

FIREWORKS IN MADISON CITY PARKS

VI C.1.

Testimony by Dr. Maria Powell and Jim Powell, Madison Environmental Justice Organization,
before the Habitat Stewardship Subcommittee (May 4, 2010)

INDEPENDENCE DAY FIREWORKS CELEBRATION IN CITY PARKS

- Warner (Rhythm & Booms)
- Elver
- Elmside Circle
- Other sanctioned neighborhood fireworks displays

FIREWORKS CONTAIN TOXINS

- Perchlorate (rocket fuel): disrupts production of thyroid hormones
- Heavy metals:
 - Strontium (red): damage bone marrow, cause anemia and prevent blood from clotting correctly, birth defects in animals
 - Aluminum (white): brain, lung damage, Alzheimer's
 - Copper (blue): jump-starts the formation of dioxins when perchlorates in the fireworks burn; Human carcinogen; disrupt hormone production and glucose metabolism.
 - Barium (green): vomiting, diarrhea, breathing trouble, changes in blood pressure, numbness around the face, general muscle weakness and cramps; changes in heart rhythm, paralysis or death.
 - Rubidium (purple): skin irritation; replace calcium in bones.
 - Cadmium (various): lung, stomach, kidney disease; damage to bones
- Particulates: cause asthma, respiratory diseases

FIREWORKS CAUSE ENVIRONMENTAL PROBLEMS

- High levels of perchlorate in local bodies of water after fireworks displays (US EPA scientist Richard T. Wilkins et al, "Perchlorate Behavior in Municipal Lake Following Fireworks Displays," *Environ. Sci. Technol.* 2007,41,3966-3971 2007)
- Perchlorate gets into groundwater and drinking water
 - Affects Warner Park lagoon
 - Perchlorate gets in the fish (J. -W. Park et al, Food Chain Transfer of Pecholrates in largemouth bass, *Micropterus salmoides*, *Bull. Environ. Contam. Toxicol.* (2005) 74:56-3
 - Waterfowl nest there
 - Waterfowl deal with explosions, fireworks and emergency vehicles all around the lagoon and island
 - Paper shell casings from fireworks are everywhere in Warner Park after R&B
 - They contain heavy metals and explosive residue
 - Eaten by birds and pets (?)

FIREWORKS CAUSE HEALTH PROBLEMS

- Perchlorate in groundwater and drinking water disrupts thyroid hormones
- Heavy air pollution, especially during the R&B finale envelopes crowd
- Asthma attacks and 4th of July fireworks displays?
- Debris handled by children
- People fish the lagoon and eat those fish

RECOMENDATIONS

- Fireworks Best Environmental Management Practices [Massachusetts Department of Environmental Protection]

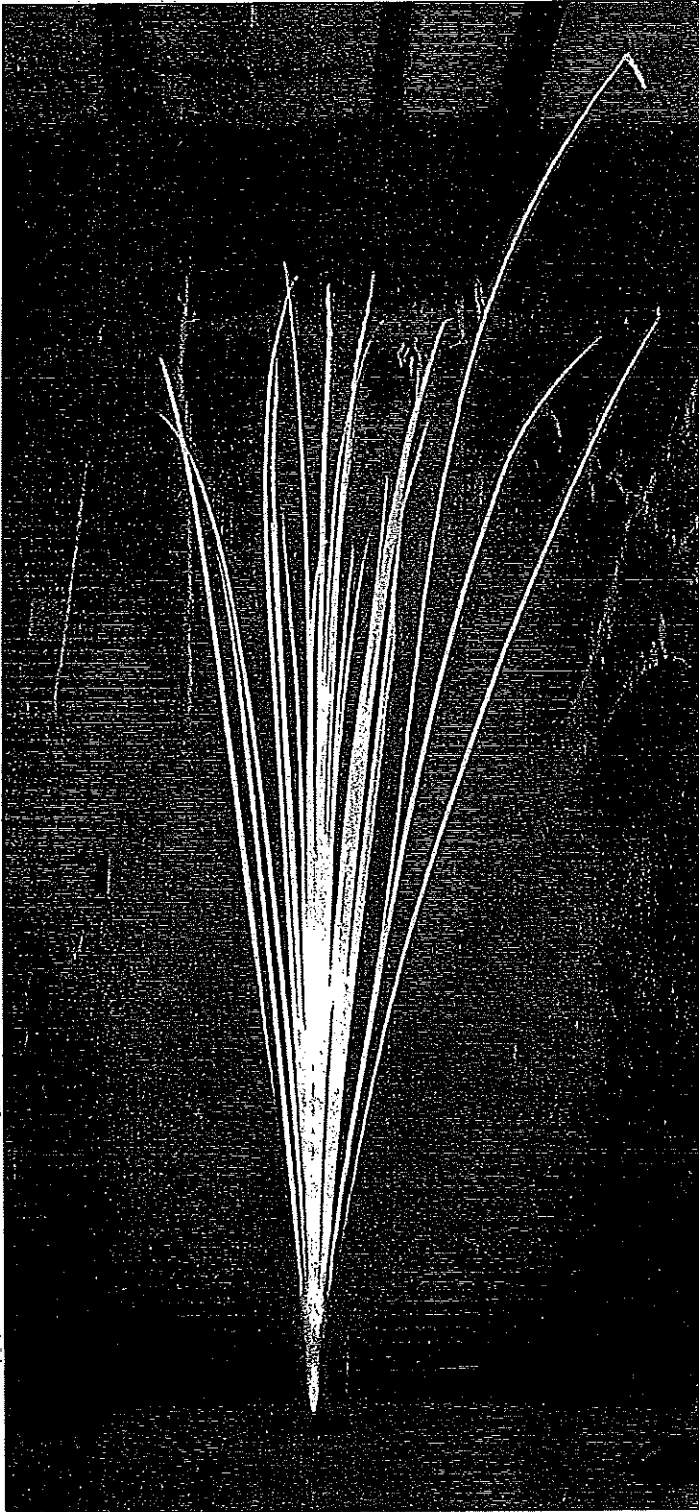
Although the environmental impacts from the use of perchlorate-containing fireworks have not been fully defined, MassDEP believes it is prudent for fireworks contractors to take the following reasonable steps to minimize potential problems:

