

Effects of climate change and eutrophication on domoic acid production by *Pseudo-nitzschia* species – context and objectives

Over the past decade, several coastal countries including France have experienced an increasing and major problem related to harmful algal blooms of the diatom *Pseudo-nitzschia*. The genus *Pseudo-nitzschia* includes some toxic species capable of producing domoic acid (DA), a neurotoxin responsible for the amnesic shellfish poisoning syndrome (ASP). Impacts of these blooms present many risks ranging from serious ecological and economic damages to threats to public health. These threats include human illness from ingesting contaminated shellfish, especially scallops that can accumulate DA for more than a year. It can also cause the death of marine mammals and seabirds. Based on literature, abundance and frequency of *Pseudo-nitzschia* blooms seem to be associated with eutrophication and climate change. Hence, several studies reviewed the effect of these changes on the production and accumulation of DA, including the change in pH, temperature, salinity and the availability of different source of nitrogen. However, studies show varying results and this is usually justified by the wide inter-species variability and even intra-strain variability of *Pseudo-nitzschia*. Therefore, further studies are needed to elucidate the effect of climate change and eutrophication that may promote growth and DA production by additional *Pseudo-nitzschia* species and strains isolated in France. So the aim of this thesis is to study the impact of several changing factors such as salinity variation, ocean acidification (pH) and nutrient availability in order to understand the physiology of the toxic *Pseudo-nitzschia* strains and the role of DA in the cells.