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Introduction

Algae are unicellular microscopic plants that are the foundation of life. An algal bloom develops in the marine or freshwater environment when there is an excess of growth of these organisms because of changes in that environment. A harmful algal bloom (HABs) is de ned as a bloom that has deleterious e ects on plants, animals, or humans [1,2]. Phytoplankton blooms, micro-algal blooms, toxic algae, red tides, or harmful algae, are all terms for these naturally occurring phenomena [3]. HABs can deplete the oxygen and block the sunlight that other organisms need to live, and some HABs release toxins that are dangerous to animals and humans. Marine algal toxins are responsible for an array of human illnesses associated with cle

species (cyanobacterium included) cause a type of contact dermatitis (swimmer's itch) in humans swimming or bathing in a ected waters. Symptoms include itching, rash, burning, blisters and deep skin erosions that can be very painful [22]. In Liguria (Italy), during 2005, more then 200 tourists and swimmers were hospitalized due to fever, cough, headache, nausea, conjunctivitis and dermatitis caused by coastal Ostreopsis ovata (Dinophyceae) blooms. Regarding the impact of harmful microalgae is particularly evident when marine food resources, e.g. aquacultures, are a ected. Shell sh and in some cases n sh are o en not visibly a ected by the algae, but accumulate the toxins in their organs. e toxins may subsequently be transmitted to

beginning between 30 minutes and few hours a er consumption of toxic shell sh with diarrhea, vomiting and abdominal cramps. It is not fatal and the patients usually recover within a few days [23,28]. ere are thousands of reported incidents from developed countries, e.g. 5000 in Spain in 1981 alone, but with the pathological picture of DSP, many incidents may be regarded as an ordinary stomach disorder, and therefore remain unreported. Chronic exposure to DSP is suspected to promote tumour formation in the digestive system [28]. But the rst cases of contamination have been detected in France in 1987. DSP contamination also occurred along the eastern coast of Corsica [31].

Neurotoxic shell sh poisoning

Neurotoxic shell sh poisoning is a disease caused by the consumption of molluscan shell sh contaminated with brevetoxins; these are a group of more than ten natural neurotoxins produced by the

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