MS and quantified against calibration standards of known concentrations of the PFAS. The methodology is accredited (flexible scope) to ISO 17025.

3.6. Inorganic arsenic analysis

Analysis was carried out by HPLC-ICP-MS, based on CEN FprEN 16802 – Foodstuffs – Determination of elements and their chemical species – Determination of inorganic arsenic in foodstuffs of marine and plant origin by anion-exchange HPLC-ICP-MS. Aliquots of homogenised test samples were extracted with a mixture of nitric acid and hydrogen peroxide at 90°C. The inorganic arsenic was separated from other arsenic compounds by anion exchange HPLC, coupled to ICP-MS for the detection of arsenic. Quality checks included the analysis of blanks, spikes, and CRMs.

4. Results and Discussion

One hundred and fifty two samples of wild caught fish, crustaceans and cephalopods were purchased from fish markets across England and Wales and analysed for the contaminants: mercury, lead, cadmium, total arsenic and PFAS. A sub-set of these samples (n = 76) were analysed for inorganic arsenic and another sub-set (n = 51) were analysed for dioxins and PCBs. Concentrations of the contaminants in the wild caught fish samples were compared to GB legislation where available.

4.1. Metals analyses

Cadmium was detected at a concentration of 0.16 mg/kg (0.13 mg/kg minus measurement uncertainty) in one of the mackerel samples. The maximum level for cadmium in mackerel is 0.1 mg/kg (Assimilated Regulation 1881/2006).

Mercury was detected above the maximum level of 0.5 mg/kg in four of the sea bass samples at concentrations of:

- 0.74 mg/kg (0.60 mg/kg minus the measurement uncertainty of 19%)
- 0.69 mg/kg (0.56 mg/kg minus the measurement uncertainty of 19%)
- 0.66 mg/kg (0.53 mg/kg minus the measurement uncertainty of 19%)
- 0.87 mg/kg (0.70 mg/kg minus the measurement uncertainty of 19%)

The GB limits for these elements are given in Table 1 in Annex C.

4.2. Dioxin and PCB analysis

Concentrations of dioxins and PCBs were below the GB and EU limits for these compounds (Assimilated Regulation 1881/2006) given in Table 2 in Annex C.

4.3. PFAS analysis

Of the EU regulated PFAS analytes (linear and branched PFOS, PFOA, PFNA and linear and branched PFHxS) the following were detected above the EU limits (Comission Reguation 2022/2388) note there are currently no maximum limits in place for these substances in fish in GB legislation):

- Three cod samples exceeded the EU limit (0.5 µg/kg) for PFNA when taking into account the measurement of uncertainty
    - 1.0 µg/kg (0.76 minus the measurement uncertainty of 24%)
    - 1.5 µg/kg (1.1 minus the measurement uncertainty of 24%)
- 1.0 µg/kg (0.76 minus the measurement uncertainty of 24%) Two cod samples exceeded the EU limit (0.2 µg/kg) for total PFHxS when taking into account the measurement of uncertainty
    - 0.52 µg/kg (0.36 minus the measurement uncertainty of 30%)
    - 0.47 µg/kg (0.33 minus the measurement uncertainty of 30%)
- Two crab samples exceeded the EU limit (0.7 µg/kg) for PFOA when taking into account the measurement of uncertainty
    - 1.8 µg/kg (1.5 minus the measurement uncertainty of 18%)
    - 1.1 µg/kg (0.90 minus the measurement uncertainty of 18%)
- One of the cod samples exceeded the restriction for the sum of PFOS, PFOA, PFNA and PFHxS (2.0 µg/kg for fish). when taking into account the measurement of uncertainty 2.6 µg/kg (2.2 minus the measurement uncertainty of 15%)

The EU limits for these substances are given in Table 3 in Annex C.

4.4. iAs analysis

There are currently no maximum levels established in GB for inorganic arsenic in fish and shellfish. Within the EU the European Commission was considering maximum levels for inorganic arsenic (EU, 2021) as described within Table 4 in Annex C. However, these levels have not been adopted in the EU pending consideration of additional data on the occurrence of inorganic arsenic in fish and fishery products. In all cases the concentrations of inorganic arsenic measured in the wild caught fish

samples were below the levels considered by the EU when taking into account the measurement of uncertainty (±26%) and given within in Table 4 of Annex C.

5. Acknowledgements

Thanks to HallMark Veterinary & Compliance Services for purchasing the samples. The FSA would like to thank the following staff at Fera who contributed to this project: Anthony Oxley, Ben Watkin, Danny Chan, Frankie Smith, Malcolm Baxter, Melanie Holland, Mike Walls, Mollie Nero, Sara Stead, Sean Panton, Victoria Bailey-Horne.





Published: February 27, 2025 BST.

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Annexes

Annex A: Planned vs actual samples purchased

Region	Total number of samples	Species	Quantity of species landed in region / tonnes *	Number of samples to be purchased (planned)	Number of samples purchased
South West	98	Sardines *(Sardina pilchardus)*	8165	45	32
		Cuttlefish (*Sepia officinalis)*	3356	11	11
		Monks & Anglers *(Lophius piscatorius)*	2225	7	7
		Crab *(Brachyura)*	1202	4	4
		Hake *(Merluccius merluccius)*	1191	4	5
		Sole *(Solea solea)*	1072	4	4
		Plaice *(Pleuronectes platessa)*	1056	3	3
		Skates & Rays *(Rajidae)*	744	2	2
		Gurnard *(Triglidae)*	704	2	2
		Dogfish *(Squalidae)*	690	2	2
		Lemon Sole *(Microstomus kitt)*	580	2	2
		Sprats *(Sprattus sprattus)*	436	4	0
		Mackerel *(Scomber scombrus)*	303	4	16
		Bass *(Dicentrarchus labrax)*	129	4	4
South East	6	Herring *(Clupea)*	108	3	0
		Sprats *(Sprattus sprattus)*	59	3	0
		Bass *(Dicentrarchus*	No data	0	3

Region	Total number of samples	Species	Quantity of species landed in region / tonnes *	Number of samples to be purchased (planned)	Number of samples purchased
		labrax)			
North East	38	Cod *(Gadus morhua)*	7516	13	13
		Crab *(Brachyura)*	5437	19	19
		Lobster *(Nephropidae)*	452	2	2
		Haddock *(Melanogrammus aeglefinus)*	125	2	2
		Squid *(Decapodiformes)*	81	2	2
Wales	10	Crab *(Brachyura)*	396	4	4
		Skates & Rays (Rajidae)	156	2	2
		Lobster *(Nephropidae)*	152	2	2
		Bass *(Dicentrarchus labrax)*	58	2	2

Across the top 3 ports in 2020

Annex B: Sample details

LIMS number	Sample number	Full Product Text Description	Landing date	Sampling Area
S23-001846	794620	Herring	26/01/23	South West
S23-001847	794621	Herring	26/01/23	South West
S23-001848	794622	Herring	26/01/23	South West
S23-001849	794623	Herring	26/01/23	South West
S23-001850	794624	Cuttlefish	26/01/23	South West
S23-001851	794625	Mackerel	26/01/23	South West
S23-001852	794626	Mackerel	26/01/23	South West
S23-001853	794627	Mackerel	26/01/23	South West
S23-001854	794628	Mackerel	26/01/23	South West
S23-001838	794630	Mackerel	26/01/23	South West
S23-000855	794727	Whole cod	10/01/23	North East
S23-000854	794728	Whole cod	10/01/23	North East
S23-001855	795629	Mackerel	26/01/23,	South West
S22-063269	823407	Monk Tail	29/11/22	South West
S22-063272	823408	Sardines	29/11/22	South West
S22-063273	823409	Sardines	29/11/22	South West
S22-063274	823410	Sardines	29/11/22	South West
S22-063275	823411	Sardines	29/11/22	South West

