

CITY OF CORAL GABLES

--MEMORANDUM--



TO: Mayor Lago, Commissioners Castro, Fernandez and Menendez, Staff and Residents
FROM: Vice Mayor Anderson
DATE: July 4, 2023
SUBJECT: Cities Replacing Fireworks with Environmentally Friendly Laser Light and Drone Shows

Cities endeavoring to reduce harmful noise, air pollution, and harmful pollutants are converting from the use of traditional fireworks to high tech solutions such as laser light shows or interesting dronelight shows. Some notable facts noted in these articles are:

- Air pollution increases by over 40% on July 4th.
- The same ingredients that lend the displays their vivid colors contain metallic particles, including lead and copper, are harmful to breathe and can linger in the air and environment.
- Fireworks can be harmful to individuals suffering with PTSD, pets and wildlife.
- There is a risk of starting actual fires with annual fireworks shows. For instance, according to the National Fire Protection Association, an estimated 12,264 fires were started by fireworks displays in 2021 causing an estimated \$59 million in direct property damage.

Attached are two articles with additional details:

- *Fireworks can make bad air quality even worse. For some cities, the answer is drones*, NPR July 3, 2023, by Emily Olson. See article at <https://www.npr.org/2023/07/03/1185815745/air-quality-fireworks-smoke-july-fourth-drone-displays>
- *High-tech 4th of July displays ditch fireworks over fire and pollution concerns -- Some cities are turning to laser lights and drones for fire-safe festivities*, by Kelly Livingston, ABC News, July 2, 2023. See audio and video recording at <https://abcnews.go.com/US/high-tech-4th-july-displays-ditch-fireworks-fire/story?id=100560162>

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NATIONAL

Fireworks can make bad air quality even worse. For some cities, the answer is drones

July 3, 2023 · 2:36 PM ET

By Emily Olson



An aerial drone display by approximately 500 drones hovers over the Garonne River in Bordeaux, France on June 23, 2023. Some U.S. cities are planning their own drone shows as an alternative to Fourth of July fireworks.

Romain Perrocheau/AFP via Getty Images

They zoom instead of boom. They flash instead of flare. They assemble into shapes so sophisticated — a swimming whale, a spinning globe, a marching robot — that

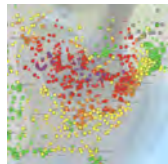
traditional pyrotechnics can seem a little lackluster in comparison.

Maybe most importantly, the drones being employed by more and more cities for Fourth of July celebrations don't leave behind a blanket of smoke at a time when America's air quality is already at its worst in decades.



NATIONAL

Canada's record wildfire season continues to hammer U.S. air quality



WEATHER

A big swath of the U.S. is under red and purple air quality alerts from Canada's smoke

As they've blazed at historic levels for weeks, Canadian wildfires have sent air pollutants drifting across the U.S., choking cities in the Northeast and Midwest. The Southwest, too, has seen days of smoky skies because of wildfires in Colorado, Arizona and other states, sparked by days of extreme heat and decades of drought.

As of Monday morning, at least half of all states had an air quality rating of moderate or worse, posing risks to those with sensitive respiratory conditions. Concern over exacerbating those conditions caused cities like Montreal to call off their annual fireworks competition, a part of Canada Day celebrations over the weekend.

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With America's Fourth of July holiday on the horizon, some U.S. cities also are looking to play it safe, canceling their celebrations or swapping their flashy fireworks displays with innovative alternatives.

Salt Lake City, Utah is also offering a drone display for the first time this year.

Laser light shows are scheduled in Flagstaff, Ariz. and Aspen, Colo..

Three Missouri towns — Bunceton, Boonville and Rosebud — are canceling or postponing their fireworks shows entirely.

Air pollution increases by over 40% on July 4th, research shows

The celebration in Boulder, Colo, will include 140 drones forming patriotic symbols over the University of Colorado's Folsom Field. Dan Kingdom, whose company, WK Real Estate, is helps organize and fund the annual Independence Day celebration, said there were several reasons for making the switch.

The company that normally provides their fireworks went out of business amid the pandemic, and finding a supplier for professional-grade pyrotechnics proved difficult after years of supply chain issues. Plus, the city is still recovering from the highly destructive Marshall Fire, and its occupants are sensitive to wildfire risks.

