

City lights make air pollution worse

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Image credit: ORNL

(PhysOrg.com) -- A new study by scientists in Los Angeles, California has found that bright city lights makes air pollution worse because the glare of the lights interferes with chemical reactions that clean the air of pollution during the night.

Pollution from motor traffic and factories pours into the air during the day and is broken down at night by the nitrate radical (NO_3^{++}), which is a special form of nitrogen oxide that is destroyed by [sunlight](#).

Scientists from the US National Oceanic and Atmospheric Administration (NOAA) and the University of Colorado's Cooperative Institute for Research in Environmental Sciences (CIRES) have now found that the lights of Los Angeles produce enough light to suppress the nitrate radicals, even though their combined light may be 10,000 less

bright than sunlight. The study was based on measurements taken from aircraft flying over the city at night.

Leader of the research team, Dr. Harald Stark of NOAA's Chemical Sciences Division, said the preliminary results show the lights of the city slow the night time cleansing of air pollution by up to seven percent, but they also increase the chemicals that produce ozone pollution during the next day by as much as five percent.

Dr. Stark said more research is needed to quantify the ozone effect, and this work is important because many cities are close to the recommended limits and even a small effect could be important.

The study was carried out in Los Angeles, but the results for other large, brightly lit cities elsewhere would be expected to be similar.

The effect could be reduced by using red light, but this is unlikely to be an acceptable solution. A better approach may be to point the lights to the ground, as suggested by campaigns such as the International Dark-Sky Association, which hope to stop the glare of street lights so people can see the stars.

The findings of the research were presented on Monday in San Francisco at the Fall meeting of the American Geophysical Union, which runs from 13 to 17 December.

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