LIMS number	Sample number	Full Product Text Description	Landing date	Sampling Area
S22-063276	823412	Sardines	29/11/22	South West
S23-001271	825315	Crab	18/01/23	Wales
S22-063271	825325	Cuttlefish	29/11/22	South West
S22-063270	825326	Dog Fish	29/11/22	South West
S22-019800	861583	Plaice	10/05/22	South West
S22-019801	861584	Lemon Sole	10/05/22	South West
S22-019817	861585	Hake	10/05/22	South West
S22-019818	861586	Monkfish	10/05/22	South West
S22-019819	861587	Sea Bass	10/05/22	South West
S22-019820	861588	Gurnard	10/05/22	South West
S22-019773	861589	Spotted Ray	10/05/22	South West
S22-036210	861590	Sardines	03/08/22	South West
S22-019799	861787	Cuttlefish	10/05/22	South West
S22-019797	861789	Live crab	10/05/22	South West
S22-050352	864609	Squid	09/11/22	North East
S22-050353	864622	Whole cod	09/11/22	North East
S22-045934	864672	Monkfish tail	05/10/22	South West
S22-045935	864673	Cuttlefish	05/10/22	South West
S23-001839	864685	Mackerel	26/01/23	South West
S23-001840	864686	Mackerel	26/01/23	South West
S22-045893	864727	Fresh cod fillets	04/10/22	North East
S22-044094	864728	Fresh cod fillets	05/09/22	North East
S22-044090	864729	Fresh whole cod	08/09/22	North East
S22-044037	864730	Monk Tail	07/09/22	South West
S22-044036	864731	Sardines	07/09/22	South West
S22-044035	864732	Sardines	07/09/22	South West
S22-044040	864733	Crab	07/09/22	South West
S23-001843	864734	Mackerel	26/01/23	South West
S23-001844	864735	Mackerel	26/01/23	South West
S23-001845	864736	Mackerel	26/01/23	South West
S22-050660	864737	Cuttlefish	16/11/22	South West
S23-001842	864738	Mackerel	26/01/23,	South West
S22-044038	864739	Cuttlefish	07/09/22	South West
S22-044534	864740	Sardines	13/09/22	South West
S22-044535	864741	Sardines	13/09/22	South West
S22-044536	864742	Sardines	13/09/22	South West
S22-044537	864743	Sardines	13/09/22	South West
S22-044538	864744	Sardines	13/09/22	South West
S23-001841	864745	Mackerel	26/01/23,	South West
S22-036231	864747	Sardines	02/08/22	South West
S22-036232	864748	Sardines	02/08/22	South West
S22-036233	864749	Sardines	02/08/22	South West
S22-036234	864750	Sardines	02/08/22	South West

LIMS number	Sample number	Full Product Text Description	Landing date	Sampling Area
S22-036235	864751	Sardines	02/08/22	South West
S22-036223	864752	Sardines	02/08/22	South West
S22-036224	864753	Sardines	02/08/22	South West
S22-036225	864754	Sardines	02/08/22	South West
S22-036226	864763	Sardines	02/08/22	South West
S22-036227	864764	Sardines	02/08/22	South West
S22-036637	864816	Fresh dead crab	10/08/22	North East
S22-036638	864817	Fresh dead crab	10/08/22	North East
S22-036635	864819	Fresh live crab	10/08/22	North East
S22-036634	864820	Live crab	10/08/22	North East
S22-036633	864821	Live crab	10/08/22	North East
S22-036142	864843	Whole wild bass	Not given (purchase 02.08.22)	Wales
S22-050355	864858	Live crab	10/11/22	North East
S22-050356	864859	Live crab	10/11022	North East
S22-036875	864884	Lobster	04/07/22	Wales
S22-036874	864885	Ray	05/07/22	Wales
S22-034419	864897	Skate wing	05/07/22	South West
S22-034421	864898	Mackerel	05/07/22	South West
S22-036220	864899	Mackerel	02/08/22	South West
S22-036221	864900	Plaice	02/08/22	South West
S22-036204	864901	Cuttlefish	02/08/22	South West
S22-036205	864902	Cuttlefish	02/08/22	South West
S22-036206	864903	Dover sole	03/08/22	South West
S22-036207	864904	Dover sole	03/08/22	South West
S22-036208	864905	Sardines	03/08/22	South West
S22-036209	864906	Sardines	03/08/22	South West
S22-022738	864926	Cuttlefish	07/06/22	South West
S22-022735	864927	Crab	07/06/22	South West
S22-022736	864928	Monkfish	07/06/22	South West
S22-022741	864929	Cuttlefish	07/06/22	South West
S22-025473	864969	Crab	15/06/22	North East
S22-025444	865061	Skate	13/06/22	Wales
S22-050354	884611	Cod	09/11/22	North East
S23-001658	2997635	Whole wild caught sea bass	22/01/23	South East
S23-001659	2997636	Whole wild caught sea bass	22/01/23	South East
S23-001660	2997637	Whole wild caught sea bass	22/01/23.	South East
S23-000332	2999451	Whole cod	03/01/23	North East
S23-000331	2999452	Whole cod	03/01/23	North East
S23-000330	2999453	Whole cod	03/01/23	North East
S22-047233	3009366	Whole herring	18/10/22	North East
S22-022566	3011256	Crab	07/06/22	North East

LIMS number	Sample number	Full Product Text Description	Landing date	Sampling Area
S22-022568	3011257	Haddock fillets	06/06/22	North East
S22-022567	3011258	Crab	07/06/22	North East
S22-022569	3011260	Crab	06/06/22	North East
S22-022740	3011305	Mackerel	07/06/22	South West
S22-034416	3011306	Lemon sole	05/07/22	South West
S22-022739	3011307	Hake	07/06/22	South West
S22-034415	3011308	Hake	04/07/22	South West
S22-034495	3011309	Fresh crabs	04/07/22	North East
S22-045894	3012817	Fresh live crabs	04/10/22	North East
S22-044093	3012819	Fresh whole cod	05/09/22	North East
S22-044092	3012820	Whole fresh cod	05/09/22	North East
S22-044091	3012821	Whole fresh cod	08/09/22	North East
S22-036215	3012832	Sardines	03/08/22	South West
S22-036214	3012833	Sardines	03/08/22	South West
S22-036213	3012834	Sardines	03/08/22	South West
S22-036212	3012835	Sardines	03/08/22	South West
S22-036219	3012836	Hake	03/08/22	South West
S22-036230	3012837	Dover sole	02/08/22	South West
S22-036229	3012838	Dover sole	02/08/22	South West
S22-047234	3012851	Whole herring	18/10/22	North East
S22-047235	3012852	Whole squid	18/10/22	North East
S22-036217	3012858	Sardines	03/08/22	South West
S22-036216	3012859	Sardines	03/08/22	South West
S22-034414	3012860	Line caught Seabass	05/07/22	South West
S22-034413	3012861	Plaice	05/07/22	South West
S22-034422	3012862	Monkfish	05/07/22	South West
S22-034420	3012863	Gurnard	04/07/22	South West
S22-034417	3012864	Crab	05/07/22	South West
S22-034418	3012865	Cuttlefish	05/07/22	South West
S22-034501	3012866	Live fresh crabs	06/07/22	North East
S22-034499	3012867	Fresh lobster	05/07/22	North East
S22-022737	3012868	Wild sea bass	07/06/22	South West
S22-019772	3012873	Rock salmon - dog fish	10/05/22	South West
S22-036218	3012874	Sardines	03/08/22	South West
S22-036997	3012875	Monktail.	16/08/22	South West
S22-022860	3012886	Native lobster	07/06/22	Wales
S22-022861	3012887	Whole wild seabass	07/06/22	Wales
S22-044039	3012910	Hake	07/09/22	South West
S22-044533	3012911	Wild sea bass	13/09/22	South West
S22-019918	3012914	Lobster	10/05/22	North East
S22-019938	3012915	Crab	10/05/22	North East
S22-034500	3012925	Whole fresh crabs	04/07/22	North East
S23-000899	3012967	Brown crab	29/12/22	Wales

LIMS number	Sample number	Full Product Text Description	Landing date	Sampling Area
S22-019937	3012972	Crab	10/05/22	North East
S22-019935	3012986	Fresh Bridlington crabs	10/05/22	North East
S22-036636	3038328	Live crab	10/08/22	North East
S22-047232	3038332	Whole herring	18/10/22	North East
S22-019936	3038512	Fresh boneless haddock	10/05/22	North East
S22-044174	3047776	Crabs	07/09/22	Wales
S22-044173	3047777	Crabs	07/09/22	Wales

Annex C: Tables

Table 1. **Mercury, cadmium lead and arsenic concentrations in wild caught fish samples, corrected for recovery**

NOTE: No limits assigned to As

Cod

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-044090	864729	Cod	0.08	<0.005	<0.005	6.6	North East
S22-044091	3012821	Cod	0.10	<0.005	<0.005	9.4	North East
S22-044092	3012820	Cod	0.12	<0.005	<0.005	8.7	North East
S22-044093	3012819	Cod	0.10	<0.005	<0.005	3.6	North East
S22-044094	864728	Cod	0.10	<0.005	<0.005	1.2	North East
S22-045893	864727	Cod	0.10	<0.005	<0.005	2.3	North East
S22-050353	864622	Cod	0.10	<0.005	<0.005	2.8	North East
S22-050354	884611	Cod	0.08	<0.005	<0.005	4.6	North East
S23-000330	2999453	Cod	0.09	<0.005	<0.005	4.7	North East
S23-000331	2999452	Cod	0.11	<0.005	0.010	5.5	North East
S23-000332	2999451	Cod	0.08	<0.005	<0.005	5.5	North East
S23-000854	794728	Cod	0.11	<0.005	<0.005	5.0	North East
S23-000855	794727	Cod	0.09	<0.005	<0.005	2.8	North East
GB limit			**0.5**	**0.05**	**0.3**		

