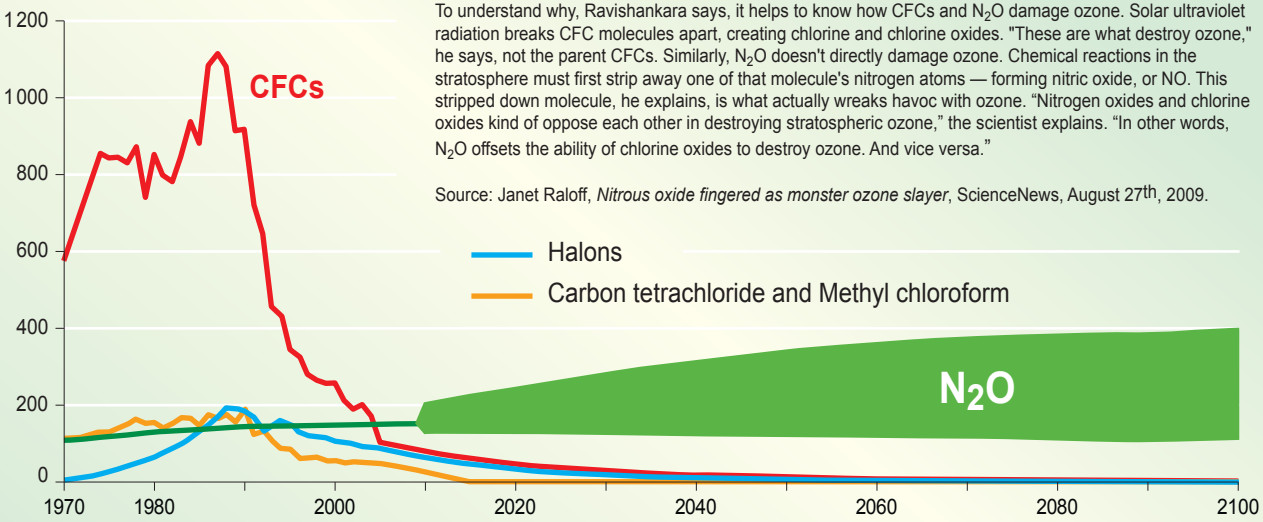
NITROUS OXIDE: A MAJOR CULPRIT AFTER 2010

Emissions

Thousand ODP Tonnes



* Tonnes multiplied by the ozone depleting potential of the considered gas.

"We have calculated the **ozone-depleting potential of N_2O to be roughly 50 percent larger** when chlorine levels return to the year-1960 level"

To understand why, Ravishankara says, it helps to know how CFCs and N_2O damage ozone. Solar ultraviolet radiation breaks CFC molecules apart, creating chlorine and chlorine oxides. "These are what destroy ozone," he says, not the parent CFCs. Similarly, N_2O doesn't directly damage ozone. Chemical reactions in the stratosphere must first strip away one of that molecule's nitrogen atoms — forming nitric oxide, or NO. This stripped down molecule, he explains, is what actually wreaks havoc with ozone. "Nitrogen oxides and chlorine oxides kind of oppose each other in destroying stratospheric ozone," the scientist explains. "In other words, N_2O offsets the ability of chlorine oxides to destroy ozone. And vice versa."

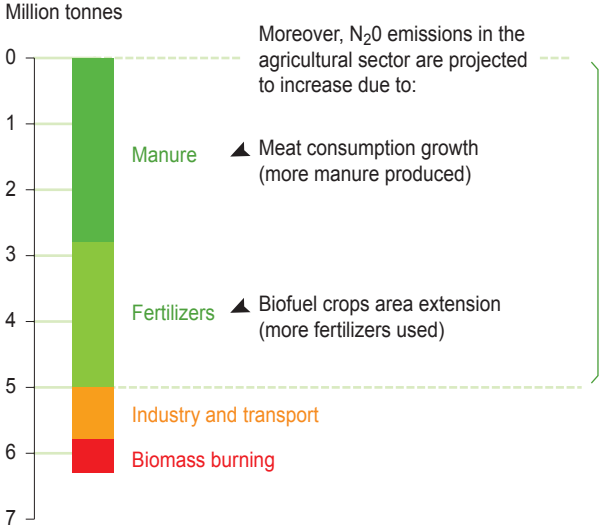
Source: Janet Raloff, *Nitrous oxide fingered as monster ozone slayer*, ScienceNews, August 27th, 2009.

Source: A. R. Ravishankara, John S. Daniel, Robert W. Portmann, *Nitrous oxide (N_2O): The Dominant Ozone-Depleting Substance Emitted in the 21st Century*, Science, August 2009.

... MOSTLY RELEASED BY THE AGRICULTURAL SECTOR

Nitrous oxide anthropogenic emissions

Million tonnes



Moreover, N_20 emissions in the agricultural sector are projected to increase due to:

- Meat consumption growth (more manure produced)
- Biofuel crops area extension (more fertilizers used)

Agriculture represents almost 80 % of all anthropogenic N_2O emitted

Harmful for the ozone layer, Nitrous oxide is also a greenhouse gas. Therefore limiting its emissions is a double benefit.

Nitrous oxide is unregulated by the Montreal Protocol.

Source: Eric A. Davidson, The contribution of manure and fertilizer nitrogen to atmospheric nitrous oxide since 1860, Nature Geoscience, August 2009.