



Commentary

In Japan, Let's Stop Sweating The Small (Nuclear) Stuff

Patrick Michaels, 03.24.11, 6:00 PM ET

Japan's gigantic 9.0 magnitude earthquake and the associated tsunami are abject tragedies, responsible for the sudden death of probably 20,000 individuals. So why are we perseverating instead on the release of tiny amounts of radiation from the Fukushima Dai-Ichi nuclear power plant?

This is the familiar story of misplaced concern about tiny risks while blithely ignoring other major ones. People who have irrational fears of small amounts of ionizing radiation have no problem crossing a busy street in the city.

Others are terrified by flying and drive instead, even though there were nearly 34,000 automotive fatalities in 2009 in the U.S., compared with 50 on scheduled planes.

People stay up at night worrying about the 5% increase in sunburn-causing radiation as a result of stratospheric ozone depletion, and the next morning go to the beach and expose 95% of their skin to the same rays.

Here's some perspective on Fukushima, and what it is being compared to, the 1979 partial meltdown at Three Mile Island in Pennsylvania, which ended nuclear power plant construction in the U.S.

Radiation is measured in "sieverts." One sievert, if experienced all at once, is likely to make you pretty nauseated, and 3.5 sieverts is the level that kills 50% of exposed people. A thousandth of a sievert, which has no detectable effect on health, is called a millisievert. A millionth, or a microsievert, is what you get from eating 10 natural bananas.

The average *total* excess radiation dose for a person living within 10 miles of the partially melted down Three Mile Island reactor core in 1979 was approximately 80 microsieverts, or less than one ten-thousandth of a potentially fatal dose.

You probably know some people who eat 800 bananas a year. They may be bloated, but they are not dead.

For comparative purposes, the average person receives a dose of about 3650 microsieverts per year--about 85% of that is from natural sources, and most of the rest is from medical scans.

Measurement from 46 sites within 19 miles of the damaged reactors in Fukushima are generally at or near background levels. There are three sites showing doses of approximately 3.6 millisieverts per day between 12 and 19 miles northwest of the site, but it is unclear whether this is from the power plant or a large strip mine close to the monitors.

Evan Douple, an expert in the effects of radioactivity and health, notes that "At these levels so far, I don't think a study would be able to measure that there would be any health effects." This is from a person who has dedicated his life to the study of the effects of the Hiroshima bomb.

One old environmental adage is "the solution to pollution is dilution." Generally (*very* generally, I might add), the concentration of a pollutant, whether it is coming from an exploded oil well *a la* Macando Canyon in the Gulf of Mexico or from a damaged Fukushima nuclear reactor, falls off at some exponential function of the distance from the source. This relationship has to be modified by prevailing weather conditions, which makes it much more complicated. Some, such as strong winds, may result in higher concentrations downstream than expected from simply exponential decay, while others, like precipitation, effectively cleanse the atmosphere.

But, like so many of our economist friends, let's assume the simpler (and somewhat more unrealistic) "model." At a 2 mile radius, there's only one-fourth of the concentration there is at one mile. At 10 miles, a hundredth; at a thousand, a millionth--all

of which simply proves that there will never be a health effect from Fukushima found in California.

So why are we so concerned? One reason may be that, as a society, we are increasingly illiterate in matters of science and technology. How many people have it in their fund of knowledge that the more radioactive a substance is, the less radioactive it gets over time? How many people realize that there is such a rapid fall-off of the concentration of a water or airborne pollutant the farther one gets from the source? How many know that exposing 95% of their skin to the sun at the beach is far more dangerous than slight changes in damaging solar radiation caused by the loss of stratospheric ozone?

This type of irrationality bleeds over into weather and climate. A category two hurricane still commands the full and complete attention of all the media if it threatens the U.S., even as the number of deaths from land-falling storms plummets (2005 Hurricane Katrina being a notable exception).

In fact, it's quite clear that despite the fashionable fear of all things related to climate, an economically vibrant society actually adapts to weather threats and consequently prospers.

The hurricane is a particularly instructive example. In 1955 an extremely destructive (category 5) Hurricane Janet struck near Chetumal, Mexico, on the Yucatan Peninsula, killing over 600 as it came ashore. In 2007, another five, Hurricane Dean, made landfall in nearly the same spot and killed *not one person*.

The differences between 1955 and 2007 in this part of Mexico are in economic development, infrastructure (roads and electricity), communication of hurricane forecasts and technology.

We have seen a similar decline in mortality from tornadoes, where the death rate, that is the number of deaths per million, has declined a remarkable 90% in the last 100 years. Score another victory for economic development and technology.

Which brings us to the subject of global warming. The atmosphere's response to all the carbon dioxide we have loaded it with has been remarkably lukewarm, consistently hanging below the average of the United Nations' "midrange" climate models. So has the change in sea level. We adapt to these slow changes without even noticing them. Though it is unclear whether or not global warming has anything to do with this, tropical cyclone (hurricanes, typhoons and their ilk) activity has spun down to the lowest level ever measured.

Nonetheless, if you want to cause a hellacious fight, just write these words: Global warming is not going to kill you. Nor is radiation from Fukushima. Have a banana.

Patrick Michaels is senior fellow in environmental studies at the Cato Institute and author of Climate Coup: Global Warming's Invasion of our Government and our Lives, which comes out April 22.