Trying something new has been met with mixed reaction from the community but, as Kingdom says, the turn away from fireworks, "is considered by many to be the way of the future."

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Air quality may be another reason for that perception.

"Around the world, we've seen consistently that, during times when fireworks usage is really high, we have really bad air quality," said Pallavi Pant, the head of global health at the Health Effects Institute. "And at this moment, there's concern in some places that we have wildfire impacts, and then on top of that, we're going to add fireworks."



WEATHER

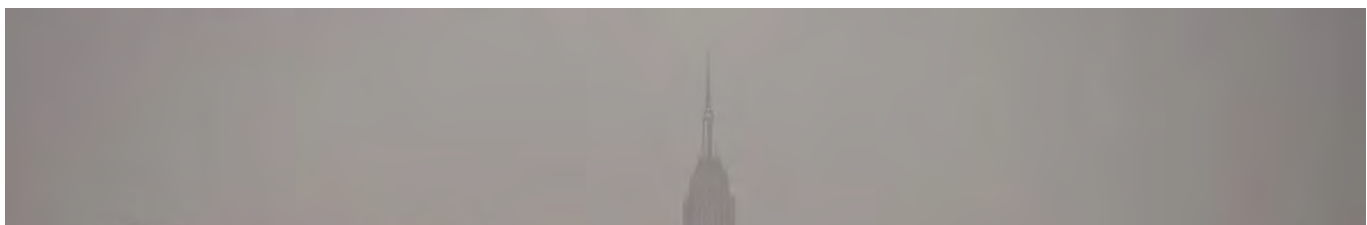
How to stay safe from the smoke that's spreading from the Canadian wildfires

During average years, July 4th brings a sizable 42% increase in the level of fine particulate pollutants (also known as PM 2.5) across the U.S., putting it in line with some wildfire events.

And while that pollution typically dissipates quickly — usually around noon on July 5th — the concentration can be high enough to aggravate symptoms for those with respiratory issues.

What's worse, one study found that concentrations of harmful air pollutants following July 4th fireworks were two times higher in communities with lower socioeconomic status, which often have higher rates of respiratory ailments in the first place, according to a California-based study published in the *Journal of Environmental Research and Public Health*.

Breathing in smoke of any kind can be damaging, but fireworks smoke comes with its own particular risks.





Wildfires in Canada sent a wave of heavy smoke over the Manhattan skyline last week.

Ed Jones/AFP via Getty Images

The same ingredients that lend the displays their vivid colors contain metallic particles, including lead and copper, that can linger in the air and surrounding environment after a holiday.

"These are particles we really don't want to be inhaling in any case," Pant said.

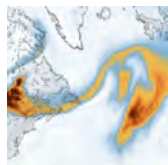
Wearing an N95 mask can help, but Pant suggests that those who are the most vulnerable to adverse health effects — children, the elderly, pregnant women and anyone with lung or heart disease — may want to stay away from sparklers, Piccolo Petes or any other kind of close-up smoke encounter.

It's not just air quality at risk on July 4

Cities making the swap to high-tech shows say there's plenty of other reasons someone may want to avoid traditional fireworks.

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"They're so much more inclusive to everyone," said Lynze Twede, an events manager for Salt Lake City Public Lands, in an interview with local news outlet Fox 13.



EUROPE

Smoke from Canada's wildfires darkens Europe's skies

Fireworks can be harmful to "folks who suffer from PTSD or families who have dogs," she said, adding: "Salt Lake City has more households with dogs than we do with kids."

The Southern California cities of La Jolla and Ocean Beach also cited animals as a key driver behind their switch to a July Fourth drone show: A 2017 lawsuit claimed that local sea lion pups were bothered by the booming sounds.

There's also the risk of starting actual fires with annual fireworks shows — a reason Flagstaff cited in making the shift to an annual laser display.

"It is also important to have a yearly celebration that we can all anticipate and rely upon, without the disappointment that comes from frequent cancellation of fireworks," said City Manager Greg Clifton in a press release.

An estimated 12,264 fires were started by fireworks displays in 2021, according to the National Fire Protection Association. Those added up to an estimated \$59 million in direct property damage.