Crab

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019797	861789	Crab	0.08	<0.005	0.012	12.2	South West
S22-019935	3012986	Crab	0.19	0.010	0.034	19.7	North East
S22-019937	3012972	Crab	0.17	0.005	0.007	26.6	North East
S22-019938	3012915	Crab	0.26	<0.005	0.007	32.9	North East
S22-022566	3011256	Crab	0.13	<0.005	0.050	18.4	North East
S22-022567	3011258	Crab	0.16	<0.005	0.031	15.4	North East
S22-022569	3011260	Crab	0.15	0.014	0.011	15.6	North East
S22-022735	864927	Crab	0.05	0.157	0.012	14.3	South West
S22-025473	864969	Crab	0.06	<0.005	0.018	10.0	North East
S22-034417	3012864	Crab	0.16	0.045	0.006	17.7	South West
S22-034495	3011309	Crab	0.14	0.020	0.019	8.0	North East
S22-034500	3012925	Crab	0.21	0.010	0.014	15.5	North East
S22-034501	3012866	Crab	0.16	0.019	0.029	17.5	North East
S22-036633	864821	Crab	0.22	<0.005	0.010	29.4	North East
S22-036634	864820	Crab	0.09	<0.005	0.009	11.9	North East
S22-036635	864819	Crab	0.10	<0.005	0.008	9.1	North East
S22-036636	3038328	Crab	0.10	<0.005	0.010	10.4	North East
S22-036637	864816	Crab	0.30	<0.005	0.026	36.1	North East
S22-036638	864817	Crab	0.22	<0.005	0.017	22.8	North East
S22-044040	864733	Crab	0.09	0.027	0.022	14.4	South West
S22-044173	3047777	Crab	0.16	0.016	<0.005	38.2	Wales
S22-044174	3047776	Crab	0.11	0.021	0.006	33.0	Wales
S22-045894	3012817	Crab	0.07	<0.005	0.013	12.2	North East
S22-050355	864858	Crab	0.12	0.006	0.013	23.2	North East
S22-050356	864859	Crab	0.12	0.011	0.012	18.8	North East
S23-000899	3012967	Crab	0.19	0.008	0.014	26.4	Wales
S23-001271	825315	Crab	0.11	0.007	0.021	16.8	Wales
GB limit			**0.5**	**0.5**	**0.5**		

Cuttlefish

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019799	861787	Cuttlefish	0.08	<0.005	0.007	11.1	South West
S22-022738	864926	Cuttlefish	0.08	0.020	0.010	13.2	South West
S22-022741	864929	Cuttlefish	0.07	0.020	0.013	17.6	South West
S22-034418	3012865	Cuttlefish	0.08	<0.005	0.009	14.6	South West
S22-036204	864901	Cuttlefish	0.04	0.022	0.013	11.6	South West
S22-036205	864902	Cuttlefish	0.05	0.014	0.012	12.4	South West
S22-044038	864739	Cuttlefish	0.06	0.009	0.010	15.6	South West
S22-045935	864673	Cuttlefish	0.06	0.006	0.008	12.5	South West
S22-050660	864737	Cuttlefish	0.06	<0.005	<0.005	8.0	South West
S22-063271	825325	Cuttlefish	0.06	0.022	0.010	14.8	South West
S23-001850	794624	Cuttlefish	0.07	0.023	0.007	13.7	South West
GB limit			**0.5**	**1.0**	**0.3**		

Dog fish

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019772	3012873	Dog fish	0.52	<0.005	<0.005	24.8	South West
S22-063270	825326	Dog fish	0.55	<0.005	<0.005	15.4	South West
GB limit			**1.0**	**0.05**	**0.3**		

Gurnard

FERA LIMS	External reference	Species	Hg (mg/kg)	Hg (mg/kg) minus MU	Hg (mg/kg) plus MU	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019820	861588	Gurnard	0.61	0.49	0.73	0.011	<0.005	2.0	South West
S22-034420	3012863	Gurnard	0.14			0.006	<0.005	3.0	South West
GB limit			**0.5**			**0.05**	**0.3**		

Haddock

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019936	3038512	Haddock	0.11	<0.005	<0.005	1.5	North East
S22-022568	3011257	Haddock	0.03	<0.005	<0.005	4.4	North East
GB limit			**0.5**	**0.05**	**0.3**		

Hake

FERA LIMS	External reference	Species	Hg (mg/kg)	Hg (mg/kg) minus MU	Hg (mg/kg) plus MU	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019817	861585	Hake	0.13			<0.005	<0.005	1.6	South West
S22-022739	3011307	Hake	0.04			<0.005	<0.005	3.5	South West
S22-034415	3011308	Hake	0.32			<0.005	<0.005	1.7	South West
S22-036219	3012836	Hake	0.42	0.34	0.52	<0.005	<0.005	5.0	South West
S22-044039	3012910	Hake	0.08			<0.005	<0.005	2.9	South West
GB limit			**0.5**			**0.05**	**0.3**		

Herring

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-047232	3038332	Herring	0.03	0.017	0.008	1.6	North East
S22-047233	3009366	Herring	0.04	0.027	<0.005	1.4	North East
S22-047234	3012851	Herring	0.05	0.011	<0.005	1.7	North East
S23-001846	794620	Herring	0.10	0.014	<0.005	1.4	South West
S23-001847	794621	Herring	0.08	0.011	<0.005	1.7	South West
S23-001848	794622	Herring	0.10	0.012	0.007	1.4	South West
S23-001849	794623	Herring	0.04	0.017	0.007	1.3	South West
GB limit			**0.5**	**0.05**	**0.3**		

Lobster

FERA LIMS	External reference	Species	Hg (mg/kg)	Hg (mg/kg) minus MU	Hg (mg/kg) plus MU	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-036875	864884	Lobster	0.12			0.016	0.013	6.9	North East
S22-022860	3012886	Lobster	0.38	0.31	0.45	0.016	0.041	9.6	Wales
S22-019918	3012914	Lobster	0.40	0.32	0.48	0.024	<0.005	19.5	Wales
S22-034499	3012867	Lobster	0.39	0.32	0.46	0.047	0.027	8.1	North East
GB limit			**0.5**			**0.5**	**0.5**		

Mackerel

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Cd (mg/kg) minus MU	Cd (mg/kg) plus MU	Pb (mg/kg)	As (mg/kg)	Region
S22-022740	3011305	Mackerel	0.08	0.016			<0.005	1.2	South West
S22-034421	864898	Mackerel	0.06	0.16	0.13	0.18	<0.005	1.2	South West
S22-036220	864899	Mackerel	0.03	<0.005			<0.005	1.8	South West
S23-001838	794630	Mackerel	0.05	0.024			<0.005	1.2	South West
S23-001839	864685	Mackerel	0.07	0.036			0.006	1.4	South West
S23-001840	864686	Mackerel	0.06	0.052			<0.005	1.3	South West
S23-001841	864745	Mackerel	0.06	0.035			<0.005	1.5	South West
S23-001842	864738	Mackerel	0.06	0.025			<0.005	1.6	South West
S23-001843	864734	Mackerel	0.07	0.005			<0.005	1.0	South West
S23-001844	864735	Mackerel	0.06	0.005			<0.005	1.1	South West
S23-001845	864736	Mackerel	0.06	0.052			<0.005	1.2	South West
S23-001851	794625	Mackerel	0.07	0.074			<0.005	1.4	South West
S23-001852	794626	Mackerel	0.07	0.075			<0.005	1.3	South West
S23-001853	794627	Mackerel	0.06	0.038			<0.005	1.3	South West
S23-001854	794628	Mackerel	0.05	0.050			<0.005	1.5	South West
S23-001855	795629	Mackerel	0.06	0.054			<0.005	1.6	South West
GB EU limit			**0.5**	**0.1**			**0.3**		

Monks and Anglers

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019818	861586	Monks & Anglers	0.16	<0.005	<0.005	11.9	South West
S22-022736	864928	Monks & Anglers	0.10	<0.005	<0.005	9.4	South West
S22-034422	3012862	Monks & Anglers	0.20	<0.005	<0.005	7.4	South West
S22-044037	864730	Monks & Anglers	0.19	0.009	0.010	8.1	South West
S22-045934	864672	Monks & Anglers	0.19	<0.005	<0.005	8.5	South West
S22-036997	3012875	Monks & Anglers	0.11	<0.005	<0.005	8.6	South West
S22-063269	823407	Monks & Anglers	0.14	<0.005	<0.005	7.3	South West
GB limit			**0.5**	**0.05**	**0.3**		

Plaice

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019800	861583	Plaice	0.10	<0.005	0.017	10.1	South West
S22-034413	3012861	Plaice	0.16	<0.005	<0.005	9.8	South West
S22-036221	864900	Plaice	0.07	<0.005	0.006	10.4	South West
GB limit			**0.5**	**0.05**	**0.3**		

