

PERSPECTIVE

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BATTLING CHILD ABUSE

It is impossible not to connect the rise in child abuse to the unparalleled breakdown of the traditional family. Kim Manning, Lela Miller, E3.

DEATH-PENALTY RACISM

What really taints the death penalty in America is the appearance that it's unfairly applied. Chris Johns, E3.

Case against CFC ban as thin as the ozone layer

By James D. Flori

Several weeks ago, *The Republic* published a commentary of mine titled, "On CFC issue, it's Arizona vs. world."

My point was that the question of whether CFCs are dangerous or harmless is a scientific issue and has nothing to do with the political question of states' rights. However, the responses to that editorial generally have focused on the scientific debate itself.

This article, therefore, is a response to the claims made against the scientific integrity of the ozone-depletion theory.

Critics of CFC orthodoxy rely heavily on two sources for their information. The first is

a credible scientist named S. Fred Singer, who invented the satellite ozone monitor. But even more influential is a book called *The Holes in the Ozone Scare* written in 1992 by Rogelio Maduro and Ralf Schauerhammer, and published by a group called 21st Century Science Associates.

It turns out that 21st Century is the mouthpiece of Lyndon LaRouche, an extremist politician currently serving 15 years for conspiracy to evade taxes, and that Maduro is an associate editor of the group's magazine. The book refers to LaRouche as an "American statesman" and as a political prisoner who must be released.

The authors made a startling claim: "Behind the actions to ban CFCs, and to cut

back on refrigeration, is the Malthusian ideology that the world needs fewer people . . . Conservative estimates are that between 20 (million) and 40 million people are going to die of starvation and food-borne diseases every years because of the collapse of refrigeration."

In other words, the hidden object of banning CFCs is mass murder.

"The truth is that the world needs *more people*," they write. "Global economic development is hindered by the lack of population in most of the Earth's land area."

Their analysis ends with a call for a series of bizarre water projects and a vision of transforming Mars into a "beautiful garden,

fit for billions of human beings."

If these are the people who suspect the scientific community of fraud, I'm even more interested to hear what real scientists have to say.

Among those I contacted was Dr. Ralph Cicerone, an atmospheric chemist at the Department of Earth Sciences, University of California at Irvine.

"We have as much proof that the ozone loss over Antarctica is due to the human production of CFCs as it is possible to get on

— See CASE, page E3

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— CASE, from page E1

any matter of Earth science. It's a very solid case.

"There is also now an observed loss of ozone over the arctic and the high northern latitudes. Those losses are fortunately not as dramatic as in Antarctica, but the evidence there strongly suggests that they, too, are caused by CFCs.

"It's also perfectly clear that if CFCs had not been regulated, we would be in big trouble. This is a case where regulation has worked."

That, in a nutshell, is the scientific consensus, and that is why 92 nations worldwide have agreed to cease production of CFCs after 1995.

Here is how scientists respond, point by point, to the specific claims made by critics of the consensus:

• *CFCs are too heavy to rise to the stratosphere.*

It's true that CFCs are five times as heavy as air, but the fact is that they do rise to the stratosphere as a result of thunderstorms, hurricanes, and plain old wind. Thousands of samples of stratospheric air have been taken since 1975 that contain CFCs, as well as other heavier-than-air gases, such as krypton and argon. To be too heavy to be mixed into the stratosphere by wind, a molecule would need to be millions of times heavier than CFCs.

• *There is so much chlorine pumped into the atmosphere from volcanoes and sea spray that it dwarfs the impact of CFCs.*

Actually, natural chlorine is soluble in

water, while CFCs are not. Some natural chlorine does make it to the stratosphere, but the vast majority is washed out of the air by rain. The source of chlorine can be identified, because when a CFC molecule is broken apart, it releases a telltale chemical called hydrogen fluoride.

NASA spent three years collecting satellite data on the sources of chlorine in the stratosphere and announced "conclusive" results last December.

"We have this thing nailed," a project scientist said. "Hydrogen fluoride has no natural source; it is not produced by volcanic eruptions or salt spray. There is no other possibility."

NASA calculates that more than 80 percent of the chlorine comes from the man-made chemicals, primarily CFCs.

Even Fred Singer now admits. "Most, though not all, of the chlorine reaching the stratosphere is from CFCs."

• *Ozone is not a depletable resource because it is constantly being recreated.*

Ozone is indeed created by the sun all the time, which is a good thing, because it is unstable and would disappear altogether in a few years if there were no source of replacement. However, the rate at which ozone is created essentially is constant. If we speed up the rate at which it is destroyed without changing the rate at which it is created, we will end up with less ozone.

• *Low ozone levels over Antarctica were reported as early as 1956, before CFCs were widely used, which proves that the hole is produced by natural causes.*

Scientists have known for decades about a

natural, seasonal shrinkage over Antarctica. However, the recent effects of chemical depletion go far beyond the natural effect. In 1992 and '93, more than 99 percent of the ozone was destroyed at altitudes from 14 to 19 kilometers.

"It's not that you get a little bit less ozone; it's practically gone," Mario Molina of the Massachusetts Institute of Technology, one of the depletion theory's original authors, told me. "The two effects are easy to distinguish."

• *The supercold atmosphere of Antarctica is the only place where an ozone hole can appear, and no one lives there anyway, so it doesn't matter.*

While a true hole can occur only over Antarctica, depletion of perhaps 20 or 30 percent can also occur over populated areas of the Northern Hemisphere. Also, people living in the Southern Hemisphere have reason to be concerned about the growth of the Antarctic hole itself and the effect it may have on average ozone densities in the mid-latitudes. Finally, it was the Antarctic hole which made it feasible to scientifically establish the reality of the chemical depletion effect in the first place, because the evidence there is so strong.

• *Rather than falling, ozone concentrations have actually been rising since 1986.*

This is simply false. According to the 1994 Scientific Assessment of Ozone Depletion published by the World Meteorological Organization and NASA, "Downward trends in total-column ozone continue to be observed over much of the globe. Decreases in ozone abundance of about 4 to 5 percent per decade

at mid-latitudes in the Northern and Southern Hemispheres continue to be observed by both ground-based and satellite-borne monitoring instruments."

• *Ozone density varies with latitude, with seasons and with solar activity, and these natural variations are much larger than the reductions predicted as a result of chemical depletion.*

Again, there is some truth to this. But there is a big difference between local fluctuations and a change in the average.

Think about temperature. From noon to midnight, there may be a temperature swing of 50 degrees in some places, and there is a swing of similar magnitude between summer and winter. Yet a change of only a few degrees in the average year-round temperature of the planet would cause droughts and floods, change the size of the polar ice caps, alter the coastlines of continents, and so on.

Ozone depletion should be viewed in the same light.

There is still much that remains unknown. No one can say for sure how much biological damage would be caused by increased ultraviolet light if CFCs were not banned: how much more skin cancer, how much more damage to crops and to wild plants, and so on. But many things are known with a high degree of confidence, and the research continues.

In the meantime, we need to act on our current understanding. As Ari Patrino, director of the Department of Energy's Ozone Project puts it, "There's only one atmosphere, and sometimes we have to be very conservative in the actions we take."