

How the Cold War Caused Millions of American Deaths Through Medical Practice: A Story of Intended and Unintended Consequences

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XaHP: The X-rays and Health Project.
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**The plan: Lower x-ray doses per x-ray procedure.
The result: Fewer cases of x-ray-induced cancer
and coronary heart disease.**

● Part 1. The Law of Unintended Consequences

● The Law of Unintended Consequences refers to the observation that human activities, in addition to their intended results, almost always have unanticipated consequences --- ranging from pleasant to tragic.

● One unintended consequence of the Cold War has been a half-century of non-cautious use of medical x-rays (defined below), resulting in premature death for millions of Americans from cancer and coronary heart disease. By "non-cautious use of medical x-rays," I mean the use of x-rays for medical imaging (not therapy) at much higher radiation doses than the doses required to obtain good images.

● The story of why this happened is not "short and sweet." But I can make it short.

● Part 2. Competition on an Uneven Playing Field

● During the Cold War (1945-1991), both the free world and the communist world relied upon nuclear deterrence to protect their homelands from the presumed aggressive intent of each other. The governments of both sides felt obliged to let "nothing, but nothing" interfere with the production and test-explosions of their nuclear weapons.

● The free world anticipated an inherent and serious disadvantage in this competition. How so?

● The communist world permitted neither free speech nor a free press. And it did not tolerate citizens who tried to receive information across the Iron Curtain. Informants to the secret police were numerous. "We hardly dared to discuss more than the weather and the birds with other people," I've been told by Russians after the Iron Curtain vanished.

● By contrast, the free world has a free press, which meant that *only* in the free world would there be any public information about the peacetime health consequences from making and test-exploding nuclear bombs.

● Part 3. Vigorous Protest Develops in the Free World

● In the early 1950s, open-air explosions of nuclear bombs began at the Nevada Test Site. Radioactive fallout was landing virtually all over the country. When radioactive atoms decay, they emit ionizing radiation --- which is the type of radiation emitted also by x-ray machines (without the presence of any radioactive atoms).

● Radioactive atoms are part of the military (and civilian) nuclear enterprises at every step of the way --- from uranium mining, to plutonium production in nuclear reactors, to the fission products created by operating nuclear reactors, to the fission products created by exploding nuclear bombs. Indeed, a civilian 1000- megawatt electrical nuclear reactor produces as many long-lived radioactive atoms, during each

year of its operation, as does the explosion of about 1,000 Hiroshima-sized nuclear bombs.

- As radioactive fallout from the bomb tests drifted down from the skies, vigorous protests erupted, with Dr. Linus Pauling in a leading role. Such protests were regarded by the U.S. government as a serious threat to national security during the Cold War. "Nothing, but nothing" must weaken public support for nuclear deterrence. What if fear of fallout should evolve into the sentiment, "better Red than dead"?

● Part 4. A Simple Solution: The Intended Consequence

- The government felt it *had* to quell public fear of "radiation" --- which meant ionizing radiation. Back then, the public did not fear other kinds of radiation --- microwaves, radiowaves, infrared waves, ultrasound waves, visible and invisible light waves, etc.

- Prior to World War Two, ionizing radiation was a known cause of human cancer (especially leukemia, lung cancer), bone disintegration (from ingestion of radium), unhealable skin ulcers and skin disintegration (from excessive exposure to x-rays, gamma rays, alpha particles), and heritable mutations (in animals).

- The key point is that peacetime nuclear activities (military and civilian) expose the general public to *low* doses of ionizing radiation.

- The government's solution to quelling public fear of "radiation" was to have its agents assert --- for decades after it was no longer true --- that *evidence* of human harm from ionizing radiation comes exclusively from exposure to high doses, and that *evidence* of human harm from low doses does not exist.

- The intended consequence was to convince fearful people that they were wimps with irrational fears of a danger which was too trivial to detect and "just hypothetical."

● Part 5. Why the Government Policy Continues

- What the government and its agents failed to point out in the 1950s and early 1960s was that no studies *capable* of producing evidence about low doses had ever been completed.

- Of course, in the absence of evidence that *low* doses cause harm, the prudent position is that low doses *do* cause harm. And that is why the protestors against open-air nuclear-bomb testing finally prevailed. In 1963, the USA, UK, and the USSR agreed to move such bomb-testing underground.

- The U.S. government's position became --- and remains --- that it will behave as if there is no safe dose of ionizing radiation, to which it almost always adds that danger at low doses remains "just hypothetical" and "could be zero."

- With the Cold War now over, what explains the government's resistance to endorsing and disseminating the overwhelming evidence (partial list of references [at the](#)

end) that danger from ionizing radiation is proportional to dose, right down to *zero* dose?

- I can only wonder about motives. Attachment to the "just hypothetical" line may arise from the estimated half-trillion dollars it will cost to recapture the radioactive poisons which were released from dozens of bomb-making facilities, and to pay injury claims from workers, soldiers, and other citizens. If the government continues to assert that harm from low-dose exposure is still not proven, it may get away with doing very little. Indeed, it may even expand permission to make intentional releases of additional radioactive material into commerce. The "just hypothetical" line may also relate to lobbying from the civilian nuclear industry. There is a common-sense adage: "Follow the money."

● Part 6. X-Ray Tragedy: The Unintended Consequence

- Fifty years of ridiculing the fear of low-dose ionizing radiation ("radio-phobia") have had a tragic *unintended* consequence:

- Two or three generations of practicing physicians and their professors at medical schools have mistakenly *believed* that danger from x-ray imaging procedures was either absent or trivial.

- The natural result is that x-ray practitioners have *not* made maximum efforts to reduce x-ray doses during imaging. Indeed, they would not even *know* if their doses were falling or rising, because very few practitioners bother to measure the skin-doses they give to patients, although it is easy and inexpensive to do so. There is powerful evidence that x-ray doses could at least be cut in half on the average, and still produce good images (details at www.x-raysandhealth.org).

- The evidence in my 1999 monograph ([Ref.4](#)), which no one has refuted, indicates that about 250,000 persons each year in the USA are dying prematurely from cancer and coronary heart disease due to the *unnecessary* half of the x-ray doses which they accumulated earlier in life, during x-ray imaging procedures. This has been going on for 50 years, and continues. Indeed, per capita dose from x-ray imaging is probably rising today, not falling, because of the increasing use (without dose measurement) of CT scans, and of fluoroscopic imaging during surgery and cardiac catheterization.

- Carcinogenic and atherogenic x-ray-induced mutations co-act with other agents (e.g., cancer promoters, atherogenic lipoproteins) to cause cancer and coronary heart disease.

- The medical use, of higher x-ray doses than necessary, has killed millions of Americans already. Each preventable death is a tragedy. The combined tragedies have occurred as an unintended consequence of the Cold War, because the Cold War inspired the fervent but mistaken assertion that danger from low-dose ionizing radiation was "just hypothetical" or trivial. Moreover, concerns about national security probably soothed the consciences of those who insulted and de-funded the dissenters.

● Part 7. The Location of Ethical Responsibility Now

● The Cold War propaganda has left the medical professions unaware of the premature, preventable, x-ray-induced deaths which they have been causing, by using higher x-ray doses than needed during imaging.

● The era of unawareness should end --- forever. Ethical responsibility for current and future x-ray practice rests now with the medical professions, and especially with the gatekeepers to their education: The medical school professors, the medical journal editors, and the members of the radiological professional societies. How will they respond?

Extra copies of this essay are available from CNR and online at www.ratical.org/radiation/CNR/XHP/ColdWar.html

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