Sardines

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-036208	864905	Sardines	0.03	0.005	0.010	2.3	South West
S22-036209	864906	Sardines	0.03	0.018	0.034	2.3	South West
S22-036210	861590	Sardines	0.03	0.007	0.011	2.5	South West
S22-036212	3012835	Sardines	0.04	0.014	0.013	2.6	South West
S22-036213	3012834	Sardines	0.03	0.013	0.012	2.2	South West
S22-036214	3012833	Sardines	0.03	0.014	0.014	2.0	South West
S22-036215	3012832	Sardines	0.03	0.014	0.010	1.9	South West
S22-036216	3012859	Sardines	0.02	0.011	0.010	2.1	South West
S22-036217	3012858	Sardines	0.03	0.013	0.012	2.3	South West
S22-036218	3012874	Sardines	0.02	0.012	0.009	2.0	South West
S22-036223	864752	Sardines	0.04	0.013	0.017	2.1	South West
S22-036224	864753	Sardines	0.02	0.012	0.011	2.2	South West
S22-036225	864754	Sardines	0.03	0.011	0.013	1.8	South West
S22-036226	864763	Sardines	0.02	0.013	0.017	2.0	South West
S22-036227	864764	Sardines	0.03	0.014	0.013	2.2	South West
S22-036231	864747	Sardines	0.04	0.021	0.015	2.5	South West
S22-036232	864748	Sardines	0.03	0.011	0.009	2.2	South West
S22-036233	864749	Sardines	0.03	0.014	0.012	2.1	South West
S22-036234	864750	Sardines	0.03	0.012	0.015	2.1	South West
S22-036235	864751	Sardines	0.03	0.012	0.011	2.3	South West
S22-044035	864732	Sardines	0.03	0.014	0.011	2.4	South West
S22-044036	864731	Sardines	0.05	0.019	0.012	2.3	South West
S22-044534	864740	Sardines	0.04	0.008	0.009	2.8	South West
S22-044535	864741	Sardines	0.04	0.009	0.017	2.7	South

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
							West
S22-044536	864742	Sardines	0.03	0.007	0.007	3.2	South West
S22-044537	864743	Sardines	0.03	0.008	0.011	2.7	South West
S22-044538	864744	Sardines	0.03	0.009	0.009	2.9	South West
S22-063272	823408	Sardines	0.03	0.008	0.012	3.4	South West
S22-063273	823409	Sardines	0.03	0.006	0.010	3.5	South West
S22-063274	823410	Sardines	0.03	0.006	0.009	3.6	South West
S22-063275	823411	Sardines	0.03	0.008	0.012	3.8	South West
S22-063276	823412	Sardines	0.03	0.006	0.008	3.7	South West
GB limit			**0.5**	**0.25**	**0.3**		

Sea bass

FERA LIMS	External reference	Species	Hg (mg/kg)	Hg (mg/kg) minus MU	Hg (mg/kg) plus MU	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019819	861587	Sea Bass	0.20			<0.005	<0.005	1.7	South West
S22-022737	3012868	Sea Bass	0.46	0.37	0.55	<0.005	<0.005	1.0	South West
S22-022861	3012887	Sea Bass	0.44	0.36	0.52	<0.005	<0.005	0.9	Wales
S22-034414	3012860	Sea Bass	0.74	0.60	0.88	<0.005	<0.005	0.5	South West
S22-036142	864843	Sea Bass	0.56	0.45	0.67	<0.005	<0.005	0.9	Wales
S22-044533	3012911	Sea Bass	0.27			<0.005	<0.005	1.4	South West
S23-001658	2997635	Sea Bass	0.69	0.56	0.82	<0.005	0.007	1.0	South East
S23-001659	2997636	Sea Bass	0.66	0.53	0.79	<0.005	0.013	0.9	South East
S23-001660	2997637	Sea Bass	0.87	0.70	1.04	<0.005	<0.005	0.6	South East
GB limit			**0.5**			**0.05**	**0.3**		

Skates and Rays

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019773	861589	Skates & Rays	0.12	<0.005	<0.005	33.2	South West
S22-025444	865061	Skates & Rays	0.32	<0.005	0.006	23.2	Wales
S22-034419	864897	Skates & Rays	0.17	<0.005	<0.005	26.3	South West
S22-036874	864885	Skates & Rays	0.07	<0.005	<0.005	13.0	Wales
GB limit			**0.5**	**0.05**	**0.3**		

Sole

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-019801	861584	Lemon Sole	0.03	<0.005	<0.005	19.8	South West
S22-034416	3011306	Lemon Sole	0.05	<0.005	<0.005	28.7	South West
S22-036206	864903	Sole	0.03	<0.005	<0.005	5.4	South West
S22-036207	864904	Sole	0.06	<0.005	<0.005	6.0	South West
S22-036229	3012838	Sole	0.04	<0.005	<0.005	9.0	South West
S22-036230	3012837	Sole	0.05	<0.005	<0.005	10.9	South West
GB limit			**0.5**	**0.05**	**0.3**		

Squid

FERA LIMS	External reference	Species	Hg (mg/kg)	Cd (mg/kg)	Pb (mg/kg)	As (mg/kg)	Region
S22-047235	3012852	Squid	0.01	0.007	<0.005	3.3	North East
S22-050352	864609	Squid	0.01	0.01	0.009	3.9	North East
GB limit			**0.5**	**1.0**	**0.3**		

Table 2. **Dioxin/PCB WHO-TEQ 2005 and Sum ICES6 Marker PCB results for wild caught fish samples corrected for recovery.**

Cod

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-044090	864729	Cod	0.04	0.04	0.08	0.35	North East
S22-044091	3012821	Cod	0.05	0.03	0.08	0.29	North East
S22-044093	3012819	Cod	0.03	0.02	0.05	0.16	North East
S22-044094	864728	Cod	0.03	0.01	0.04	0.11	North East
S22-045893	864727	Cod	0.03	0.02	0.05	0.26	North East
GB Limit			**3.5**		**6.5**	**75**	

Crab

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019937	3012972	Crab	0.04	0.01	0.05	0.07	North East
S22-022566	3011256	Crab	0.11	0.02	0.13	0.16	North East
S22-022567	3011258	Crab	0.09	0.02	0.11	0.14	North East
S22-034417	3012864	Crab	0.05	0.02	0.07	0.15	South West
S22-036634	864820	Crab	0.04	0.01	0.05	0.08	North East
S22-044040	864733	Crab	0.04	0.02	0.06	0.13	South West
S22-044173	3047777	Crab	0.1	0.05	0.15	0.23	Wales
S22-045894	3012817	Crab	0.04	0.01	0.05	0.09	North East
S23-001271	825315	Crab	0.1	0.02	0.12	0.17	Wales
GB Limit			**3.5**		**6.5**	**75**	

Cuttlefish

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019799	861787	Cuttlefish	0.03	0.01	0.04	0.34	South West
S22-022738	864926	Cuttlefish	0.05	0.02	0.07	0.38	South West
S22-034418	3012865	Cuttlefish	0.04	0.01	0.05	0.17	South West
GB Limit			**3.5**		**6.5**	**75**	

Dogfish

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019772	3012873	Dog Fish	0.04	0.03	0.07	0.4	South West
GB Limit			**3.5**		**6.5**	**75**	

Gurnard

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019820	861588	Gurnard	0.04	0.04	0.08	0.35	South West
GB Limit			**3.5**		**6.5**	**75**	

Hake

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019817	861585	Hake	0.05	0.29	0.34	3.88	South West
S22-034415	3011308	Hake	0.03	0.01	0.04	0.26	South West
GB Limit			**3.5**		**6.5**	**75**	

Herring

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-047234	3012851	Herring	0.6	0.37	0.97	5.32	North East
GB Limit			**3.5**		**6.5**	**75**	

Mackerel

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-034421	864898	Mackerel	0.14	0.27	0.41	2.58	South West
S23-001844	864735	Mackerel	0.5	1.08	1.58	9.04	South West
S23-001845	864736	Mackerel	0.19	0.93	1.12	12.01	South West
S23-001852	794626	Mackerel	0.15	0.37	0.52	3.5	South West
S23-001853	794627	Mackerel	0.13	0.32	0.45	3.66	South West
GB Limit			**3.5**		**6.5**	**75**	

Monks & Anglers

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019818	861586	Monks & Anglers	0.03	0.03	0.06	0.23	South West
S22-022736	864928	Monks & Anglers	0.04	0.04	0.08	0.29	South West
S22-034422	3012862	Monks & Anglers	0.03	0.04	0.07	0.26	South West
GB Limit			**3.5**		**6.5**	**75**	

Plaice

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-034413	3012861	Plaice	0.2	0.42	0.62	2.5	South West
GB Limit			**3.5**		**6.5**	**75**	

Sardines

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-036208	864905	Sardines	0.3	0.89	1.19	8.66	South West
S22-036209	864906	Sardines	0.27	0.79	1.06	6.58	South West
S22-036210	861590	Sardines	0.27	0.78	1.05	6.41	South West
S22-036223	864752	Sardines	0.24	0.69	0.93	6.1	South West
S22-036224	864753	Sardines	0.23	0.76	0.99	6.9	South West
S22-036225	864754	Sardines	0.24	0.81	1.05	7.38	South West
S22-044534	864740	Sardines	0.3	0.78	1.08	7.73	South West
S22-044535	864741	Sardines	0.27	0.76	1.03	8.3	South West
S22-044536	864742	Sardines	0.28	0.75	1.03	5.85	South West
S22-063272	823408	Sardines	0.41	1.02	1.43	7.89	South West
S22-063273	823409	Sardines	0.51	1.28	1.79	11.04	South West
GB Limit			**3.5**		**6.5**	**75**	