1. Request low (or no) perchlorate containing fireworks. This may require that you make inquiries with your suppliers and/or manufacturers.
 2. Institute rigorous "housekeeping" practices. It appears that the deposition of unburned aerial shell fragments and other pyrotechnic debris may be the primary mechanism by which groundwater becomes contaminated by perchlorate. Fireworks companies or display sponsors should remove all visible shell debris encountered during the search at first light.
 3. Dispose or manage "duds" and "misfires" appropriately; all "duds" or "misfires" must be removed from the site and disposed of in accordance with applicable codes and manufacturers instructions. Contain and/or promptly address runoff in cases where water is used to douse duds or misfired materials.
 4. Be aware of the existence of surrounding drinking water supplies and stay as far away from them as possible. Of particular concern are Fireworks displays within the recharge areas of public drinking water supply wells (i.e., "Zone II" and "Interim Wellhead Protection" areas).
- Test Warner Park lagoon for perchlorate and heavy metals the day after Rhythm & Booms
 - JUSTIFICATION: It is well established that perchlorate fireworks will contaminate bodies of water near where fireworks are shot off. R&B fireworks are shot off in an island IN THE LAGOON. Toxins deposited in the water will end up in the fish. Many people fish the lagoon and connected Warner beach and eat the fish they catch. There can be no doubt there will be contamination. Knowing the level of contamination will help define the scope of the problems and need for corrective action.
 - Determine emergency room admissions the night of and the day after Rhythm & Booms and Elver fireworks displays to determine if there is a correlation with asthmatic attacks.

COMMENTS ON THE CITY OF MADISON CONTRACT WITH MADISON FIREWORKS FUND, INC. (PURVEYOR OF RHYTHM & BOOMS)

- The contract makes no mention of the type of fireworks to be used or any prohibition of the use of perchlorate in fireworks.
 - Since perchlorate is a known toxin that contaminates drinking water and affects human, animal and ecological health, the City should not sanction its use.
- The contract states "Clean up from the fireworks shooter shall be completed by Tuesday following the event."
 - "Clean up" is not defined.
 - The reality is that tens of thousands of pieces of fireworks (casings, shells, etc.) litter Warner Park for months after the event. These fireworks fragments contain perchlorate and heavy metals. We assume that the weather and sun break down the paper casings over time, thus releasing the toxins into the soil.
 - Children handle the paper casings all summer long
 - Wildlife likely ingest them (perhaps this is form of goose management?).
 - There are undoubtedly a similar amount of fireworks remnants that end up in Warner park lagoon.

National
Geographic
6/09



New high-nitrate fireworks don't add much smoke to an indoor space.

Friendlier Fire

The EPA is worried about fireworks. It's not so much the noise and smoke—it's the toxic chemical that provides the oxygen needed to burn the fuel.

The culprit is perchlorate, and the fear is it could seep into drinking water. Early research suggests it might hinder the thyroid's production of growth hormones, notably in children and pregnant women. "It deserves more study," says EPA spokesman Rick Wilkin.

After a fireworks blast, bits of perchlorate can land in nearby water. Poor cleanup of duds adds to contamination. And perchlorate lingers. In a study of an Oklahoma lake from 2004 to 2006, levels spiked following a fireworks show and took 20 to 80 days to stabilize. Why the range? The warmer the water, the faster the perchlorate dissipated.

Chemists Darren Naud and Mike Hiskey have devised a solution. Most of the fireworks made by their New Mexico company use cleaner burning, nitrate-based oxidants instead of perchlorate. This low-smoke variety is ideal for indoor shows like Cirque du Soleil, but outdoor venues opt for Chinese imports, which are far cheaper. Without laws regulating perchlorate, event planners aren't likely to spend more bucks for their bang. —Catherine L. Barker



Faint, illegible text located in the bottom left corner of the page. The text is too light and blurry to be transcribed accurately.

