

## Introduction to Algae

### 1. Define:

**Phycology** – Phycology is the science or study of algae and typically includes multiple macroscopic forms. In microbiology, we will consider only microscopic algae and those macroscopic organisms significant to microbiology.

**Endophytic** – Endophytic is a term applied to algae living inside other organisms (such as giant green sea anemones, flatworms, sponges, *Paramecium*, etc.). Algae are nutritionally categorized as photoautotrophs, so are not parasitic. The presence of endophytic algae inside another organism is an example of a symbiotic relationship (symbiosis).

**Eutrophication** – Eutrophication may be defined as an increase in algae populations within a body of water (it may also be referred to as an algae bloom, or in marine environments as red tides). This is due in part to an increase in nutrient supply available, but is also influenced by light intensity and water temperature.

**Paralytic shellfish poisoning** – Paralytic shellfish poisoning (PSP), is an intoxication involving dinoflagellates (protista) in the genera *Alexandrium*, *Gymnodinium* or others. When the populations of these organisms increase in ocean waters (due to eutrophication sometimes called red tides) the neurotoxins they produce become concentrated in shellfish (mussels, clams, etc.) that feed on the dinoflagellates. When the shellfish are consumed by people (or other animals), the toxins cause Paralytic Shellfish Poisoning. Symptoms include nausea, vomiting, diarrhea, abdominal pain, tingling or burning lips, gums, tongue, face, neck, arms, legs, toes, a choking feeling and loss of coordination.

**Diatomaceous earth** – Diatomaceous earth is a material made from the glass cell walls of diatoms (algae) that lived thousands or millions of years ago. A sedimentary rock type called diatomite is collected, and ground up to form this powder-like glass material. Diatomaceous earth is used to filter various liquids (water, honey, apple juice, etc.) and is also used in insulation, abrasive cleansers, toothpaste, car polish, and a variety of other products.

2. Phycology
3. Photoautotrophs/ molecular oxygen/ food materials (organic compounds), for other organisms
4. Molecular oxygen
5. Molecular oxygen/ eutrophication
6. Chlorophylls/ phycobilins
7. Carotenoids
8. Fragmentation
9. Karyogamy/ sporophyte

10. Eutrophication/ Eutrophication can be detrimental in that too many algae can remove so much oxygen from water during the night that fish die. Algae are respiratory organisms, so use oxygen for metabolic processes just as we do; at night, when no light is available, algae can't produce oxygen so by using it, they can cause fish kills. The algae that cause red tides can also cause paralytic shellfish poisoning in humans and other animals. Dinoflagellates identified as *Pfiesteria* can attack and kill fish when present in large numbers and also produce toxins that can cause neurological symptoms in humans. In addition to this, eutrophication causes water to become cloudy and green (or sometimes brownish or red). This is not acceptable in water that is expected to be clear such as in swimming pools or Lake Tahoe.
11. Lichens/ endophytic
12. Paralytic shellfish poisoning
13. Diatoms
14. They are the source of agar (the polysaccharide we use as a solidifying agent in our culture media).
15. Diatomaceous earth is used as a filtering material (for pool water, honey, fruit juices, etc.); as an abrasive in cleansers, toothpaste, and car polish; it can be used as an insulation material, and is also used to determine the clotting time of blood.
16. *Pfiesteria*
17. *Noctiluca*
18. Matching letter sequence is – D, E, F, A, B, and C.