

Our World Should Be Green, Not Our Waterways

By Jenny Wang

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Algal blooms occur naturally, appearing like bright, almost-neon green muck floating on the waters' surface. They can make the area look like moss-covered land rather than a body of water. However, certain types of algae can become toxic when they appear in too large of quantities. Harmful Algal Blooms (HABs) are algal blooms that have spread and seriously disrupted the ecological balance of the area where they are found. HABs are prone to occur more often in warmer and more southerly areas, but they exist at all latitudes, even in the Charles River in Newton during the summer.

The increase in Harmful Algal Blooms in recent years in the Charles is a direct consequence of nutrient run-offs into our local water bodies.

When nutrients from fertilizers get into the river, usually from parking lots and roads, they cause algae to reproduce more rapidly than organisms that live in the water can consume them. The oxygen content of the water is reduced by the excess nutrients, sometimes to the point that the water becomes completely devoid of oxygen. This happens mainly because an abundance of algae at the water's surface prevents light from reaching plants at the bottom, inhibiting photosynthesis. Also, when dead plants sink to the bottom it is decomposed by oxygen-absorbing bacteria, which further deplete the oxygen levels. Excess nutrients, calm water, and dead organic matter provide the perfect conditions for algal blooms. There is a wide range of types of algae and the toxins associated with each one are different. The symptoms caused by different toxins range from minor ailments, such as stomachaches, to possible death.

Last summer the Charles River Watershed Association (CRWA) discovered patches of a harmful "bluegreen algae" in the Charles River Basin, and signs were posted on the banks prohibiting the public, and organizations such as Community Rowing, from using the river. For two months, the toxins being emitted by this severe bloom of cyanobacteria made the river unsafe for human contact over its last two miles. These postings have raised public awareness about how harmful HABs can be.

The toxins in HABs do not need to be consumed to cause serious damage. Humans can be affected if these algae merely come in contact with the skin. For many years, airborne particles have been seriously exacerbating respiratory problems in humans and their pets on Florida's West coast. Toxins from a type of HABs, usually referred to as Red Tides (although the algae is not always red), have been linked to the deaths of manatees in Florida and sea lions in California. In the algal bloom last summer in the Charles, a dog would have become very ill from drinking the water; fortunately, no pet deaths were reported.

Frequent water quality tests are conducted in the Charles River and authorities are alerted when problems are detected. Working with volunteers, teams from nearby universities, federal and state agencies, scientists from CRWA monitor water flow,

water quality, and sediment quality. Local ponds are also monitored, but less frequently.

The public has a vital role to play in reducing run-off by limiting the use of fertilizers, and by discarding dog waste and yard waste properly. It would be difficult to stop all fertilizer use, but consumers can be conscientious about identifying the chemicals in the ones that they buy. Citizens can also contact the city when catch basins become obstructed. Small steps can make a big difference. The main source of nutrient runoff into the Charles River is the chemical and biological material placed on our high-density residential land, which constitutes about 50% of the land in Newton.

Although HABs may be visible only to those situated close to a body of water, they impact the lives of many millions of people. In places where they are not controlled, vast oceanic regions sometimes become devoid of life. People living thousands of miles away from the source of the problem are affected because HABs have a ripple effect throughout the food chain. It is vital for scientists to continue researching this problem, and even more essential that the public becomes aware of this serious threat. We are all part of the problem and we can all become part of the solution. The first step is to become mindful of how profoundly our behavior affects the ecosystems of which we are a part.

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