Medicine, Public Health, and the Lurid Ethics of the Cold War

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The outrage and shame that have followed the disclosures of federally funded, often unethical, and pseudoscientific radiation experiments on uninformed persons in the United States have, understandably, focused on the procedures -- in one blatant example, irradiating the testicles of prisoners and then requiring them to undergo vasectomies -- and on the subjects. They include pregnant women at a charity clinic, the terminally ill, cancer patients, children with mental retardation, the poor, and minorities -- a roster of those least valued and least protected. They number, so far, at least 2,000 (including about 800 exposed fetuses, curiously uncounted in most of the recent summations), and there are surely more, hidden in government files still falsely classified secret in the name of "national security."

As McCally, Cassel, and Kimball note in this issue [1], the known experiments range across a broad ethical spectrum, from medically legitimate and useful investigations (though usually flawed by lack of informed consent) to bizarre and dangerous regimens, ominously described by one investigator at the time as having "a little of the Buchenwald touch" [2], lacking any diagnostic or therapeutic purpose. The multiple investigations now underway by the U.S. Department of Energy itself, by other government agencies, and by Congressional committees are concentrated on these individual experiments.

But this focus may be dangerously misleading, and may inappropriately limit both the scientific and ethical questions that will be raised in what should be a long, intensive, and international review of the toxic legacy of the cold war and of the design, production, testing, and stockpiling of nuclear, chemical, and biological weapons in many nations.

The Cold War and Public Health

In both medical and moral terms, the several thousand subjects of these American experiments are not alone. They are joined by hundreds of thousands of unknowing or misinformed civilians exposed to varying levels of radiation by multiple, deliberate releases from nuclear weapons plants and laboratories. These, too, were experiments with human subjects, though they had no medical purpose. To them must be added the millions exposed to radioactive fallout from atmospheric testing of nuclear bombs over the American southwest and near the Marshall Islands in the Pacific; the miners who dug out the uranium ore; the soldiers who were marched into highly radioactive ground zeros after nuclear bomb tests and the sailors exposed at Bikini atoll; and the erratically monitored, belatedly studied workers in nuclear weapons plants.

But even that total is incomplete. The deliberate releases (about a dozen so far have been disclosed in the U.S.) are dwarfed by what are described -- in the most chilling term of all -- as "routine" releases of radioac-

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tivity into the air, soil, or groundwater from nuclear weapons plants and laboratories, together with such toxins as mercury and polychlorinated biphenyls.

The Hanford Case: One Example

The record of the Hanford nuclear weapons facility in Washington State is illustrative. Much attention, properly, has been focused on the infamous "Green Run" in 1949, during which 7,800 curies of 131-I were deliberately released in a test of fallout-sensing monitors, exposing some 270,000 residents of Washington, Oregon, and Idaho. But this was a small fraction of an estimated total of 685,000 curies of accidental and "routine" releases of 131-I into the atmosphere from Hanford, including 400,000 from 1944 to 1947 alone. The bodily absorption of 50 millionths of a curie of l31-I is sufficient to raise the risk of thyroid cancer. A five-year dose-reconstruction study has calculated that, in consequence of these releases, some 13,700 residents -- one in 20 -- absorbed an estimated dose of 33 rads to their thyroid glands during the last 40 years. Among the 20,000 children born between 1944 and 1960, estimated doses range from 15 to 65 rads, mostly from drinking radioactively contaminated milk, and a few may have received as much as 2,900 rads, the equivalent of 100 thyroid nuclear scans [3].

These figures make it clear that the "routine" operations of U.S. nuclear weapons plants during the cold war included what can properly be called public health experiments, conducted without informed consent on whole populations and unaccompanied even by systematic monitoring of received doses. The Hanford case is not alone. The Tennessee Health Department recently reported that accidental and routine releases from the Oak Ridge nuclear facilities, including l31-I, 133-I, and cesium-137, could match the numbers at Hanford. At the Fernald, Ohio, plant, 465,000 tons of uranium were released into the environment between 1952 and 1980. Dose reconstruction studies at two other major facilities, Rocky Flats in Colorado and Savannah River in South Carolina, are just beginning [4].

The Soviet Equivalent

Following glasnost, a cascade of angry anecdotal reports -- and a few published studies [5] on populations around a major Soviet nuclear weapons production site at Chelyabinsk -- have revealed a bitter sym of the cold war and confirmed that arrogance, ignorance, and obsessive secrecy know no national borders. By all accounts, massive risks to the health of civilians, nuclear weapons workers, and soldiers were even worse, apparently by orders of magnitude, in the Soviet Union.

