

# ENVIRONMENTAL Fact Sheet



29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-BB-60

2008

## Fireworks and New Hampshire's Lakes

### Concerns of Health and Environmental Effects

There are growing concerns about the use of fireworks around 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.

Toxic Element	Fireworks Usage	Toxic Effect of Fallout Dust & Fumes
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

## **The Effects Fireworks have on You and Nature**

The fallout of these different chemicals can affect you both directly and indirectly. Once a firework explodes in the sky, it does many things. The gases from the rocket and the explosion are released into the atmosphere, where they are inhaled by humans and animals, and hurt the ozone layer. In addition to the gases, the debris and burning metals fall back to earth where they litter the area, contaminate aquatic ecosystems, and poison the wildlife, eventually working their way up the food chain.



## **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. The Department of Environmental Services urges you to consider the effects of fireworks and perhaps find an alternative to a problem that is only growing with time.



**For more information, please go to these links:**

[www.geocities.com/Yosemite/Falls/9200/toxic\\_fireworks.html](http://www.geocities.com/Yosemite/Falls/9200/toxic_fireworks.html)

[www.serconline.org/phosphorus/background.html](http://www.serconline.org/phosphorus/background.html)