Sea Bass

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019819	861587	Sea Bass	0.13	0.52	0.65	6.98	South West
S22-034414	3012860	Sea Bass	0.05	0.8	0.85	7.64	South West
S23-001658	2997635	Sea Bass	0.07	0.23	0.3	2.23	South East
S23-001660	2997637	Sea Bass	0.19	0.73	0.92	10.27	South East
GB Limit			**3.5**		**6.5**	**75**	

Skates & Rays

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019773	861589	Skates & Rays	0.05	0.02	0.07	0.16	South West
S22-025444	865061	Skates & Rays	0.57	0.35	0.92	7.37	Wales
GB Limit			**3.5**		**6.5**	**75**	

Sole

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-019801	861584	Sole	0.18	0.16	0.34	0.77	South West
S22-036206	864903	Sole	0.12	0.13	0.25	2.88	South West
GB Limit			**3.5**		**6.5**	**75**	

Squid

Fera LIMS Number	External Reference	Species	PCDD/F WHO-TEQ upper, ng/kg whole	PCB WHO-TEQ upper, ng/kg whole	PCDD/F + PCB WHO-TEQ upper, ng/kg whole	SUM of ICES 6 upper, µg/kg whole	Region
S22-047235	3012852	Squid	0.03	0.01	0.04	0.1	North East
GB Limit			**3.5**		**6.5**	**75**	

Table 3. **PFAS concentrations in wild caught fish samples (µg/kg).**
* Confirmatory by the second transition was not detectable, therefore results are indicative
n/r – the PFBA and its internal standard could not be quantified due to interferences
SUM # - sum of PFOS, PFOA, PFNA, PFHxS
NOTE: Currently there are no applicable regulatory limits assigned to PFDA, PFBS, PFDoA, PFHpA, PFHxA, PFPeA and PFBA

Cod

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-044090	864729	Cod	0.06	<0.1	<0.1	0.23	<0.1	0.03	0.32
S22-044091	3012821	Cod	0.05	<0.1	<0.1	0.19	<0.1	<0.025	0.24
S22-044092	3012820	Cod	0.12	<0.1	<0.1	0.19	<0.1	<0.025	0.31
S22-044093	3012819	Cod	0.07	<0.1	<0.1	0.16	<0.1	<0.025	0.23
S22-044094	864728	Cod	0.03	<0.1	<0.1	<0.1	<0.1	<0.025	0.03
S22-045893	864727	Cod	0.04	<0.1	<0.1	0.13	<0.1	0.04	0.21
S22-050353	864622	Cod	0.05	<0.1	<0.1	0.15	<0.1	<0.025	0.20
S22-050354	884611	Cod	0.07	<0.1	<0.1	0.16	<0.1	<0.025	0.23
S23-000330	2999453	Cod	0.04	<0.1	<0.1	<0.1	<0.1	<0.025	0.04
S23-000331	2999452	Cod	0.03	<0.1	<0.1	<0.1	<0.1	<0.025	0.03
S23-000332	2999451	Cod	1.01	<0.1	<0.1	0.94	<0.1	0.03	1.98
S23-000854	794728	Cod	1.49	0.52	0.12	0.31	<0.1	0.14	2.58
S23-000855	794727	Cod	0.98	0.47	<0.1	0.23	<0.1	0.09	1.78
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Cod

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-044090	864729	Cod	0.08	<0.2	0.06	0.20	0.13	<0.5	<0.5
S22-044091	3012821	Cod	0.06	<0.2	0.05	0.10	<0.1	<0.5	<0.5
S22-044092	3012820	Cod	<0.05	<0.2	<0.05	0.06	0.10	<0.5	<0.5
S22-044093	3012819	Cod	<0.05	<0.2	<0.05	0.09	<0.1	<0.5	<0.5
S22-044094	864728	Cod	<0.05	<0.2	<0.05	0.12	0.11	<0.5	<0.5
S22-045893	864727	Cod	<0.05	<0.2	<0.05	0.51	0.22	<0.5	<0.5
S22-050353	864622	Cod	0.06	<0.2	<0.05	0.13	<0.1	<0.5	<0.5
S22-050354	884611	Cod	<0.05	<0.2	<0.05	0.06	<0.1	<0.5	<0.5
S23-000330	2999453	Cod	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S23-000331	2999452	Cod	<0.05	<0.2	<0.05	0.05	<0.1	<0.5	<0.5
S23-000332	2999451	Cod	0.49	<0.2	0.09	0.07	<0.1	<0.5	n/r
S23-000854	794728	Cod	<0.05	<0.2	<0.05	0.05	<0.1	<0.5	<0.5
S23-000855	794727	Cod	<0.05	<0.2	<0.05	0.09	<0.1	<0.5	<0.5
EU limit									

Crab

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019797	861789	Crab	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S22-019935	3012986	Crab	0.50	0.12	<0.1	0.42	<0.1	0.39	1.42
S22-019937	3012972	Crab	0.23	<0.1	<0.1	<0.1	<0.1	0.09	0.32
S22-019938	3012915	Crab	0.19	<0.1	<0.1	<0.1	<0.1	0.18	0.38
S22-022566	3011256	Crab	0.14	<0.1	<0.1	0.13	<0.1	0.14	0.41
S22-022567	3011258	Crab	0.23	<0.1	<0.1	0.25	<0.1	0.23	0.71
S22-022569	3011260	Crab	0.28	<0.1	<0.1	0.17	<0.1	0.15	0.61
S22-022735	864927	Crab	0.06	<0.1	<0.1	0.17	0.04	0.04	0.31
S22-025473	864969	Crab	0.07	<0.1	<0.1	0.13	0.03	0.05	0.28
S22-034417	3012864	Crab	0.09	<0.1	<0.1	0.22	0.02	0.17	0.49
S22-034495	3011309	Crab	0.08	<0.1	<0.1	0.16	0.01	0.09	0.35
S22-034500	3012925	Crab	0.10	<0.1	<0.1	0.12	0.01	0.09	0.32
S22-034501	3012866	Crab	0.09	<0.1	<0.1	0.17	<0.01	0.10	0.36
S22-036633	864821	Crab	0.19	<0.1	<0.1	0.11	0.02	0.28	0.60
S22-036634	864820	Crab	0.07	<0.1	<0.1	0.16	<0.01	0.08	0.32
S22-036635	864819	Crab	0.21	<0.1	<0.1	0.26	0.02	0.27	0.76
S22-036636	3038328	Crab	0.06	<0.1	<0.1	<0.1	<0.01	0.06	0.12
S22-036637	864816	Crab	0.30	<0.1	<0.1	0.21	0.02	0.42	0.95
S22-036638	864817	Crab	0.11	<0.1	<0.1	<0.1	0.01	0.11	0.23
S22-044040	864733	Crab	0.09	<0.1	<0.1	<0.1	0.02	0.21	0.31
S22-044173	3047777	Crab	0.20	<0.1	<0.1	0.17	0.01	0.48	0.86
S22-044174	3047776	Crab	0.44	<0.1	<0.1	0.20	0.02	1.82	2.49
S22-045894	3012817	Crab	0.07	<0.1	<0.1	0.07	0.01	0.10	0.25
S22-050355	864858	Crab	0.18	<0.1	<0.1	0.23	0.02	0.19	0.62
S22-050356	864859	Crab	0.26	<0.1	<0.1	0.23	0.05	0.28	0.82
S23-000899	3012967	Crab	0.30	<0.1	<0.1	0.78	<0.1	1.11	2.19
S23-001271	825315	Crab	0.15	<0.1	<0.1	0.19	0.01	0.11	0.47
EU limit (crustaceans)			**1.0**	**1.5**		**3.0**		**0.7**	**5.0**

