Morning-after spike in ozone air pollution from Super Bowl XLV?

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Not even the most avid fans could notice, but those spectacular aerial images of a brightly-lit Cowboys Stadium during Sunday's Super Bowl XLV symbolize one of the hottest new pieces of scientific intelligence about air pollution:

Researchers have discovered — in a classic case of scientific serendipity — that the bright light from sports stadiums and urban street lights may boost daytime levels of ozone, a key air pollutant in many heavily populated areas. That's among the topics included in a broader article about the chemistry of air pollution in Monday's edition of Chemical & Engineering News (C&EN), ACS' weekly newsmagazine.

In the article, C&EN Associate Editor Jyllian Kemsley describes a so-called "field campaign" that took place in southern California and Mexico last year. It was a far-ranging effort by land, sea, and air to gain a deeper scientific understanding of all the factors involved in air quality and climate change. One of experiments involved use of detectors to measure the intensity of sunlight from an airplane.

As the plane flew over a brightly lit sports stadium, one of the crew suggested, perhaps only half seriously, turning the device on, even though it was the dead of night. Much to the scientists' surprise, they found there was enough light to drive certain chemical reactions in the atmosphere that would boost daytime levels of ozone, one of the most prevalent and difficult-to-control air pollutants in urban areas. One of the scientists in the experiment notes in the article that cities and states,

struggling to meet ever-stricter government air pollution limits, may want to consider the unexpected effects of night-time lighting of streets, sports stadiums, and other sources of bright light.

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