[Skip Navigation](#)

[MassDEP Home](#)

[Mass.Gov Home](#)

[State Agencies](#)

[State Online Services](#)

[site map](#) [contacts](#) search:

[dep home](#) > [water](#) > [drinking water](#) > [lead & other contaminants](#) > [perchlorate information](#)



MassDEP Quick Links:

- About MassDEP**
- Public Participation & News**
- Air & Climate**
- Water, Wastewater & Wetlands**
 - :: [priorities & results](#)
 - :: [drinking water](#)
 - :: [water resources & wetlands](#)
 - :: [wastewater & septic system](#)
 - :: [laws and rules](#)
 - :: [permits, reporting & forms](#)
 - :: [grants & financial assistance](#)
 - :: [compliance assistance](#)
 - :: [enforcement](#)
- Waste & Recycling**
- Toxins & Hazards**
- Cleanup of Sites & Spills**
- Service Center**

- [Calendar](#)
- [My Community](#)
- [Online Services](#)
- [Regional Offices](#)
- [Report Pollution](#)

WATER, WASTEWATER & WETLANDS

Fireworks Best Environmental Management Practices

Memorandum

To: Fireworks Contractors and Interested Parties

From: Janine Commerford, Assistant Commissioner - Waste Site Cleanup

Subject: Potential Environmental Contamination From the Use of Perchlorate-Containing Fireworks

Date: April 14, 2008

Introduction

Over the past few years, the Massachusetts Department of Environmental Protection (MassDEP) has detected perchlorate in eleven drinking water supplies in Massachusetts, including three public water supply wells where nearby fireworks displays appear to be a source of the perchlorate contamination. The purpose of this memorandum is to provide guidance on perchlorate-containing fireworks to prevent contamination of drinking water supplies from this potential source.

Background

Perchlorate is a chemical compound comprised of 1 chlorine and 4 oxygen atoms. The wide-scale production of perchlorate for use as a solid rocket propellant has led to the use of perchlorate compounds in a number of common products, including airbag inflators, industrial chemicals, explosives, and fireworks. Perchlorate is highly water soluble, and can travel significant distances in groundwater. Perchlorate can affect the function of the thyroid gland, which regulates the body's metabolism. Pregnant women and their fetuses, infants, children under the age of 12, and people with hypothyroidism are most susceptible. In July 2006, MassDEP promulgated a drinking water standard of 2 parts per billion or ppb, and notification criteria (Reportable Concentrations in soil and groundwater) for this contaminant under the state waste site cleanup regulations (Massachusetts Contingency Plan, 310 CMR 40.0000).

In response to detection of perchlorate in water supply wells in Massachusetts, MassDEP is investigating surrounding sites and activities that may have caused or contributed to contamination. Fireworks displays employing perchlorate-containing pyrotechnics have been identified in at least three locations as the possible source of drinking water contamination.

Recommendations

Although the environmental impacts from the use of perchlorate-containing fireworks have not been fully defined, MassDEP believes it is prudent for fireworks contractors to take the following reasonable steps to minimize potential problems:

1. Request low (or no) perchlorate containing fireworks. This may require that you make

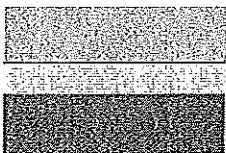
inquiries with your suppliers and/or manufacturers.

2. Institute rigorous "housekeeping" practices. It appears that the deposition of unburned aerial shell fragments and other pyrotechnic debris may be the primary mechanism by which groundwater becomes contaminated by perchlorate. Fireworks companies or display sponsors should remove all visible shell debris encountered during the search at first light.

3. Dispose or manage "duds" and "misfires" appropriately; all "duds" or "misfires" must be removed from the site and disposed of in accordance with applicable codes and manufacturers instructions. Contain and/or promptly address runoff in cases where water is used to douse duds or misfired materials.

4. Be aware of the existence of surrounding drinking water supplies and stay as far away from them as possible. Of particular concern are Fireworks displays within the recharge areas of public drinking water supply wells (i.e., "Zone II" and "Interim Wellhead Protection" areas). Maps of these areas and surface water supplies should be available from local officials, and can be viewed on-line at <http://www.mass.gov/mgis/> (specifically <http://maps.massgis.state.ma.us/WSPA/viewer.htm>) and <http://mass.gov/dep/water/drinking/swareps.htm>

Please contact Rose Knox at the MassDEP Bureau of Waste Site Cleanup (BWSC) at 617-556-1026 or Rosemary.Knox@state.ma.us if you would like additional information, or please refer to the following link on MassDEP's Website:
<http://mass.gov/dep/water/drinking/percinfo.htm>



[Contacts](#) • [Feedback](#) • [Related Sites](#) • [Site Policies](#) • [Help](#)
[Mass.Gov](#) • [Energy & Environmental Affairs](#) • [Department of Environmental Protection](#)