

Why is Public Health Madison Dane County more interested in protecting the fireworks show than in protecting public and environmental health?

In a recent op-ed, Janel Heinrich, the Director of Public Health Madison Dane County (PHMDC) questions comments made by the northside grassroots group Wild Warner on the ecological effects of Rhythm & Booms fireworks. Ms Heinrich asserts that the group “exaggerates” findings of a 2012 Rhythm & Booms fireworks study and that their claims about environmental effects of this huge fireworks display are “speculation” and “opinion.”

Unfortunately, Ms Heinrich resorts to speculation and opinion herself rather than drawing on a large body of scientific research—or even reviewing results of her own department’s 2005 Rhythm & Booms fireworks’ study and comparing them to the 2012 results. The 2005 PHMDC study showed significant spikes in several toxic metals in Warner lagoon surface water after both Madison Mallard and Rhythm & Booms fireworks shows. In fact, based on their results, public health department staff, the authors of the report, concluded that *“firework displays at Warner Park do impact the water quality in the lagoon in the park.”*

Did metal concentrations after the 2012 show (unlike after the 2005 show) really show “no discernable change,” as Ms Heinrich highlights? Did emissions from the 2012 fireworks somehow not fall onto the lagoon beneath them? This is extremely unlikely (if not impossible), but unfortunately, the 2012 study did not include appropriate background samples, making it difficult to see spikes in chemicals in the lagoon after Rhythm & Booms. In the 2005 study, background water samples and post-fireworks samples were timed in a way that could detect spikes in metals emitted from fireworks in Warner lagoon after the fireworks. Still, interestingly the 2012 pre- and post-fireworks water levels of some metals, such as barium and strontium, were significantly higher than 2005 pre- and post-fireworks samples.

Public health authors of the 2005 report also concluded that the toxic metals emitted from the fireworks *“most likely sank into the sediment in the lagoon upon reaching the water.”* In other words, they knew that decreases in metals in water in the weeks after the show did not mean they magically disappeared—but that they moved elsewhere in the environment (most likely the sediments). Ms Heinrich, in contrast, states that perchlorate decreased to background levels in surface water after the 2012 fireworks “due to microbial degradation”—a claim based on *speculation*, not evidence, from the draft report—and “dilution,” which is just another way of saying it spread out and went elsewhere. Perchlorate is highly mobile in the environment. Since perchlorate wasn’t tested for anywhere else, we don’t really know where it went after the 2012 show or previous shows. Not knowing where it went does not mean it is no longer there.

Further, it is disturbing that our public health department director expressed no concern whatsoever about the human health effects of this huge fireworks show and others like it. Many studies show that fireworks displays emit numerous toxic metals (strontium, barium, lead, mercury, cadmium, arsenic, and more), [dioxins](#), and radioactive materials into the air at times at levels well above urban background levels (which include automobile exhaust). [One study](#) found over 500 times more barium in the snow after a fireworks show than that measured before the show. [Another study](#) found numerous metals in air well above background levels—including strontium 86 times above, cobalt nine times, and lead seven times above background air levels.

Neither the 2005 nor the 2012 Rhythm & Booms studies tested air during or after the shows, but many of these contaminants were likely in the air at similar levels as those found in these studies.

Fireworks contaminants fall as tiny particulates onto the people attending shows—including many infants and children—who then have no choice but to inhale them. [Inhalation of particulates](#) emitted from fireworks causes spikes in [asthma](#) and cardiovascular attacks—and emergency room visits rise during fireworks shows and in the days immediately following them. Children, elderly, asthmatics, and people with cardiovascular problems are particularly at risk. The effects are not just limited to the areas immediately under the shows. Clouds of fireworks contaminants often travel to other parts of the city, where they can linger for days.

Wild Warner's statements about effects of fireworks chemicals on wildlife and the environment are also far from "speculation" and "opinion." Firstly, no scientific study is required to understand that contaminants released from hundreds if not thousands of pounds of exploding fireworks fall onto land, water, people, and wildlife beneath the shows. More importantly, it is well-documented scientifically that once in the environment, heavy metals and chlorinated compounds are highly persistent, build up in ecological food webs over time, and affect wildlife health. These effects were not assessed in the recent studies, but that doesn't mean they did not or will not occur over time as chemicals from yearly fireworks shows build up in the environment.

Basic ecology tells us that once toxic contaminants are in the ecological food web, they usually find their way into human bodies as well, though it may take a long time. Contaminants build up in sediments, then aquatic organisms and plants, then fish and wildlife, and then people. Subsistence anglers who fish in Warner Park and other Madison lakes—many of whom are low-income people of color who rely on fish as a food source—are particularly vulnerable because they eat fish regularly. Toxic metals and organochlorines in fish end up in their bodies and brains, potentially causing neurological, immune, endocrine, and other problems years after they ate the fish.

It is troubling, to say the least, that Madison's public health department seems so eager to discount concerns about environmental and public health risks from this huge fireworks display, especially given the abundant scientific evidence that these concerns are merited. *Why is Public Health Madison Dane County more interested in protecting the fireworks show than in protecting public and environmental health?*

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Hyperlinks from Document (by Genesis Steinhorst):

1. <http://www.ncbi.nlm.nih.gov/pubmed/10448567>
2. <http://www.sciencedirect.com/science/article/pii/S1352231008007917>
3. <http://www.sciencedirect.com/science/article/pii/S0304389410009672>
4. <http://www.sciencedaily.com/releases/2010/11/101116111715.htm>
5. <http://www.telegraph.co.uk/science/3814165/Fallout-from-firework-displays-aggravates-asthma-claim-scientists.html>