

Marine Toxins and Associated Syndromes

Syndrome/toxins	Dinoflagellates/Diatoms	Exposure(s)	Range of symptoms	Symptom Onset
Paralytic Shellfish Poisoning (PSP) -saxitoxins	<i>Alexandrium</i> spp.*, <i>Gymnodinium catenatum</i> , <i>Pyrodinium bahemense</i> (dinoflagellate)	<ul style="list-style-type: none"> Shellfish (including, crabs, lobsters, puffer fish) in Pacific Coast, New England, Florida 	<ul style="list-style-type: none"> Perioral tingling Numbness of face and neck Headache Nausea and vomiting Respiratory difficulty Death 	Few minutes – 10 hrs
*Observed coincidental health effects but not scientifically confirmed -Goniodomin A	<i>Alexandrium monilatum</i>	<ul style="list-style-type: none"> Direct skin contact Inhalational 	<ul style="list-style-type: none"> Skin rash Mild burning and itching tingling around the lips Respiratory difficulty 	Immediate – 15 min
Diarrhetic Shellfish Poisoning (DSP) -okadaic acid and derivatives	<i>Dinophysis</i> spp. <i>Prorocentrum</i> spp. (dinoflagellate)	<ul style="list-style-type: none"> Shellfish (Gulf Coast of Texas) 	<ul style="list-style-type: none"> Diarrhea (most prominent) Nausea and vomiting Abdominal pain 	30 min – 2 hrs
Ciguatera Fish Poisoning (CSP) -ciguatoxins, maitotoxin	<i>Gambierdiscus toxicus</i> , <i>Prorocentrum</i> spp. (dinoflagellate)	<ul style="list-style-type: none"> Reef fish (tropical/subtropical) 	<p>Early onset</p> <ul style="list-style-type: none"> Diarrhea, abdominal pain Nausea, vomiting <p>Later onset</p> <ul style="list-style-type: none"> Reversal of hot and cold sensations Paresthesias Blurred vision Headache Arrhythmias Paralysis 	<p>2 – 6 hrs</p> <p>12-24 hrs</p>
Neurotoxic Shellfish Poisoning (NSP) -brevetoxin	<i>Karenia brevis</i> (dinoflagellate) <i>Chattonella subsalsa</i> (Raphidophyte)	<ul style="list-style-type: none"> Shellfish (Mid-Atlantic and Gulf of Mexico) Inhalation of aerosolized toxins 	<p>GI and neuro symptoms</p> <ul style="list-style-type: none"> Similar to those of PSP except NSP not known to cause death <p>Irritation:</p> <ul style="list-style-type: none"> Eyes Throat 	Few min - hours
Domoic Acid Poisoning / Amnesiac Shellfish Poisoning (ASP) -domoic acid	<i>Pseudo-nitzschia</i> spp. (diatom)	<ul style="list-style-type: none"> Shellfish (Pacific Coast, Northeast Coast, Western Coast of Florida) 	<ul style="list-style-type: none"> Diarrhea Nausea and vomiting Confusion Memory loss Seizures Coma Death 	Nausea and vomiting usually within 24 hrs; other symptoms 24 – 48 hrs

Not included above, is Azaspiracid Shellfish Poisoning (AZP), caused by toxins of a dinoflagellate in Ireland, Netherlands, Belgium, Morocco, and eastern Canada.

*Range of symptoms reported in Virginia as a result of direct contact to *A. monilatum*.