



Ratifying Kigali Amendment is all pain, no gain

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November 9th, 2018

With the election over, pressure is sure to build on President Trump to submit the Kigali Amendment on hydrofluorocarbons to the Senate. It is an amendment to the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. HFCs are currently the refrigerants of choice, appearing everywhere from your home heat pump to your car's A/C.

On June 4, 13 Republican senators sent a letter to President Trump urging him to submit Kigali to the Senate for ratification. They said it would result in a lot of HVAC sales. Together with the 49 Democrats, that would leave the amendment only five votes short of the 67 needed to ratify or amend a treaty.

Kigali is no gain and all loss for almost everyone. The effect of HFCs on stratospheric ozone has been estimated from very slim (a theoretical reduction of 0.035 percent is too small to measure) to none. But the effect on wallets will also be stratospheric.

While HFCs are out of patent and cost a mere \$7 a pound, their patented replacements, branded as Solstice (Honeywell) and Opteon (Dupont) go for around \$71 a pound. They are known as Hydrofluoro-olefins (HFOs). The raw material cost (not including labor and installer markup), to fill a new residential HVAC system will be about \$1,000 more than the cost of HFCs. Your existing unit likely cannot use HFOs, so you're going to have to shell out several thousand more for a new heat pump, along with the installation cost. All of this will be required when your old HFC-driven system goes on the fritz.

Recognizing the virtually nonexistent ozone-depletion potential of HFCs, proponents of Kigali switched to global warming, saying banning HFCs will prevent 0.5°C of dreaded global surface heating. That's an awful lot more than the mere 0.1 degree that the United Nations' Intergovernmental Panel on Climate Change (IPCC) says that continued use of HFCs will cause this century.

This was also mirrored by Andrew Jones, who runs the policy-tracking firm Climate Interactive. He told *Science* magazine that "I'm not really buying it", meaning the 0.5°C saving, and also noting the IPCC figure.

A Senate ratification is likely going to be on the fast track to the Supreme Court. Because the ozone-depleting effects are, at most *de minimus*, and the (purported) climate effects are, relatively speaking, orders of magnitude larger, the Kigali Agreement is about global warming. It should therefore be an amendment to the 1992 United Nations' Framework Convention on Climate Change, not the Montreal Protocol.

The 0.5° warming, absent an effective Kigali Agreement, is predicated upon the notion that there will be, in the words of the four scientists who calculated the outlier number, a “complete market saturation” with HFCs by 2050, which continues as population and air conditioning demand increases to the year 2100. It seems hard to believe that refrigeration technology will be so stagnant. If the same applied to automobiles, all U.S.-built economy cars would be Ford Pintos and Chevrolet Vegas.

The June 4 letter from the Republican Senators projects dramatically increased sales of HVAC equipment as a result of Kigali. Given that the average home unit lasts around 15 years, after that time each replacement will be a much more expensive chiller run on a refrigerant costing ten times as much as what it replaces. Owners, employees, and stockholders of the big HVAC companies will no doubt be very happy with Kigali—and the rest of us, well, not so much. Kigali is a big wealth transfer from the people of the U.S. to Honeywell, Dupont, and big machine producers like Carrier. That’s not exactly Making America Great Again.

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