

Nations agree to ban refrigerants that worsen climate change

Use of heat-trapping hydrofluorocarbons to be cut sharply under ozone treaty.

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HFCs are used as refrigerants in appliances such as air conditioners.

Negotiators from 197 countries have reached a historic agreement to reduce emissions of chemical refrigerants that contribute to global warming. The deal, finalized on 15 October [at a United Nations meeting in Kigali, Rwanda](#), could reduce projected emissions by as much as 88% over the course of the twenty-first century.

“It’s a great deal for the climate,” says Guus Velders, an atmospheric scientist at the National Institute for Public Health and the Environment in Bilthoven, the Netherlands.

The pact represents a major expansion of the 1987 Montreal Protocol, which was intended to halt the destruction of Earth’s protective ozone layer. That treaty [successfully curbed the use of ozone-depleting chemicals](#) used as refrigerants and in other industrial processes, but many of their replacements — known as hydrofluorocarbons (HFCs) — [are potent greenhouse gases](#). Governments will now use the Montreal agreement to promote a new generation of chemicals that are safe for the climate as well as for the ozone layer.

HFCs account for a small but growing slice of the world’s greenhouse-gas emissions. Scientists project that HFCs could contribute up to 0.5 °C of warming by the end of the century if left unchecked^{1,2}. Velders’ calculations suggest that contribution could be slashed to just 0.06 °C, provided countries stick to the schedules laid out in the Kigali agreement.

The pact comes amid a flurry of international activity to address climate change. On 6 October, the UN’s International Civil Aviation Organization struck a deal intended to slow the growth in [emissions from international aviation](#). A day earlier, the European Union pushed the world across a critical threshold by [joining the 2015 Paris climate agreement](#), ensuring that the pact would come into force this year.

Eyes on the prize

But advocates say that the HFC agreement is a singular accomplishment. The aviation agreement attracted criticism for being too weak, and the world hasn’t even begun to test the effectiveness of the Paris agreement, which is a collection of voluntary pledges. The

machinery of the Montreal Protocol, however, has proved enormously effective in promoting and diffusing environmentally friendly technologies across the world.

“We are extraordinarily confident that this treaty will deliver,” says Durwood Zaelke, president of the Institute for Governance and Sustainable Development, an advocacy group based in Washington DC.

One difference is that the chemical industry has been able to develop viable alternatives to the chemicals in question. Developed countries are the first to adopt these alternatives. They then help to pay for developing countries to make the conversion. Much of the debate in Kigali centred on how much time developing countries should be given to make the transition.

Although the United States and other developed countries pushed for fast implementation, the final deal relaxed the timetables for countries such as India and other developing countries. That leaves some work to do, but the Montreal Protocol has a history of setting initial targets and then tightening the requirements over time as technologies improve and costs fall, Zaelke says.

The debate began in earnest in 2009 but moved slowly, partly because of resistance among many developing countries and partly because of political turf issues. Until now, HFCs have fallen under the sole jurisdiction of the United Nations climate treaty. The delay has frustrated many scientists and environmentalists who felt that the Montreal Protocol was ideally suited to deal with the chemicals that it spawned.

“It’s a PhD thesis as to why and how it took seven years to get here,” says David Fahey, an atmospheric scientist with the US National Oceanic and Atmospheric Administration in Boulder, Colorado, and co-chair of a scientific assessment panel under the Montreal Protocol.

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References

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I think this is already a big step for the good of the environment! Pending the results! [martin](#)

