

The Impact of Fireworks on New Hampshire's Lakes

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When we celebrate the 4th of July, we often do so with many of our closest friends and families. Each family or group of friends has their own tradition or idea of how they like to celebrate our country's Independence Day. However, one tradition that we all share in common is our love of watching fireworks. Every year around the 4th of July, we head out to the nearest open area to watch the fireworks light up the sky. For many of us here in New Hampshire, there is no better place to see or light off fireworks than right over one of the state's many tranquil lakes, where you can watch the fireworks above and see their reflection in the water.



However, what I bet you did not know is the effect that exploding fireworks over the water can have on New Hampshire's lakes. As fun and enjoyable as fireworks can be, they may be causing more damage than you know. Aside from the obvious danger of operating controlled explosives, what you may not realize is the effects fireworks have environmentally, economically and health wise.

Firework Ingredients and Their Dangers

Fireworks are composed of many different elements, each contributing to the noise, color or propellant. While these ingredients combine to form a beautiful spectacle, many of them are very dangerous. Here's a list of a few common firework ingredients, their use, and what makes them so dangerous.

- Lead Nitrate/Dioxide/ Chloride (oxidizer) - Bioaccumulation; developmental danger for children and the unborn; may remain airborne for days; poisonous to plants and animals.
- Barium (glittering greens) - Extremely poisonous, radioactive.
- Lithium (blazing reds) - Slightly toxic.
- Rubidium (purple colors) - Slightly radioactive; can replace calcium in body.
- Strontium (blazing reds) - Can replace calcium in body; can be radioactive.
- Copper compounds (blues) - Dioxin pollution.
- Aluminum (brilliant whites) - Contact dermatitis.
- Ammonium Perchlorate (propellant) - Can contaminate ground and surface waters; can disrupt thyroid functions.
- Cadmium (firework colors) - Extremely toxic, carcinogenic; can bioaccumulate.
- Potassium Nitrate (in black powder) - Toxic dusts, carcinogenic sulfur-coal compounds.
- Sulfur Dioxide (gaseous byproduct of sulfur combustion) - Acid rain from sulphuric acid affects water sources, vegetation and causes property damage

How Phosphorus in Fireworks Impacts the Water

It has taken years to determine the dangers associated with the many ingredients in fireworks. Up until very recently, phosphorous (also found in fertilizers) was highly popular in fireworks until the realization of its associated problems to the environment. Although most manufacturers no longer incorporate more than trace amounts of phosphorus in fireworks, every little bit added to a lake can influence water quality. Phosphorus accelerates a process called eutrophication, which is the process that results in increased biomass, decreased lake clarity, decreased bottom oxygen, and increases the likelihood of cyanobacteria scums. Algal and cyanobacteria blooms caused by phosphorus introductions impact fisheries, drinking water supplies and impact the health of people who recreate in the waters as well as pets and any animal that drinks these waters.

The Final Impact

Altogether the damaging effect fireworks have is overwhelming. They impact water quality by affecting the odor and taste of drinking water. On the economic side, excessive algal and cyanobacteria growth due to phosphorus or contamination due to firework fallout increases water treatment costs, degrades fishing and boating activities, and impacts tourism and property values. The cost of damage done to property, the litter and the effect upon both wildlife and human life is incalculable.

In the future when your town is proposing to hold their fireworks display near the water or you yourself are considering exploding fireworks over the lake, consider the impacts that this can have on our aquatic ecosystems. Take a look at the chemical ingredients in the fireworks that you are planning to light off and pair that information with the dangers listed above. You may decide that there is a better and safer alternative to watching the fireworks over the lake.

For more information, please go to these links: www.geocities.com/Yosemite/Falls/9200/toxic_fireworks.html www.serconline.org/phosphorus/background.html.