A 1980s ban on CFCs to heal the ozone layer is also shaving degrees off global warming, study says

By Angela Dewan, CNN

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IPCC vice-chair: There is no going back from some changes in the climate system

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London (CNN) — The world would be on track for a collapse of the ozone layer and an additional 2.5 degrees Celsius of global warming by the end of the century if it hadn't agreed in the 1980s to ban CFCs, chemicals once commonly used in aerosol sprays, refrigeration and air conditioners, according to a new study.

The findings were published in the journal Nature on Wednesday by scientists in the UK, US and New Zealand, who analyzed the impacts of the Montreal Protocol, an agreement signed in 1987 by dozens of countries to ban chlorofluorocarbon (CFC) production, now ratified by all UN member states.

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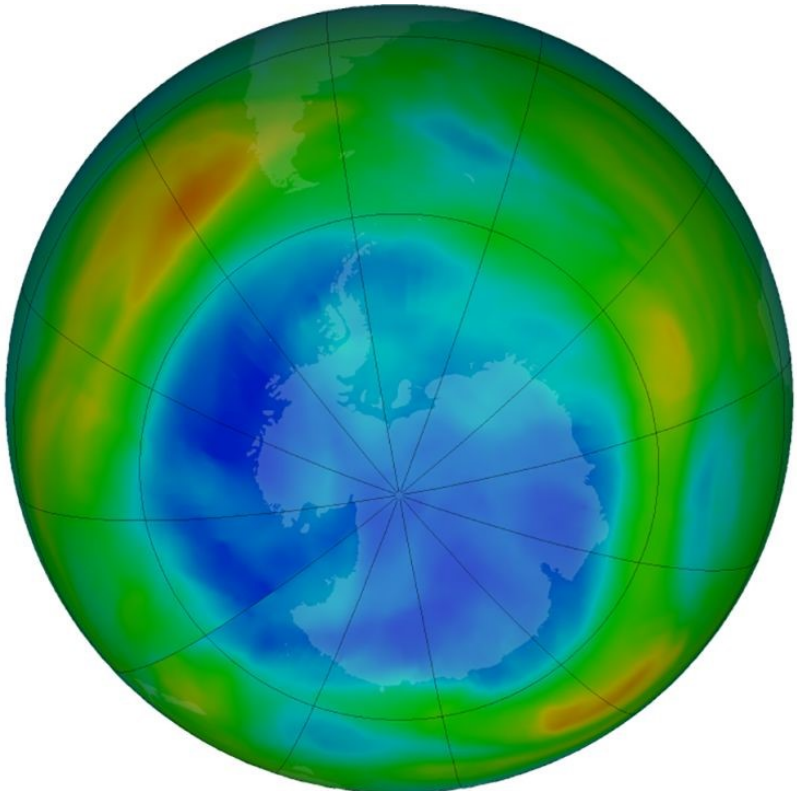
The scientists used computer modeling to see how unabated CFC use would have affected the ozone layer – which sits between nine and 22 miles above the Earth – and what impacts that would have had on the planet.

They concluded the CFC ban had avoided a "scorched Earth," in which the ozone layer breaks down by the late 2040s, putting humans at greater risk of health problems, like skin cancer, and degrading the ability of plants and trees to absorb carbon from the atmosphere.

A landmark report from the UN's Intergovernmental Panel on Climate Change (IPCC) published earlier this month showed that average global temperatures are already at least 1.1 degrees Celsius above pre-industrial levels, and that will likely hit 1.5 degrees Celsius sometime in the 2030s.

That already means extreme weather like heatwaves, which can contribute to wildfires, and heavy rainfall and storms, which can cause flooding, will become more frequent and intense. But the more the Earth warms, the worse these weather events are likely to become.



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A simulated image of the ozone over the Antarctic pole. The purple and blue show where there is the least ozone, and the yellows and reds are where there is more.

Paul Young, an atmospheric and climate scientist from Lancaster University and the study's lead author, told CNN that there would have been "drastic consequences" in areas like agriculture and human health.

"Thankfully, this is now a scenario that is science fiction. But as you can imagine, the consequences would have been absolutely dire," he said.

"It's kind of hard to imagine, but you could think of us as humans all in wide-brimmed hats, sunglasses, caked in sunscreen, only going outside for five to 10 minutes a day when the sun was out. I think it would have been quite apocalyptic really, and it would have been a problem all over the world."

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The study found that unabated CFC use would have increased the strength of UV

central Asia – by the 2050s to levels stronger than the present-day tropics. The tropics would have seen a 60% reduction in ozone by 2100.

“This depletion above the tropics would have been worse than was ever observed in the hole that formed above the Antarctic,” the scientists said in a statement.

In 1985, three scientists from the British Antarctic Survey published a study in the journal Nature finding abnormally low ozone levels in the southern hemisphere, in what came to be known as a “hole” in the ozone layer.

Young said that, while international climate negotiations coming up in Glasgow in November would be more complex than banning CFCs, the quick response to the problem was a good example of how effective international climate agreements can be.

It was only two years after scientists sounded the alarm on the ozone layer that dozens of countries signed up to the Montreal Protocol and eventually got the whole world on board.

“The ozone layer problem was simpler than the climate problem. You had a handful of companies who are producing a handful of chemicals for a handful of different uses, and it was relatively straightforward for them to come up with alternatives for that,” Young said.

“But this is still a great example of how science, identifying a problem, and the world acting comparatively quickly, acknowledging that problem and coming together to address it, and that is the model that we need to address climate change.”

The IPCC report showed that if the world reaches net zero – where it emits no more greenhouse gases than it removes from the Earth – it can keep global warming to 1.5 degrees Celsius above pre-industrial levels, and stave off worse climate impacts.

The UK’s Alok Sharma, president of the COP26 climate talks in Glasgow, has said that “keeping 1.5 alive” is a priority for talks.