Crab

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019797	861789	Crab	<0.05	<0.05	<0.05	0.07	<0.1	<0.5	<0.5
S22-019935	3012986	Crab	0.09	<0.2	<0.05	0.17	0.12	<0.5	<0.5
S22-019937	3012972	Crab	<0.05	<0.2	<0.05	0.05	<0.1	<0.5	<0.5
S22-019938	3012915	Crab	<0.05	<0.2	<0.05	0.14	<0.1	<0.5	<0.5
S22-022566	3011256	Crab	0.08	<0.2	<0.05	0.40	0.18	<0.5	<0.5
S22-022567	3011258	Crab	0.09	<0.2	0.08	0.10	<0.1	<0.5	<0.5
S22-022569	3011260	Crab	0.13	<0.2	<0.05	0.07	<0.1	<0.5	<0.5
S22-022735	864927	Crab	<0.05	<0.2	<0.05	1.04	<0.1	<0.5	<0.5
S22-025473	864969	Crab	<0.05	<0.2	<0.05	0.65	<0.1	<0.5	<0.5
S22-034417	3012864	Crab	<0.05	<0.2	<0.05	0.16	<0.1	<0.5	<0.5
S22-034495	3011309	Crab	0.06	<0.2	<0.05	0.28	0.15	<0.5	<0.5
S22-034500	3012925	Crab	0.05	<0.2	<0.05	0.20	0.12	<0.5	<0.5
S22-034501	3012866	Crab	0.08	<0.2	<0.05	0.09	0.11	<0.5	<0.5
S22-036633	864821	Crab	0.05	<0.2	<0.05	0.10	<0.1	<0.5	<0.5
S22-036634	864820	Crab	0.07	<0.2	<0.05	0.15	<0.1	<0.5	<0.5
S22-036635	864819	Crab	0.15	<0.2	<0.05	0.18	0.18	<0.5	<0.5
S22-036636	3038328	Crab	0.04	<0.2	<0.05	0.05	<0.1	<0.5	<0.5
S22-036637	864816	Crab	0.05	<0.2	<0.05	0.08	<0.1	<0.5	<0.5
S22-036638	864817	Crab	<0.05	<0.2	<0.05	0.07	<0.1	<0.5	<0.5
S22-044040	864733	Crab	<0.05	<0.2	<0.05	0.16	0.16	<0.5	<0.5
S22-044173	3047777	Crab	<0.05	<0.2	<0.05	0.16	<0.1	<0.5	<0.5
S22-044174	3047776	Crab	<0.05	<0.2	<0.05	0.46	0.18	<0.5	<0.5
S22-045894	3012817	Crab	0.06	<0.2	<0.05	0.14	0.14	<0.5	<0.5
S22-050355	864858	Crab	0.07	<0.2	<0.05	0.11	0.10	<0.5	<0.5
S22-050356	864859	Crab	0.09	<0.2	<0.05	0.18	0.18	<0.5	<0.5
S23-000899	3012967	Crab	0.14	<0.2	0.05	0.09	<0.1	<0.5	<0.5
S23-001271	825315	Crab	0.06	<0.2	0.05	0.16	0.18	<0.5	<0.5
EU limit (crustaceans)									

Cuttlefish

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019799	861787	Cuttlefish	<0.025	<0.1	<0.1	0.14	<0.1	<0.025	0.14
S22-022738	864926	Cuttlefish	0.03	<0.1	<0.1	0.25	<0.1	<0.025	0.28
S22-022741	864929	Cuttlefish	<0.025	<0.1	<0.1	0.19	<0.1	<0.025	0.19
S22-034418	3012865	Cuttlefish	<0.025	<0.1	<0.1	0.13	<0.1	<0.025	0.13
S22-036204	864901	Cuttlefish	<0.025	<0.1	<0.1	0.14	<0.1	<0.025	0.14
S22-036205	864902	Cuttlefish	<0.025	<0.1	<0.1	0.15	<0.1	0.03	0.17
S22-044038	864739	Cuttlefish	<0.025	<0.1	<0.1	0.15	<0.1	<0.025	0.15
S22-045935	864673	Cuttlefish	<0.025	<0.1	<0.1	0.15	<0.1	<0.025	0.15
S22-050660	864737	Cuttlefish	<0.025	<0.1	<0.1	0.19	<0.1	0.03	0.21
S22-063271	825325	Cuttlefish	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001850	794624	Cuttlefish	<0.025	<0.1	<0.1	0.11	<0.1	<0.025	0.11
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

NOTE: Cephalopods are not specifically mentioned in the regulations. The limits indicated above apply to "muscle meat of fish"

Cuttlefish

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019799	861787	Cuttlefish	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S22-022738	864926	Cuttlefish	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-022741	864929	Cuttlefish	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-034418	3012865	Cuttlefish	<0.05	<0.2	<0.05	0.11	<0.1	<0.5	n/r
S22-036204	864901	Cuttlefish	<0.05	<0.2	<0.05	0.09	<0.1	<0.5	n/r
S22-036205	864902	Cuttlefish	<0.05	<0.2	<0.05	0.28	0.11	<0.5	n/r
S22-044038	864739	Cuttlefish	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-045935	864673	Cuttlefish	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-050660	864737	Cuttlefish	<0.05	<0.2	<0.05	0.12	0.13	<0.5	<0.5
S22-063271	825325	Cuttlefish	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001850	794624	Cuttlefish	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
EU limit									

NOTE: Cephalopods are not specifically mentioned in the regulations. The limits indicated above apply to "muscle meat of fish"

Dog fish

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019772	3012873	Dog fish	<0.025	<0.1	<0.1	0.13	<0.1	<0.025	0.13
S22-063270	825326	Dog fish	<0.025	<0.1	<0.1	0.27	<0.1	<0.025	0.27
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Dog fish

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019772	3012873	Dog fish	<0.05	<0.2	<0.05	0.11	<0.1	<0.5	<0.5
S22-063270	825326	Dog fish	<0.05	<0.2	0.05	<0.05	<0.1	<0.5	n/r
EU limit									

Gurnard

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019820	861588	Gurnard	0.05	<0.1	<0.1	<0.1	0.01	<0.025	0.06
S22-034420	3012863	Gurnard	0.57	<0.1	<0.1	1.46	<0.1	0.03	2.06
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Gurnard

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019820	861588	Gurnard	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S22-034420	3012863	Gurnard	0.23	<0.2	<0.05	0.10	<0.1	<0.5	<0.5
EU limit									

Haddock

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019936	3038512	Haddock	0.16	<0.1	<0.1	<0.1	<0.1	0.03	0.18
S22-022568	3011257	Haddock	0.15	<0.1	<0.1	0.12	<0.1	0.03	0.30
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Haddock

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019936	3038512	Haddock	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-022568	3011257	Haddock	0.05	<0.2	<0.05	0.08	<0.1	<0.5	<0.5
EU limit									

Hake

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019817	861585	Hake	<0.025	<0.1	<0.1	0.10	<0.1	<0.025	0.10
S22-022739	3011307	Hake	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S22-034415	3011308	Hake	<0.25	<0.1	0.10*	0.03	<0.1	0.03	0.16
S22-036219	3012836	Hake	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S22-044039	3012910	Hake	0.03	<0.1	<0.1	<0.1	<0.1	<0.025	0.03
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Hake

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019817	861585	Hake	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S22-022739	3011307	Hake	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-034415	3011308	Hake	<0.05	<0.2	<0.05	0.31	0.12	<0.5	<0.5
S22-036219	3012836	Hake	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-044039	3012910	Hake	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
EU limit									

Herring

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-047232	3038332	Herring	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S22-047233	3009366	Herring	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S22-047234	3012851	Herring	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001846	794620	Herring	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001847	794621	Herring	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001848	794622	Herring	<0.025	<0.1	0.10*	<0.1	<0.1	0.03	0.13
S23-001849	794623	Herring	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Herring

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-047232	3038332	Herring	<0.05	<0.2	<0.05	<0.05	<0.1	0.56	n/r
S22-047233	3009366	Herring	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-047234	3012851	Herring	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001846	794620	Herring	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001847	794621	Herring	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S23-001848	794622	Herring	<0.05	<0.2	<0.05	0.43	0.14	<0.5	<0.5
S23-001849	794623	Herring	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
EU limit									

Lobster

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-036875	864884	Lobster	0.19	<0.1	<0.1	0.17	<0.1	0.26	0.62
S22-022860	3012886	Lobster	0.11	<0.1	<0.1	0.62	<0.1	0.53	1.26
S22-019918	3012914	Lobster	0.21	<0.1	<0.1	0.20	<0.1	0.23	0.64
S22-034499	3012867	Lobster	0.10	<0.1	<0.1	0.20	<0.1	0.17	0.46
EU limit (crustaceans)			**1.0**	**1.5**		**3.0**		**0.7**	**5.0**

Lobster

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-036875	864884	Lobster	0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-022860	3012886	Lobster	0.15	<0.2	0.08	0.18	<0.1	<0.5	<0.5
S22-019918	3012914	Lobster	0.14	<0.2	0.24	<0.05	<0.1	<0.5	n/r
S22-034499	3012867	Lobster	0.15	<0.2	0.18	<0.05	<0.1	<0.5	n/r
EU limit (crustaceans)									

Mackerel

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-022740	3011305	Mackerel	0.03	<0.1	<0.1	<0.1	<0.1	<0.025	0.03
S22-034421	864898	Mackerel	0.03	<0.1	0.12*	0.14	<0.1	0.04	0.32
S22-036220	864899	Mackerel	0.05	0.12*	0.15*	0.67	<0.1	<0.025	0.98
S23-001838	794630	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001839	864685	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001840	864686	Mackerel	<0.025	<0.1	<0.1	0.18	<0.1	<0.025	0.18
S23-001841	864745	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001842	864738	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001843	864734	Mackerel	<0.025	<0.1	<0.1	0.48	<0.1	<0.025	0.48
S23-001844	864735	Mackerel	<0.025	<0.1	<0.1	0.21	<0.1	<0.025	0.21
S23-001845	864736	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001851	794625	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001852	794626	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001853	794627	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001854	794628	Mackerel	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
S23-001855	795629	Mackerel	<0.025	<0.1	<0.1	0.16*	0.69	<0.025	0.85
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Mackerel

