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### Fireworks: Fun for the Whole Family or Dangerous Water Contaminants?

by Jeremy Elton Jacquot, Los Angeles on 06. 3.07  
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You may want to lay off buying all those extra fireworks come July 4: according to a new study published in the journal *Environmental Science & Technology*, fireworks heavily contribute to perchlorate contamination of surrounding water bodies. Although Richard Wilkin, the study's lead author and an

environmental geochemist at the U.S. EPA's National Risk Management Research Laboratory, says that his research establishes a direct link between firework displays and perchlorate water contamination, he adds that it also demonstrates the contaminant's shortlivedness: concentrations fell to background levels after 1 to 2 months, possibly due to microbial degradation.

Perchlorate is well-known to pose risks for both human health and wildlife and has been shown to arise from many natural and anthropogenic sources, including ammonium perchlorate and lightning discharges. Wilkin and his colleagues sampled water from Wintersmith Lake, Oklahoma, before and after firework displays in July 2004, 2005, 2006 and in November 2005.

Their results indicated that within 14 hours of the displays, the background levels of perchlorate increased sharply 24-1028 times and typically peaked at 1 day, after which they slowly degraded until they reached normal levels within 20 to 80 days. Since the

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perchlorate disappearance rate seemed to mirror previously recorded microbial degradation rates and was also temperature dependent, they decided to test whether microbes were directly involved in a laboratory setting.

They found that the microbes taken from the lake degraded the perchlorate whereas sterilized samples of lake water displayed no change in levels of the chemical. They concluded that the microbes preferred to use nitrate for food first before beginning to consume perchlorate.

Purnendu Dasgupta, a perchlorate expert from the University of Texas, Arlington, believes that the gradual degradation of perchlorate levels may be due instead to diffusion. To evaluate this hypothesis, Dasgupta suggests the use of several trace heavy metals whose concentrations also rise during firework displays as tracers. "If perchlorate disappeared but this tracer concentration remained stable, one could follow the argument with greater faith that it just did not disappear by dilution into deeper waters," he says.

Andrew Jackson, an environmental engineer and perchlorate expert at Texas Tech University, think that the study "helps to emphasize the fact that perchlorate exposure is not always from a well-documented contamination issue." He cites several transient sources, such as bleach or certain herbicides, as potential "exposure sources."

Todd Anderson, an environmental toxicologist from Texas Tech University, describes the study's value thusly: "The real impact of it is in helping to fill data gaps in our understanding of potential sources of perchlorate to the environment."

Via [::Fireworks cause environmental pollution](#), [::Fireworks shower perchlorate into water bodies](#)

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Nick Barnum

Just imagine all the pollution from Disney parks and their daily fireworks. I'm not sure how big or often they have their displays but I understand they use an enormous amount of fireworks. Boycott? The Disney shareholders and customers should be informed of the environmental impact of Disney's business. As should all shareholders and customers of all businesses.

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I say, fun for the whole family. Face it, the world loves fireworks for everything they are, and if the world cant unite against the greatest pollutants like the burning of fossile fuels, it will never even try to stop its beloved consumer explosives. There are many more, much greater environmental threats out there that dont have strong public approval, and yet they persist. I think with all the other things going on that we dont like, we can stand two days a year of firework "pollution" accompanied by their annoyingly, beautiful lights and exhilarating booms.

3 years ago

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MDO

In regards to the comment that Disney uses an "enormous" amount of fireworks, I disagree. Having actually been there twice and seen all the fireworks shows I can tell you first hand that the displays put on at your local 4th of July are much longer and use many more fireworks.

I'm no redneck and I enjoy fireworks, thank you very much. We are loosing so many traditions due to over-zealous idealism from BOTH sides that it really worries me. I don't think one night of 4th of July fireworks is going to do as much damage as the coal factories that spew pollution into the air daily.

3 years ago

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alex

I used to love fireworks until i learned that they just dont dissappear when they explode. With more information out there im sure a lot more people would oppose the use of fireworks as i do now.

4 years ago

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RandomElginGuy

I wouldn't jump the gun too much on the Disney attacks and boycotts.

<http://corporate.disney.go.com...>

Sure it might not still be perfectly unpolluting, but at least they are trying to go in the right direction.

4 years ago

Like



JiltedCitizen

Once again treehuggers show how incredibly boring they are.

4 years ago

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MC

Just like flag-waving, fire works are a redneck sport. It pollutes the air, contaminate the water, and is a primitive kind of entertainment. It's also a source of light pollution. Want to awed by spectacular display of lights? Just look up into the night sky!

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