A report by Sharov [6] in this issue, describing Soviet soldiers ordered to march through ground zero shortly after a nuclear airburst during war games in the test area near Totsk, in the southern Urals, is typical. Additional details of this event were reported by Igor Stadnik in an article in the weekly Moscow News in 1992:

> A well-equipped infantry corps was moved from Byelorussia to Kazakhstan. It was divided into the defending "Blue" side and the advancing "Red" side. The bomb was exploded in the space between the two...The area was saturated with radioactive dust: the bomb was exploded 350 metres above the sun-scorched steppe, which was then pounded for two hours by artillery guns...Troops were not always told about the effects of nuclear radiation during the preparatory stage. Far from all of them were issued antigas gear and gas masks...The commanders of friendly armies were invited to witness the game: Rokoskowski from Poland, Kim Il Sung from Korea. The visitors were entertained by an orchestra and a march past [7].

In a report to the Secretariat of the International Physicians for the Prevention of Nuclear War (IPPNW), Dr. Alexey Yablokov, Counselor to the President of Russia for Ecology and Health, confirmed that none of the approximately 44,000 soldiers at Totsk were followed up and "there are no documents available" on their exposures or health outcomes. The Soviet (now Russian) Ministry of Atomic Energy, he reported, has similarly kept secret all medical data on nuclear weapons production workers (personal communication, December 21, 1993, David Rush), in a striking parallel to the monopoly on worker epidemiological data maintained for decades by the U.S. Department of Energy and its predecessor agencies. Similar secrecy surrounds the health and environmental effects of nuclear weapons testing at Novaya Zemla in the Russian far north, the data on the Kyshtym disaster near Chelyabinsk in the 1950s, and evidence of massive radioactive contamination at the former testing site at Semipalatinsk in Khazakhstan (personal communication, December 21, 1993, David Rush).

The symmetry extends beyond the military (the U.S. has its atomic veterans organization; Russia has a "Committee of Special Risk Contingent Veterans") and includes

civilian exposures due both to accidents and routine releases. Recent reports indicate that accidents between 1950 and 1957 at the Mayak complex, the largest Soviet nuclear weapons production center, released an estimated 150 million curies of radioactivity, exposing an estimated 500,000 people [8]. Releases of radioactivity at the Tomsk-7 military plutonium extraction plant reportedly continued until 1993, [9] and Yablokov has described dangerously inadequate plutonium storage facilities at that facility (personal communication, December 21,1993, David Rush).

The Unanswered Questions

The American and Soviet disclosures suggest the first of a long series of urgent and unanswered questions. How much remains to be disclosed from the U.S. Department of Energy files, at least 32 million pages of records (some of them, ironically, literally contaminated with plutonium and other radioactive materials) that are still classified? How much nuclear experimentation lies hidden in the records of other U.S. agencies -- the Department of Defense, the Central Intelligence Agency (CIA), the National Aeronautic and Space Administration and the Veterans Administration? How many of them refer, in addition, to the production and testing of chemical and biological weapons -- individual, like the CIA's tests of LSD and other psychotropic agents, or population based, as in the government's release of allegedly (but not quite) innocuous bacteria in a half dozen cities? Each of these questions, clearly, must be asked of the former Soviet Union as well.

And what of the other nuclear powers? How much is hidden behind the highly restrictive Official Secrets Act in the United Kingdom? Does France have dosimetric and epidemiologic data on the South Pacific populations exposed to fallout from its atmospheric nuclear tests in the South Pacific? What are the records -- of medical experiments, population exposures, worker health and safety, and environmental contamination -- of China, India, South Africa, and Israel? Partial answers have been provided by IPPNW [10], but no truly global accounting will be possible until the international culture of secrecy -- it is not just an American phenomenon -- is undone.

The Ethical Question: What Took So Long?

Many of the most troubling cases of U.S. government-sponsored radiation research on humans took place in the early and mid-1940s, when there were no explicit and binding ethical codes governing such work -- although they often violated the ancient Hippocratic injunction "First, do no harm." But in 1948, in response to the horrifying Nazi concentration camp experiments described at the Nuremberg War Crimes Trials, the Nuremberg Code (see page 11) was published. It called, clearly and unequivocally, for full and valid informed consent, clear medical purposes, sound experimental design, and justifiable risk/benefit ratios. Given the profound international revulsion in response to the Nazi record, the Code drew worldwide medical attention and was the focus of intense discussion among physicians and researchers.