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-022740	3011305	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-034421	864898	Mackerel	<0.05	<0.2	<0.05	0.06	<0.1	<0.5	n/r
S22-036220	864899	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001838	794630	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001839	864685	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001840	864686	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001841	864745	Mackerel	<0.05	<0.2	<0.05	0.09	<0.1	<0.5	<0.5
S23-001842	864738	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001843	864734	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001844	864735	Mackerel	<0.05	<0.2	<0.05	0.11	<0.1	<0.5	<0.5
S23-001845	864736	Mackerel	<0.05	<0.2	<0.05	0.12	<0.1	<0.5	<0.5
S23-001851	794625	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S23-001852	794626	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S23-001853	794627	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S23-001854	794628	Mackerel	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S23-001855	795629	Mackerel	<0.05	<0.2	<0.05	1.03	0.13	<0.5	<0.5
EU limit									

Monks and Anglers

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019818	861586	Monks & Anglers	0.03	<0.1	<0.1	0.17	0.02	<0.025	0.21
S22-022736	864928	Monks & Anglers	0.03	<0.1	<0.1	0.32	<0.1	0.04*	0.34
S22-034422	3012862	Monks & Anglers	<0.025	<0.1	<0.1	0.17	<0.1	0.03	0.20
S22-044037	864730	Monks & Anglers	<0.025	<0.1	<0.1	0.26	<0.1	<0.025	0.26
S22-045934	864672	Monks & Anglers	<0.025	<0.1	<0.1	0.25	<0.1	<0.025	0.25
S22-036997	3012875	Monks & Anglers	0.03	<0.1	<0.10	0.26	<0.1	<0.025	0.29
S22-063269	823407	Monks & Anglers	0.03	<0.1	<0.1	0.21	<0.1	<0.025	0.23
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Monks and Anglers

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019818	861586	Monks & Anglers	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S22-022736	864928	Monks & Anglers	<0.05	<0.2	<0.05	0.16	0.10	<0.5	<0.5
S22-034422	3012862	Monks & Anglers	<0.05	<0.2	<0.05	0.19	0.13	<0.5	n/r
S22-044037	864730	Monks & Anglers	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-045934	864672	Monks & Anglers	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036997	3012875	Monks & Anglers	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-063269	823407	Monks & Anglers	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
EU limit									

Plaice

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019800	861583	Plaice	0.18	<0.1	<0.1	0.53	0.03	0.03	0.77
S22-034413	3012861	Plaice	0.04	<0.1	<0.1	0.16	<0.1	0.04	0.24
S22-036221	864900	Plaice	0.11	<0.1	<0.1	0.15	<0.10	0.04	0.30
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Plaice

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019800	861583	Plaice	0.06	<0.2	<0.05	0.22	0.21	<0.5	<0.5
S22-034413	3012861	Plaice	<0.05	<0.2	<0.05	0.16	0.10	<0.5	<0.5
S22-036221	864900	Plaice	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
EU limit									

Sardines

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-036208	864905	Sardines	0.03	<0.1	<0.1	0.37	0.03	0.03	0.46
S22-036209	864906	Sardines	<0.025	<0.1	<0.1	0.30	0.02	0.03	0.35
S22-036210	861590	Sardines	<0.025	<0.1	<0.1	0.35	0.02	0.03	0.40
S22-036212	3012835	Sardines	0.03	<0.1	<0.1	0.49	0.08	<0.025	0.60
S22-036213	3012834	Sardines	0.04	<0.1	<0.1	0.47	0.06	<0.025	0.57
S22-036214	3012833	Sardines	0.03	<0.1	<0.1	0.35	0.04	<0.025	0.42
S22-036215	3012832	Sardines	0.03	<0.1	<0.1	0.45	0.04	<0.025	0.52
S22-036216	3012859	Sardines	0.03	<0.1	<0.1	0.40	0.03	<0.025	0.46
S22-036217	3012858	Sardines	0.03	<0.1	<0.1	0.39	0.08	<0.025	0.50
S22-036218	3012874	Sardines	0.03	<0.1	<0.1	0.42	0.05	<0.025	0.49
S22-036223	864752	Sardines	0.03	<0.1	<0.1	0.37	0.03	<0.025	0.42
S22-036224	864753	Sardines	0.03	<0.1	<0.1	0.39	0.02	<0.025	0.44
S22-036225	864754	Sardines	<0.025	<0.1	<0.1	0.37	0.02	<0.025	0.38
S22-036226	864763	Sardines	0.03	<0.1	<0.1	0.44	0.03	<0.025	0.49
S22-036227	864764	Sardines	<0.025	<0.1	<0.1	0.42	<0.1	0.03	0.44
S22-036231	864747	Sardines	<0.025	<0.1	<0.1	0.38	<0.1	<0.025	0.38
S22-036232	864748	Sardines	0.03	<0.1	<0.1	0.38	<0.1	<0.025	0.41
S22-036233	864749	Sardines	<0.025	<0.1	<0.1	0.39	<0.1	<0.025	0.39
S22-036234	864750	Sardines	0.03	<0.1	<0.1	0.33	<0.1	<0.025	0.36
S22-036235	864751	Sardines	0.04	<0.1	1.46*	0.54	<0.1	0.05	2.09
S22-044035	864732	Sardines	<0.025	<0.1	<0.1	0.22	<0.1	<0.025	0.22
S22-044036	864731	Sardines	0.04	<0.1	<0.1	0.32	<0.1	0.05	0.40
S22-044534	864740	Sardines	<0.025	<0.1	<0.1	0.29	<0.1	<0.025	0.29
S22-044535	864741	Sardines	<0.025	<0.1	<0.1	0.24	<0.1	0.03	0.27
S22-044536	864742	Sardines	0.03	<0.1	<0.1	0.28	<0.1	0.05	0.35
S22-044537	864743	Sardines	<0.025	<0.1	<0.1	0.24	<0.1	<0.025	0.24
S22-044538	864744	Sardines	0.03	<0.1	<0.1	0.30	<0.1	0.04	0.37
S22-063272	823408	Sardines	<0.025	<0.1	<0.1	0.41	<0.1	<0.025	0.41
S22-063273	823409	Sardines	<0.025	<0.1	<0.1	0.41	<0.1	<0.025	0.41
S22-063274	823410	Sardines	<0.025	<0.1	<0.1	0.40	<0.1	<0.025	0.40
S22-063275	823411	Sardines	<0.025	<0.1	<0.1	0.42	<0.1	<0.025	0.42
S22-063276	823412	Sardines	<0.025	<0.1	<0.1	0.40	<0.1	<0.025	0.40
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Sardines

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-036208	864905	Sardines	<0.05	<0.2	<0.05	0.06	<0.1	<0.5	n/r
S22-036209	864906	Sardines	<0.05	<0.2	<0.05	0.07	<0.1	<0.5	n/r
S22-036210	861590	Sardines	<0.05	<0.2	<0.05	0.16	0.11	<0.5	n/r
S22-036212	3012835	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036213	3012834	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036214	3012833	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036215	3012832	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036216	3012859	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036217	3012858	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036218	3012874	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036223	864752	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036224	864753	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036225	864754	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036226	864763	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036227	864764	Sardines	<0.05	<0.2	<0.05	0.31	0.12	<0.5	<0.5
S22-036231	864747	Sardines	<0.05	<0.2	<0.05	0.15	<0.1	<0.5	<0.5
S22-036232	864748	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036233	864749	Sardines	<0.05	<0.2	<0.05	0.25	0.13	<0.5	<0.5
S22-036234	864750	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036235	864751	Sardines	<0.05	<0.2	<0.05	0.25	<0.1	<0.5	<0.5
S22-044035	864732	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-044036	864731	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-044534	864740	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-044535	864741	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-044536	864742	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-044537	864743	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-044538	864744	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-063272	823408	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-063273	823409	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-063274	823410	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-063275	823411	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-063276	823412	Sardines	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
EU limit									

Sea bass

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019819	861587	Sea Bass	0.03	<0.1	<0.1	1.97	<0.1	<0.025	2.00
S22-022737	3012868	Sea Bass	0.05	<0.1	<0.1	1.00	<0.1	<0.025	1.04
S22-022861	3012887	Sea Bass	0.03	<0.1	<0.1	0.88	<0.1	<0.025	0.91
S22-034414	3012860	Sea Bass	0.04	<0.1	<0.1	0.90	<0.1	<0.025	0.94
S22-036142	864843	Sea Bass	<0.025	<0.1	<0.1	0.49	<0.1	<0.025	0.49
S22-044533	3012911	Sea Bass	<0.025	<0.1	<0.1	1.35	<0.1	<0.025	1.35
S23-001658	2997635	Sea Bass	<0.025	<0.1	<0.1	0.31	<0.1	<0.025	0.52
S23-001659	2997636	Sea Bass	0.01	<0.1	<0.1	1.76	<0.1	0.03	0.32
S23-001660	2997637	Sea Bass	<0.025	<0.1	<0.1	0.12	<0.1	<0.025	0.12
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Sea bass

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019819	861587	Sea Bass	0.07	<0.2	<0.05	0.55	0.17	<0.5	<0.5
S22-022737	3012868	Sea Bass	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-022861	3012887	Sea Bass	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-034414	3012860	Sea Bass	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036142	864843	Sea Bass	<0.05	<0.2	<0.05	0.06	<0.1	<0.5	n/r
S22-044533	3012911	Sea Bass	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001658	2997635	Sea Bass	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S23-001659	2997636	Sea Bass	<0.05	<0.2	<0.05	0.48	0.20*	<0.5	<0.5
S23-001660	2997637	Sea Bass	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
EU limit									

