Quick reference guide on marine toxin test methods. Please click on hyperlinks to access contact details for test kit suppliers and testing laboratories

Toxin Group / Regulatory limit	Methods available	Method characteristics	Intended usage	Benefits	Limitations
PSP 800 micrograms saxitoxin equivalents/kg.	**EU approved methods:** HPLC (UK Official Control method)	HPLC is an analytical (chemical) method, which measures all toxins of concern from the PSP family, and gives a fully quantitative result.	Can be used for end product testing, Official Control and confirmatory testing. Can only be undertaken in specialised testing labs : CEFAS, AFBI, Marine Institute	Provides very accurate results, which directly relate to the regulatory limits. Can give information on the toxin profile (types of PSP toxins present in a sample). Can be used to test large numbers of samples in short timeframes.	Methods require significant equipment and expertise thus can only be carried out in specialist labs. Analysis can be relatively expensive. The need to use a laboratory may incur time delays.
	ELISA kits: Abraxis Saxitoxin (PSP) ELISA, Beacon Saxitoxin Plate Kit, Bioo Scientific MaxSignal® Saxitoxin ELISA, EuroProxima Saxitoxin ELISA, R-biopharm RIDASCREEN®FAST PSP SC, Zeulab Saxitest	ELISAs are antibody-based methods. They provide semi-quantitative results because the antibodies have varying reactivity to the different types of PSP toxins that may be present.	Can be used for end product testing. More suitable for use in testing laboratories, but can be used by highly skilled industry members.	Can be used to screen large numbers of samples in under 2 hours. Relatively inexpensive.	Methods generally require the use of a plate reader, thus require some up front expenditure. Sensitivity to the different PSP toxins varies. This means that: (a) there are some limitations in the coverage of PSP toxins that can be detected; and (b) occasional samples may be positive using the kits, but contain total levels less than the regulatory limit.
	Lateral flow kits: Neogen Reveal® 2.0 for PSP, Scotia PSP Rapid Test	Lateral flow assays are antibody based 'dip stick' type tests. They provide qualitative results ('yes/no' or 'positive/negative').	Can be used for end product testing. Suitable for use by harvesters and processors.	Easy to use in the field by non-specialists. Can be used to screen large numbers of samples in under 2 hours (or single sample analysis in around 30 mins). Relatively inexpensive.	
DSP Okadaic acid (OA), dinophysistoxins (DTX) and pectenotoxins (PTX) together, 160 micrograms of OA equivalents/kg.	**EU approved methods:** (a) LC-MS/MS (Official Control method) (b) The Zeulab OkaTest protein phosphatase inhibition assay (EU supplementary method for DSP)	(a) LC-MS/MS: an analytical (chemical) method which measures all toxins of concern from the DSP, PTX, YTX and AZA groups, and gives fully quantitative results. (b) OkaTest: Is a functional colorimetric assay which gives quantitative results for the DSP toxins (OA, DTX1, 2 and 3), but not PTX, AZA or YTX.	LC-MS/MS can be used for end product testing, Official Control and confirmatory testing. LC-MS/MS can only be undertaken in specialised testing labs .: CEFAS, AFBI, Marine Institute, Neogen The OkaTest can be used for end product testing, but also requires specialised laboratory facilities.	LC-MS/MS provides very accurate results, which directly relate to the regulatory limits. It can provide information on the toxin profile (types of DSP toxins present in a sample). The OkaTest gives an indication of the actual toxicity of the sample. Both tests can be used to screen large numbers of samples.	(a) LC-MS/MS: Requires significant equipment and expertise thus can only be carried out in specialist labs. This means analysis can be relatively expensive and the need to use a lab may incur time delays. (b) OkaTest: limited toxin coverage, other methods are required to detect other lipophilic toxins - PTXs, AZAs and YTX. (c) An additional step called the 'hydrolysis' step needs to be performed to detect DTX3 (both LC-MS/MS and the OkaTest)
	ELISA kits: Abraxis Okadaic Acid ELISA, Beacon Okadaic acid Plate Kit, Bioo Scientific MaxSignal® Okadaic Acid ELISA, EuroProxima Okadaic Acid ELISA	ELISAs are antibody-based methods. They provide semi-quantitative results for DSP (excluding PTX).	Can be used for end product testing. More suitable for use in testing laboratories, but can be used by highly skilled industry members.	Can be used to screen large numbers of samples in under 2 hours. Relatively inexpensive.	Most methods require the use of a plate reader and hotplate, thus require some up front expenditure. Sensitivity to the different DSP toxins varies. This means that: (a) there are some limitations in the coverage of DSP toxins that can be detected; and (b) that occasional samples may be positive using the kits, but contain total levels less than the regulatory limit. An additional step called the 'hydrolysis' step needs to be performed to detect DTX3
	Lateral flow kits: Neogen Reveal® 2.0 for DSP, Scotia DSP Rapid Test	Lateral flow assays are antibody based 'dip stick' type tests. They provide qualitative results ('yes/no') for DSP.	Can be used for end product testing. Suitable for use by harvesters and processors.	Easy to use in the field by non-specialists. Can be used to screen large numbers of samples in under 2 hours (or single sample analysis in around 30 mins). Relatively inexpensive.	