Yet, as the Department of Energy records reveal, questionable and sometimes grossly unethical radiation (and other) experimentation in the U.S. continued, without serious challenge, throughout the late 1940s, the 1950s, and 1960s, until Henry Beecher published a classic challenge to prevailing practices in 1966 [11]. During some of this time, if informed consent was sought at all, a "community standard" prevailed; the physician was required only to disclose as much to experimental subjects as other physicians did. (One "informed consent" example of this period consists in its entirety of a statement written and signed by the mother on behalf of her three-year-old child: "The doctors have told me everything I need to know." Personal communication, February 8, 1994, Christine K. Cassel.) Many researchers now offer these practices as an ethical frame of reference, arguing that their experiments met "the standards of the time." It is as if the Nuremberg Code had never been published. Not until the early 1970s were Nuremberg principles adopted in regulations governing federally funded research.

What happened? It seems that the ethical frame of the Nuremberg Code was swept away almost at once by the "national security" frenzy that drove the nuclear arms race and the perceived need to be ready to fight a nuclear war. Many experiments had legitimate medical purposes, but others were intended only to help design radiation weapons such as the neutron bomb, or to test the capacity of radiation exposed soldiers to fight. And the need to produce ever more nuclear weapons, in the U.S. and the former Soviet Union at least, had continuing priority over public health concerns: the "routine" releases from weapons plants continued into the late 1980s. When a Congressional committee disclosed many of the experiments in 1986, during an intensification of the cold war arms race, its findings were largely ignored.

Next Time?

That leads to the final, and perhaps most important, question. What protection do we have, in any nation equipped with nuclear, chemical, or biological warfare resources, against a recurrence? What will happen the next time -- and it will certainly arrive -- there is an announced new "national security" threat? What will happen when new categories of weapons are developed, and the demand is made to test them on humans (for purely " defensive" purposes, of course), or for large-scale production despite attendant risks of environmental contamination and population exposures?

We are collectively unlikely to abolish arrogance and ignorance, but we can conceivably limit the practice that is at once the core of our past vulnerability and the key to prevention in the future. It is secrecy, and that -- above all else -- should be the lesson we draw from the current disclosures in the U.S., the former Soviet Union, and elsewhere, and the first target of international remedial efforts now. As a report on workers in U.S. nuclear weapons plants said not long ago:

Secrecy is the ultimate crime. It blocks the principle of open scientific inquiry that is the only sure road to truth. It violates cardinal principles of medicine: to do no avoidable harm, and to assure informed consent. It denies the right of free people to control their government. And it permits -- and conceals -- all the other crimes committed in pursuit of the dubious proposition that an endless, ever-growing supply of nuclear weapons will make us safe [12].

References

1. McCally M, Cassel C, Kimball DG. US government-sponsored radiation research on humans 1945-1975. M&GS 1994;1;3-18.
2. Allen S, Kong D. '50 memo warned radiation tests would suggest Nazism. boston Globe, December 28, 1993;1.
3. Geiger HJ. Generations of poison and lies. New York Times, August 5, 1990;E19.
4. Stone R. Scientists study "cold war" fallout. Science 1993;262:1968.
5. Kossenko MM, Degteva, MP, Petrushova NA. Estimates of the risk of leukemia to residents exposed to radiation as a result of a nuclear accident in the southern Urals. PSR Quarterly 1992;2:187-197.
6. Sharov VB. The secrecy of the southern Ural nuclear accidents and its results. M&GS 1994;1:37.
7. Stadnik 1. Survivors of the Soviet atomic bomb program. Moscow News, No. 26, 1992;11.
8. Epstein PR, Clapp RW. Soviet nuclear mishaps pre-Chernobyl. Lancet 1993;341:346.
9. Yemelyanenkov A, Propov V. The atom declassified. Berlin: H & P Druck: 1992.
10. Hu H, et al. Plutonium: deadly gold of the nuclear age. Cambridge, MA: International Physicians Press; 1992.
11. Beecher HK. Ethics and clinical research. New Engl J Med 1966; 274:1354-1360.
12. Geiger HJ, Rush D, et al. Dead Reckoning: A critical review of the Department of Energy's epidemiological research. Washington, DC: Physicians for Social Responsibility, 1992.