Skates and Rays

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019773	861589	Skates & Rays	0.07	<0.1	<0.1	0.24	<0.1	0.06	0.36
S22-025444	865061	Skates & Rays	0.10	<0.1	<0.1	1.34	<0.1	<0.025	1.44
S22-034419	864897	Skates & Rays	<0.025	<0.1	<0.1	0.11	<0.1	<0.025	0.11
S22-036874	864885	Skates & Rays	0.05	<0.1	<0.1	1.44	<0.1	<0.025	1.49
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Skates and Rays

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019773	861589	Skates & Rays	<0.05	<0.2	<0.05	0.09	<0.1	<0.5	<0.5
S22-025444	865061	Skates & Rays	0.13	<0.2	0.20	<0.05	<0.1	<0.5	n/r
S22-034419	864897	Skates & Rays	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036874	864885	Skates & Rays	0.10	<0.2	0.10	<0.05	<0.1	<0.5	n/r
EU limit									

Sole

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-019801	861584	Lemon Sole	0.11	<0.1	<0.1	0.18	0.03	<0.025	0.31
S22-034416	3011306	Lemon Sole	0.13	<0.1	<0.1	0.19	<0.1	0.05	0.37
S22-036206	864903	Sole	0.03	<0.1	<0.1	0.13	0.02	0.03	0.20
S22-036207	864904	Sole	0.08	<0.1	<0.1	0.21	0.02	0.05	0.36
S22-036229	3012838	Sole	<0.025	<0.1	<0.1	0.12	<0.01	<0.025	0.12
S22-036230	3012837	Sole	<0.025	<0.1	<0.1	<0.1	<0.1	<0.025	<0.45
EU limit			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

Sole

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-019801	861584	Lemon Sole	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	<0.5
S22-034416	3011306	Lemon Sole	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036206	864903	Sole	<0.05	<0.2	<0.05	0.10	0.10	<0.5	n/r
S22-036207	864904	Sole	<0.05	<0.2	<0.05	0.19	0.11	<0.5	n/r
S22-036229	3012838	Sole	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
S22-036230	3012837	Sole	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
EU limit									

Squid

FERA LIMS	External reference	Species	PFNA	Linear-PFHxS	Branched-PFHxS	Linear-PFOS	Branched-PFOS	PFOA	SUM #
S22-047235	3012852	Squid	<0.025	<0.1	0.33*	0.11	0.42	0.04	0.90
S22-050352	864609	Squid	<0.025	<0.1	0.10*	<0.1	<0.1	<0.025	0.10*
EU limit**			**0.5**	**0.2**		**2.0**		**0.2**	**2.0**

***NOTE: Cephalopods are not specifically mentioned in the regulations. The limits indicated above apply to "muscle meat of fish"*

Squid

FERA LIMS	External reference	Species	PFDA	PFBS	PFDoA	PFHpA	PFHxA	PFPeA	PFBA
S22-047235	3012852	Squid	<0.05	<0.2	<0.05	0.10	<0.1	<0.5	<0.5
S22-050352	864609	Squid	<0.05	<0.2	<0.05	<0.05	<0.1	<0.5	n/r
EU limit									

NOTE: Cephalopods are not specifically mentioned in the regulations. The limits indicated above apply to "muscle meat of fish"

Table 4. **Inorganic arsenic concentrations in wild caught fish samples (mg/kg)**

There are currently no maximum levels established in GB for inorganic arsenic in fish and shellfish. Within the EU the European Commission was considering maximum levels for inorganic arsenic as given below:

Foodstuff	Maximum level
Muscle meat of fish (excluding species listed below)	0.020 mg/kg wet weight
Muscle meat of the following fish: anchovy (Engraulis species); eel (Anguilla species); halibut (Hipoglossus species); mackerel (Scomber species); plaice (Pleuronectes species); shad (Alosa species); sprat (Sprattus sprattus); shark (all species)	0.080 mg/kg wet weight
Crustaceans: muscle meat from appendages and abdomen. In case of crabs and crab-like crustaceans (Brachyura and Anomura) muscle meat from appendages	0.070 mg/kg wet weight
Bivalve molluscs (excluding those listed below)	0.090 mg/kg wet weight
Clams (Myidae, Cardiidae, Veneridae and Arcidae species) and horse mussel (Modiolus modiolus)	0.35 mg/kg wet weight

Measurement uncertainty (MU) = ±26%

Cod

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-044090	864729	Cod	<0.007	North East
S22-044092	3012820	Cod	<0.007	North East
S22-045893	864727	Cod	<0.007	North East
S23-000330	2999453	Cod	<0.007	North East
S23-000854	794728	Cod	<0.007	North East

Crab

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019797	861789	Crab	<0.007	South West
S22-019935	3012986	Crab	<0.007	North East
S22-022566	3011256	Crab	<0.007	North East
S22-022735	864927	Crab	<0.007	South West
S22-034417	3012864	Crab	0.009	South West
S22-034500	3012925	Crab	<0.007	North East
S22-036634	864820	Crab	<0.007	North East
S22-044040	864733	Crab	<0.007	South West
S22-044174	3047776	Crab	<0.007	Wales
S22-045894	3012817	Crab	<0.007	North East
S23-000899	3012967	Crab	<0.007	Wales

Cuttlefish

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019799	861787	Cuttlefish	<0.007	South West
S22-022738	864926	Cuttlefish	<0.007	South West
S22-034418	3012865	Cuttlefish	<0.007	South West
S22-036204	864901	Cuttlefish	<0.007	South West
S22-044038	864739	Cuttlefish	<0.007	South West
S22-045935	864673	Cuttlefish	<0.007	South West
S22-050660	864737	Cuttlefish	<0.007	South West
S23-001850	794624	Cuttlefish	<0.007	South West

Dog fish

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019772	3012873	Dog fish	<0.007	South West
S22-063270	825326	Dog fish	<0.007	South West

Gurnard

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019820	861588	Gurnard	<0.007	South West
S22-034420	3012863	Gurnard	<0.007	South West

Haddock

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019936	3038512	Haddock	<0.007	North East
S22-022568	3011257	Haddock	<0.007	North East

Hake

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019817	861585	Hake	<0.007	South West
S22-034415	3011308	Hake	<0.007	South West
S22-044039	3012910	Hake	<0.007	South West

Herring

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-047232	3038332	Herring	<0.007	North East
S22-047234	3012851	Herring	<0.007	North East
S23-001846	794620	Herring	<0.007	South West
S23-001848	794622	Herring	<0.007	South West

Lobster

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-036875	864884	Lobster	0.009	North East
S22-022860	3012886	Lobster	0.009	Wales
S22-034499	3012867	Lobster	0.011	North East

Mackerel

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-022740	3011305	Mackerel	<0.007	South West
S22-036220	864899	Mackerel	<0.007	South West
S23-001841	00864745	Mackerel	<0.007	South West
S23-001844	00864735	Mackerel	<0.007	South West
S23-001851	00794625	Mackerel	<0.007	South West
S23-001853	00794627	Mackerel	<0.007	South West

Monks and Anglers

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019818	861586	Monks & Anglers	<0.007	South West
S22-034422	3012862	Monks & Anglers	<0.007	South West
S22-036997	3012875	Monks & Anglers	<0.007	South West

Plaice

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019800	861583	Plaice	<0.007	South West
S22-034413	3012861	Plaice	<0.007	South West
S22-036221	864900	Plaice	<0.007	South West

Sardines

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-036208	864905	Sardines	<0.007	South West
S22-036213	3012834	Sardines	<0.007	South West
S22-036223	864752	Sardines	0.009	South West
S22-036226	864763	Sardines	<0.007	South West
S22-044534	864740	Sardines	0.010	South West
S22-044537	864743	Sardines	0.010	South West
S22-063272	823408	Sardines	<0.007	South West
S22-063274	823410	Sardines	<0.007	South West

Sea bass

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019819	861587	Sea Bass	<0.007	South West
S22-022737	3012868	Sea Bass	<0.007	South West
S22-022861	3012887	Sea Bass	<0.007	Wales
S22-034414	3012860	Sea Bass	<0.007	South West
S22-036142	864843	Sea Bass	<0.007	Wales
S22-044533	3012911	Sea Bass	<0.007	South West
S23-001658	2997635	Sea Bass	<0.007	South East
S23-001659	2997636	Sea Bass	<0.007	South East
S23-001660	2997637	Sea Bass	<0.007	South East

Skates and Rays

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-025444	865061	Skates & Rays	<0.007	Wales
S22-034419	864897	Skates & Rays	<0.007	South West

Sole

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-019801	861584	Lemon Sole	<0.007	South West
S22-036207	864904	Sole	<0.007	South West
S22-036230	3012837	Sole	<0.007	South West

Squid

FERA LIMS	External reference	Species	Inorganic As (mg/kg)	Region
S22-047235	3012852	Squid	<0.007	North East
S22-050352	864609	Squid	<0.007	North East