ASP 20 milligrams domoic acid/kg.	**EU approved methods:** (a) HPLC (Official Control method) (b) Biosense® ASP ELISA (AOAC 2006.02, EU screening method)	(a) HPLC: An analytical (chemical) method which gives fully quantitative results. (b) Biosense® ASP ELISA: Antibody based method which provides fully quantitative results	HPLC can be used for end product testing, Official Control and confirmatory testing in specialised testing labs: CEFAS, AFBI, Marine Institute, Neogen The Biosense® ASP ELISA can be used for end product testing and is more suitable for testing in labs. Although an approved regulatory method for screening purposes, the Biosense® ASP ELISA is not used for Official control samples in the UK.	The HPLC and ELISA give very accurate results which relate directly to the regulatory limit. Both tests can be used to screen large numbers of samples.	The methods require significant equipment and expertise thus can only be carried out in specialist labs. This means analysis may be relatively expensive and the need to use a lab may incur time delays.
	ELISA kits: Beacon Domoic Acid Plate Kit, Bioo Scientific MaxSignal® Domoic Acid ELISA, Europroxima Domoic Acid ELISA, Zeulab Domotest	ELISAs are antibody-based methods. They provide quantitative results for ASP.	Can be used for end product testing More suitable for use in testing laboratories, but can be used by highly skilled industry members.	Can be used to screen large numbers of samples in under 2 hours. Relatively inexpensive.	Most methods require the use of a plate reader, thus require some up front expenditure. Lateral flow tests may occasionally give a positive result, but toxin levels are below the regulatory limit.
	Lateral flow kits: Neogen Reveal® 2.0 for ASP, Scotia ASP Rapid Test	Lateral flow assays are antibody based 'dip stick' type tests. They provide qualitative results ('yes/no' for ASP).	Can be used for end product testing. Suitable for use by harvesters and processors.	Easy to use in the field by non-specialists. Can be used to screen large numbers of samples in under 2 hours (or single sample analysis in around 30 mins). Relatively inexpensive.	
Azaspiracids (AZA) and Yessotoxins (YTX) AZA: 160 micrograms of AZA equivalents / kg YTX: 3.75 miligram /kg	**EU approved methods:** LC-MS/MS (Official Control method)	An analytical (chemical) method which measures all toxins of concern from the DSP, PTX, YTX and AZA groups, and gives fully quantitative results.	LC-MS/MS can be used for end product testing, Official Control and confirmatory testing in specialised testing labs: CEFAS, AFBI, Marine Institute	Gives very accurate results, which directly relate to the regulatory limits. It can provide information on the toxin profile (types of AZA and YTX toxins present in a sample).	Methods require significant equipment and expertise thus can only be carried out in specialist labs. This means analysis can be relatively expensive and the need to use a lab may incur time delays.
	Kit methods: None available	NA	NA	NA	NA