

A healthier July Fourth: Eco-friendly fireworks and flares poised to light up the sky

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Scientists plan to replace potassium perchlorate, a harmful substance widely used in fireworks, with cleaner, less toxic materials. Courtesy of Wikimedia Commons

From the rockets' red glare to bombs bursting in air, researchers are developing more environmentally friendly fireworks and flares to light up the night sky while minimizing potential health risks, according to an article scheduled for the June 30 issue of Chemical & Engineering News. Some eco-friendly fireworks may soon appear at a Fourth of July display or rock concert near you.

In the C&EN cover story, Associate Editor Bethany Halford points out

that fireworks, flares and other so-called pyrotechnics commonly include potassium perchlorate to speed up the fuel-burning process.

But some studies have linked perchlorate, which can accumulate in the soil, air and water, to thyroid damage. Pyrotechnics also contain color-producing heavy metals, such as barium and copper, which have also been linked to toxic effects.

Researchers recently developed new pyrotechnic formulas that replace perchlorate with nitrogen-rich materials or nitrocellulose that burn cleaner and produce less smoke. At the same time, these nitrogen-rich formulas also use fewer color-producing chemicals, dramatically cutting down on the amount of heavy metals used and lowering their potentially toxic effects. Some of these fireworks are already being used at circuses, rock concerts, and other events.

The big challenge in developing these "eco-friendly" pyrotechnics is making them as cost-effective as conventional fireworks while maintaining their dazzle and glow, the article states.

Source: ACS

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