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Insurers Flee California As Catastrophic Wildfires Become The Norm

But data also shows that much of the wildfire risk comes not from grand public displays, but from the small-scale shows set off on streets and sidewalks.

Consumer-grade fireworks usage spiked across the U.S. in recent years, especially during the height of pandemic lockdowns, when people looked for ways to celebrate life's milestones in their own backyards.

It may be too early to tell how the burgeoning trend in alternatives at the city level may trickle down to smaller shows and consumers, but price is a limiting factor: those high-tech displays are expensive.

The company Hire UAV Pro, which has conducted drone shows for events like Coachella, says \$10,000 is the starting minimum price for a show, with higher costs for longer or more complex displays.

[commercial drones](#) [major wildfires](#) [fireworks](#) [air quality](#) [canada](#)

High-tech 4th of July displays ditch fireworks over fire and pollution concerns

Some cities are turning to laser lights and drones for fire-safe festivities.

By [Kelly Livingston](#)

July 2, 2023, 8:57 AM

No more July 4 fireworks?

More cities are turning to drone and laser shows due to concerns that fireworks could worsen already poor air quality or trigger wildfires in drought-stricken areas. ABC News' Andrea Fujii reports, <https://abcnews.go.com/US/high-tech-4th-july-displays-ditch-fireworks-fire/story?id=100560162>

With the Fourth of July right around the corner, many cities are gearing up for their traditional fireworks displays with many locations opting for innovative alternatives.

Pallavi Pant, head of global health at the Health Effects Institute, told ABC News that the use of fireworks releases metallic particles into the air that can have harmful consequences.

"These fireworks, you know, what gives them their color -- the blues, the greens, the vibrant reds -- are essentially metals, like copper. Copper gives you blue, or strontium, which gives you the bright red we see in the fireworks," Pant explained. "When we use these fireworks, either in our homes and our backyards or with our friends or the family, or in a professional sort of setup, which tends to be in many cases in the US, we are emitting all of these particles in the air."

[MORE: 11-year-old boy dies from fireworks in Indiana](#)

Studies have shown that the particles released by fireworks can have negative impacts on human health, especially for people with respiratory conditions like asthma or chronic obstructive pulmonary disease (COPD).

Pant explained that researchers have been noting these effects since as far back as the 1970s and that people with existing heart conditions may also be affected.



Spectators watch fireworks explode during the Central Astoria annual Independence Day Celebrations fireworks display in Astoria Park on June 29, 2023, in New York. Ron Adar/Shutterstock

"You may experience aggravation of symptoms," she said. "Shortness of breath is a common one. Sometimes you have a sort of irritation in your eyes."

Effects on air quality can also be compounded by fires started by fireworks. The National Fire Protection Association [reports](#) that, "fireworks started an estimated 12,264 fires in 2021, including 2,082 structure fires, 316 vehicle fires, and 9,866 outside and other fires. These fires caused 29 civilian injuries and \$59 million in direct property damage."

That year, a group of 150 fire scientists released a warning against using fireworks in the West due to increased fire risks associated with drought. Many western cities, like Flagstaff, Arizona, have banned or limited firework use for those reasons.

[MORE: July 4th fireworks can be stressful for dogs. These 6 tips can keep them calm and safe](#)

Flagstaff is one of the cities embracing alternative celebrations for the Fourth of July, due to the fire risk. They've been celebrating with a free laser light show for a few years now, which, according to a press release, "[replaces] the standard fireworks with a stunning display of multicolored lights and lasers in sync to fun music."



In this undated file photo, people watch fireworks during a Fourth of July celebration. Allen Eyestone/Palm Beach Post via USA Today Network

"The shift from traditional fireworks to a laser light show was the responsible action to take due to extreme fire risk with the dry and hot conditions in the northland. It is extremely important to have a safe celebration and be fire aware," Flagstaff City Manager Greg Clifton said in a press release. "And it is also important to have a yearly celebration that we can all anticipate and plan on."

Some others, like Boulder, Colorado, are choosing to use drones for their festive displays. The city of Boulder explained in a press release that prior to the COVID-19 pandemic, its annual fireworks display had been a tradition dating back to 1941.

"The shift from traditional fireworks to drones was not an easy decision and based on a number of factors," the release said. "Including increased fire danger fueled by climate change."