

MISC NOTES and INFORMATION:

Info regarding decibels / shock waves:

While a perceived management solution at the time consumer fireworks were introduced in Maine, Home Rule to manage consumer fireworks is not working.

Noise from modern fireworks can **reach 175 decibels** — louder than a jet plane taking off (150 decibels from 82 feet away) or a jackhammer (about 100 decibels). Hearing damage to humans and animals can result from multiple lifetime exposures or a single loud blast.

Fireworks generate three very noticeable forms of energy: a tremendous release of sound, bright light, and heat. The tremendous booms heard at ground level are the result of the rapid release of energy into the air, causing the air to expand faster **than** the speed of sound. This produces a shock wave at a speed that causes a sonic boom.

This speed depends on air temperature, but it is typically **about 1,100 feet per second** in "standard" air. Denser air contains the blast/sound wave, while high humidity transmits sound waves more efficiently, "In addition, temperature inversions, in which colder air sits below warmer air in the atmosphere, can dramatically increase the blast wave."

Random Examples of Taxpayer response costs to Local & State Emergency Services

In Maine in 2020:

Fireworks were the cause of 14 structure fires and 20 wildfires. Additionally, 14 people were taken to a hospital due to reported fireworks-related injuries (ages 5-41 yrs old).

<https://www.wmtw.com/article/mainers-cautioned-to-be-careful-with-fireworks-over-july-4th-holiday/36914062>

In Maine in 2012 consumer fireworks caused a reported 20 structure fires, 38 wild fires and 20 injuries treated at Maine hospitals

Impacts to Livestock (Heritage Industries)

Sound & Shock waves from thunder storms are signaled to livestock. They can sense the changes in temperature, winds, sky darkening, and air-pressure. They inherently prepare and seek shelter against thunder/lighting (*decibels in common thunderstorms approx 120dB*)

Sound and shock waves from fireworks at NOT SIGNALLED to livestock. They can not sense or prepare for the sudden and extreme (150-175dB) explosion. Most fireworks are also a 360-degree circular spatial impact of sound & shock along with whistles, buzzing & crackling noises, colors, flashing lights, etc. Nothing in nature prepares livestock for this continued environmental phenomenon.

Impacts to Livestock (Heritage Industries) cont

Why Cows and Fireworks Don't Mix

<https://modernfarmer.com/2014/07/stampede-4th-july/>

Yarmouth Fire Rescue \$3500 response cost to taxpayers:

The town of Yarmouth has an ordinance against setting off fireworks: It carries up to a \$200 fine. "But we haven't been able to pinpoint where they are or who's releasing the fireworks," North Yarmouth Code Enforcement Officer Ryan Keith said.

<https://wgme.com/news/local/yarmouth-horse-owner-blames-fireworks-for-death-of-beloved-pet>

Negative Impact of Sedatives for Livestock

For many reasons the use of sedatives and /or tranquilizers for livestock so they can deal with the fear and pain of fireworks is not functional or financially feasible for **working** farms and their livestock.

1. Costly: \$35-75 per head
2. Show and work animals can not be routinely tranquilized or sedated for performance and production reasons. (bred cows/mares, milking cows)
3. Firework tranquilizers/sedatives should not be used in animals /livestock raised for human consumption
4. Timing for proper tranquilizing and sedation can not be planned due to non-holiday use of consumer fireworks – exactly what days and times to administer? For example, Demorsodan gel needs to be administered 45 minutes **BEFORE** an event and lasts for approximately half an hour.

Chemical Impacts to air, land, and water resources (Natural Resources)

In addition to the debris from fireworks that can litter and contaminate the local lakes, the chemicals that land in the water are noted as harmful, based upon a study from the **New Hampshire Department of Environmental Services**. **A common chemical that is released in fireworks is ammonium perchlorate, which is known to contaminate ground and surface waters, and can cause harm to aquatic creatures** residing in the lake. Further, copper compounds, sulfur dioxide, lead nitrate and lead chloride are released when fireworks are let off, and can be a hazard to the environment if released in mass amounts.

https://www.laconnidailysun.com/news/local/fireworks-displays-over-water-can-hurt-plants-wildlife-there/article_b2572d89-86b9-5d70-89ff-17dcffe23cb9.html

Impacts to air, land, and water resources (cont)

Dr. Gordon and his team also analyzed 14 years' worth of air quality samples taken at dozens of sites across the United States by the Environmental Protection Agency (EPA) throughout each year. They found that levels of toxic metals were higher in samples taken near Independence Day and New Year's Eve celebrations than at any other time of the year.

Along with lead, titanium, strontium, and copper are commonly found in fireworks.

<https://nyulangone.org/news/common-fireworks-release-lead-copper-other-toxic-metals-air>

When fireworks go off, the metal salts and explosives undergo a chemical reaction that releases smoke and gases into the air. **These include carbon dioxide, carbon monoxide, and nitrogen—three greenhouse gases that are unfortunately responsible for climate change.** During the explosion, the metal salts do not 'burn up.' They are still metal atoms, and many of them end up as aerosols that bioaccumulate and poison the air, water, and soil. When inhaled or ingested, these metals cause a huge variety of short- and long-term reactions, ranging from vomiting, diarrhea or asthma attacks, to kidney disease, cardiotoxic effects, and a variety of cancers.

<https://brightly.eco/fireworks-environmental-impact/>

Selected articles from Maine, of many such articles, documenting destructive impacts of fireworks:

<https://www.mainepublic.org/maine/2017-07-06/discarded-fireworks-cause-house-fire-in-scarborough>

<https://www.ellsworthamerican.com/maine-news/was-it-a-safe-fourth-of-july-when-it-comes-to-fireworks-not-really/>

Human Deaths Due to consumer fireworks in Maine:

2015

<https://www.cbsnews.com/news/maine-man-dies-shooting-fireworks-off-head-police-say/>

2017

<https://www.wmtw.com/article/fire-marshals-lewiston-man-dies-in-sabattus-fireworks-accident/12805855#>