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Global Monitoring Division Hot Items

## Accelerated Increases Observed for Ozone-Depleting, Climate Warming HCFCs

**Global Monitoring Division - ESRL-GMD**

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In a study published in *Geophysical Research Letters* on 5 February, NOAA scientists show that the atmospheric abundances of a class of ozone-depleting and climate-active chemicals, the hydrochlorofluorocarbons (also known as HCFCs), have increased at an accelerated rate in recent years. Through signals extracted from the measurement data and from an assessment of global production figures, the authors were able to attribute increases in the three most abundant HCFCs to accelerated use in developing countries.

Background: Of all the ozone-depleting substances regulated by the Montreal Protocol, only HCFCs continue to increase in the global atmosphere. This is primarily because use of these chemicals is still allowed—temporary use of HCFCs was written into Protocol restrictions to enable a rapid phase-out of more potent ozone-depleting substances such as CFCs. By 2007 the three most abundant HCFCs accounted for 237 ppt of Cl, or 8.8%, of all chlorine carried by long-lived anthropogenic halocarbons. Developed countries have reported less production of these compounds since the turn of the century, but production in developing countries is increasing exponentially and now dominates global amounts. This report demonstrates that this enhanced use has led to significant increases in the atmospheric accumulation of these three HCFCs in the global atmosphere. HCFCs also influence climate because they are efficient absorbers of infra-red radiation. In September of 2007, parties to the Montreal Protocol agreed to more stringent restrictions on future HCFC production in light of their contributions to ozone depletion and climate change.

Importance: Guiding the recovery of the ozone layer requires monitoring atmospheric changes in the abundance of ozone-depleting substances. This work allows scientists and policymakers to assess the influence of the recent dramatic changes noted for HCFC production in developed and developing countries on the atmospheric abundance of these ozone-depleting chemicals and, ultimately, on the ozone layer itself.

**More information:** <http://www.esrl.noaa.gov/gmd/>

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