This chapter reviews a problem – that of harmful algal bloom (HAB) occurrence on the Catalan coast – which has been gaining prominence in recent decades. Some general concepts related to HAB formation and effects are explained and the main harmful phenomena registered on the Catalan coast are discussed. Among the most frequent toxic species are some dinoflagellates of the genus *Dinophysis*, producers of diarrhetic shellfish poisoning, which may be responsible for closures of exploitation areas of bivalves (which accumulate toxins when they consume the microalgae). *Alexandrium minutum* and *A. pacificum* give rise to recurrent blooms in confined areas such as the ports of Arenys (*A. minutum*) or of Tarragona (*A. pacificum*) and produce toxins that cause the so-called *paralytic shellfish poisoning*. Another *Alexandrium* species, *A. taylori*, is not toxic but its accumulation causes brownish spots on several Catalan beaches, with the consequent economic and aesthetic damage. *Ostreopsis* cf. *ovata* forms mucilaginous aggregates on macroalgae and marine phanerogams, corals, or abiotic substrates (sand, rocks) and their summer proliferations have been associated with respiratory and skin irritation in people exposed to marine aerosols on some beaches of Catalonia and elsewhere in the Mediterranean. There has been an increase in PAN records both in the Catalan countries and in other parts of the world. There are several causes, including natural and anthropogenic changes that have originated a real increase of these phenomena, and the greater use and occupation of the coast together with the improvement of detection and monitoring systems. In the case of Catalonia, one of the main factors that seems to have contributed to the increase of PAN, especially with regard to the genus *Alexandrium*, has been the multiplication of confined water areas associated with the building of ports and other maritime infrastructures.