

Rocket launches may need regulation to prevent ozone destruction

Rocket launches in future may require more stringent regulation to minimise damage to the ozone layer of the Earth's atmosphere, according to a new study.

Today, just a handful of NASA space shuttle launches release more ozone-depleting substances in the stratosphere than the entire annual use of CFC-based medical inhalers used to treat asthma and other diseases in the US, said Darin Toohey, professor of Colorado University at Boulder (CUB) atmospheric and oceanic sciences department. The inhalers have now been banned for their ozone-depleting effect.

'As the rocket launch market grows, so will ozone-destroying rocket emissions. If left unregulated, rocket launches by the year 2050 could result in more ozone destruction than was ever realised by CFCs (chlorofluorocarbons).

'The Montreal Protocol (to safeguard the ozone layer) has left out the space industry, which could have been included,' he said.

The study by CUB and Embry-Riddle Aeronautical University provides a market analysis for estimating future ozone layer depletion based on the expected growth of the space industry and known impacts of rocket launches.

Highly reactive trace-gas molecules known as radicals dominate stratospheric ozone destruction, and a single radical in the stratosphere can destroy up to 10,000 ozone molecules before being deactivated and removed from the stratosphere, said a CUB release.

In addition, every type of rocket engine causes some ozone loss, and rocket combustion products are the only human sources of ozone-destroying compounds injected directly into the middle and upper stratosphere where the ozone layer resides.

The study appeared online in March in *Astropolitics*.

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