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## A Nuclear Paradigm Shift?

U.S. regulators may radically revise safety assumptions about atomic radiation.



PHOTO: GETTY IMAGES



By HOLMAN W. JENKINS, JR.

Dec. 1, 2015 6:58 p.m. ET

Wade Allison, emeritus professor of physics at Oxford, has a more realistic idea for fighting global warming than any being promoted at this week's climate summit in Paris: Increase by 1,000-fold the allowable limits for radiation exposure to the public and workers from nuclear power plants.

Politicians in Paris might notice their host country ranks 20th in per capita income but 50th in greenhouse emissions. You know why: France gets 75% of its electricity from nuclear. France has waded forward even while, for reasons having to do with horror of nuclear war and atmospheric testing, the world has surrendered since the 1950s to an unfounded dogma that radiation exposure is always dangerous in direct proportion to dose.

This is roughly the equivalent of saying a bullet fired at one foot per second has 1/900th the chance of killing you as a bullet fired at 900 f.p.s. (the actual muzzle velocity of a .45 automatic). Known as the linear no-threshold model (LNT), it underlies predictions of thousands of cancer deaths from Chernobyl or Fukushima that have consistently failed to be borne out.

Sweden a few years ago finally acknowledged nearly a year's supply of reindeer meat was needlessly destroyed after Chernobyl. A Japanese survey in 2013 found 1,600 premature deaths from "evacuation stress" (including suicides and loss of access to critical health care) among those forcibly protected from Fukushima exposures that posed little or no threat and were less than residents of, say, Finland experience on a normal basis.

In 2001, America's then-chief nuclear regulator cautiously admitted that "excess cases of leukemia that can be attributed to Chernobyl have not been detected."

In the 1980s, 1,700 apartments in Taiwan were built from recycled steel contaminated with radioactive cobalt. In a 2006 study that found residents suffered unusually low cancer rates, the authors suggested that, by correcting our risk estimates, "many billions of dollars in nuclear reactor operation could be saved and expansion of nuclear electricity generation could be facilitated."

They were right: Exaggerated radiation fears have been crucial in driving up the safety, waste storage and licensing costs of nuclear power. But change may finally be coming—a paradigm shift in how we think about nuclear risk.

In June, the U.S. Nuclear Regulatory Commission began soliciting comments on whether to revise the safety standards in favor of a more sophisticated view, known as hormesis, which recognizes that organisms bathed in natural radiation have evolved cellular responses that protect against low-level radiation doses. The petitioners for this change include Dr. Carol S. Marcus, a professor of nuclear medicine at UCLA, who pointed to a lack of “scientifically valid support” for the LNT hypothesis and the “enormous” cost of “complying with LNT based regulations.”

Kudos go to Mr. Allison and toxicologist Edward J. Calabrese of UMass Amherst, who’ve fought this battle for decades. Prof. Calabrese’s latest paper, published in October in the journal *Environmental Research*, traces how a cabal of radiation geneticists associated with the Manhattan Project in the 1950s promoted adoption of the LNT hypothesis to increase the prestige of their discipline.

By now hundreds of papers have added evidence against LNT. A study last year from Munich’s Institute of Radiation Biology showed a specific mechanism by which low levels of radiation induce a nonlinear response in certain cell protection mechanisms.

The consequences have been incalculable. Not from any intrinsic cost, safety or efficiency advantage coal became the world’s go-to electricity source in the early 21st century. China and India today would not be opting for coal. They would be choosing among an array of off-the-shelf, affordable, safe and clean nuclear reactors developed in the advanced industrial countries.

How foolish have we been? In a month, coal mining kills more people than all nuclear power industry accidents since the beginning of time. Though it opens a can of worms, by the standards of LNT, coal is also more dangerous than nuclear. The particulates, heavy metals and radioactive elements coal plants emit are estimated to cause 13,200 deaths a year, according to the American Lung Association.

Put also into the mix Al Gore. When climate change politics emerged in the 1980s under his leadership, it quickly became a psychodrama in which ideological solidarity required rejection of nuclear power—though nuclear power is the obvious, easiest solution to the alleged carbon problem.

At least the Obama administration is capable of cold reason when not under the microscope from its lefty friends. Undoubtedly a prayer goes up daily from the White House that the greenies won’t notice its openness to revising the nuclear safety standards. Maybe the Keystone pipeline distraction was good for something after all.

Unfortunately, it probably would take only one noisy New York Times op-ed accusing him of green apostasy to cause the president to surrender one of his few useful gestures on the climate conundrum.

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Dec. 2, 2015

Ladies and Gentlemen:

FYI

Best, Carol