

New perspectives and insights from 20 years of monitoring algal events in Irish coastal waters

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Abstract

The Irish monitoring programme for harmful algal events has been in operation since the mid 1980's. Recent reviews of each of the data sets assembled from the last 20 years has revealed new insights into the toxin profiles of the four main shellfish toxin groups which occur on an annual basis, which has provided valuable information for industry and regulatory agencies in making risk management decisions on the onset and during toxic events.

Azaspiracid Shellfish Poisoning (AZP) events are difficult to predict, therefore Polymerase Chain Reaction (PCR) molecular methods are used to identify and discriminate between toxic and non-toxic *Azadinium* species. *Alexandrium* species succession during Paralytic Shellfish Poisoning (PSP) events has been revealed to commence with the occurrence and increase of *A. minutum* cells, which correlates with the increase of PSP toxins in shellfish, which is then succeeded and predominated by non-toxic *A. tamarense* and *A. tamutum* populations. For Amnesic Shellfish Poisoning (ASP) events, a recent biogeography project has investigated and compared the dynamics and inter-actions of *Pseudo-nitzschia* species and the occurrence of ASP toxins in two commercially important mussel production areas. The *Dinophysis* species, *D. acuta* and *D. acuminata* are responsible for Diarrhetic Shellfish Poisoning (DSP) events, where *D. acuminata* is generally the dominant species, however the highest DSP toxicity was observed in the years when *D. acuta* was dominant. The data suggests that Pectenotoxin concentrations, which were quantified for the first time in 2014, were associated with unusually high number of *D. tripos* cells observed at the time.

Keywords:

DSP, ASP, PSP, AZP, *Dinophysis*, *Azadinium*, *Pseudo-nitzschia*, *Alexandrium*

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