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**CRITICAL DISCUSSION FORUM:  
KATE BROWN, *A MANUAL FOR SURVIVAL:  
CHERNOBYL GUIDE TO THE FUTURE***

## **The Shadow of the Soviet Legacy on the World's Nuclear Future**

**Kate Brown**

I woke one day the spring of 2019 to a jammed inbox and the realization that I had become a character in my own history. I have not shied away from writing in the first person, but publishing *Manual for Survival: A Chernobyl Guide to the Future* involved a heightened level of exposure that left me for a time wishing I could sink down under the earth's crust, the book with it.

*Manual for Survival* tracks the environmental and medical consequences of the Chernobyl accident. I reported that in documents that had been classified during the Soviet period, local doctors and researchers recorded with reams of charts and graphs increasing frequencies of disease and fertility problems in the Chernobyl-contaminated lands. Doctors were at a loss to explain these trends until the spring of 1989, when the Soviet State Committee for Hydrometeorology finally published radioactive fallout maps from the Chernobyl accident. At that time, doctors and researchers started to see an association between the uptick in health problems and Chernobyl exposures. By 1990, the ministers of health in Belarus and Ukraine announced they had a public health disaster on their hands and begged the international community for aid.

Wondering why we did not know this story, I headed for the archives in Europe to see how UN agencies assessed the disaster as the Soviet government collapsed. In those records I documented how a few key officials in the International Atomic Energy Agency and the UN Scientific Committee for the Effects of Atomic Radiation worked to help Soviet leaders minimize the effects of the disaster. They hid troubling data, limited questions in research agendas, and discredited Soviet research methodologies, insisting instead on unrealistic and supposedly universal “western standardized research protocols.” They wrote letters of protest to editors who published Soviet researchers’ work, blocked research funding for a large-scale Chernobyl health study proposed in the UN General Assembly, sponsored rival studies, and rushed to convene forums to issue seemingly-credible summaries of their assertions that other than the death of thirty-five clean-up workers, Chernobyl had caused no detectable health damage (1991), or just a few cancers in children (1996), or more cancers in children and a possible few thousand cancer deaths in the future (2006). Scientists who hued to the party line of minimal health effects were praised and rewarded with plum jobs and trips abroad. Those who did not had their funding pulled, were iced out of their positions and came under attack as politicized or bad scientists. Soviet scientists who struggled to speak

*Slavic Review* 79, no. 2 (Summer 2020)

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doi: 10.1017/slr.2020.80

English in poor-fitting suits and synthetic shoes were easy targets in the slick, well-paid world of international scientific expertise. It was easy to tar them with a broad brush as incompetent, poorly-educated, easily given to fear and panic, or willing to say anything to get a grant or handout. All this went into my book.

Then the same cycle started again, and this time I was the target. Within a few days of publication, an industry scientist wrote an ad hominem attack of *Manual for Survival* for an otherwise staid publication. While I was merely surprised at such a timely and personal review, the scientist was repeatedly “shocked” that I omitted from my book the work of physicists who measured radioactivity in soils and air and computed them into doses for Chernobyl survivors. I was well aware of that scholarship, but a cursory reading of the book reveals that I am critical of that method in general because the “uncertainties” and estimations in this science makes it easy to get the results one wants by tweaking inputs, parameters, and computations. This was well known. As one Department of Energy (DOE) scientist put it in 1980, such studies were not “scientifically useful,” but were necessary to “assure [nuclear] workers” and as a “counter-measure to the antinuclear propaganda that continues to flood all of us.”<sup>1</sup> After the Chernobyl accident, DOE officials sought to head off a free-for-all of open-ended questions connecting reports of health problems near Chernobyl with on-going lawsuits related to America’s nuclear legacy. At a 1987 meeting of American health physicists in suburban Maryland, an official from the US Department of Justice gave a talk. The speaker showed slides and explained that the biggest threat at that time to the nuclear industry was not more nuclear accidents, but lawsuits. Health physicists, the speaker continued, needed to be prepared to serve as expert witnesses to defend the US government in court. After the speech, attendees broke into groups so that Department of Justice lawyers could provide on-the-spot training.<sup>2</sup> In the 1990s, lawyers defending US government contractors in lawsuits over the health effects from the massive releases of radioactivity in the production of nuclear weapons sat in on the meetings where scientists drew up their study protocols.<sup>3</sup> These lawyers too understood that a properly-designed epidemiological study would be useful in their defense of corporate contractors.<sup>4</sup>

Because most experts in health physics in the US and Europe came out of nuclear civilian and defense agencies and were funded by those agencies, it was difficult for non-governmental, dissenting views of radiation medicine

1. C. C. Lushbaugh, M.D. Oak Ridge Associated Universities to John Kozlowich, Knolls Atomic Power Laboratory, June 18, 1980. Steve Wing Personal Files.

2. Interview with Robert Alvarez, Takoma Park, MD, May 24, 2019.

3. Karen Dorn Steele, “Radiation Study Set up as Defense, Records Show,” *The Spokesman Review*, February 13, 2005, 1.

4. Indeed, the study found in 1999 that the children in eastern Washington exposed to exceptionally high doses of radioactive iodine were the only children known so far in the world not to have incurred higher rates of thyroid cancer from exposures to radio-iodine. Scott Davis et al. 2004. “Thyroid neoplasia, autoimmune thyroiditis, and hypothyroidism in persons exposed to iodine 131 from the Hanford nuclear site,” *JAMA* 292, no. 21 (December 1, 2004): 2600–13.

to get a fair airing.<sup>5</sup> The main purpose of my book was to foreground Soviet work on Chernobyl health problems. This data is interesting because it was created at a time of censorship and placed in sealed filing cabinets before the topic of Chernobyl was heavily politicized. The archives show this uncensored correspondence between Soviet researchers and public health officials, conversations they had no idea would one day become public. I also sought to highlight the quite different Soviet approach to radio-biology, which was to use patients' bodies (not ambient radioactivity in the environment) to estimate patients' doses of radioactive contaminants. The use of biomarkers is increasingly being validated by the western scientific community.<sup>6</sup>

As few readers were likely to find the industry scientist's review in a specialist journal, he sent it around to people who support nuclear power. One such individual repeated his criticisms in a more mainstream publication, with little sign that he read *Manual for Survival* (he called me the afternoon before publication and admitted he had not yet had time to read it). The pro-nuclear activist continued his campaign on Twitter and created a YouTube video using a recording of a conversation with me that I requested be off-the-record. His organization later added a podcast devoted to debunking my book. Negative reviews to *Manual for Survival*'s Amazon site appeared on the day the book went for sale before any purchaser could have possibly read it. The same anonymous critics trolled the web for reviews and bombarded comment sections, repeating the original mischaracterizations of my argument. A letter addressed to the president of MIT questioned my credentials to be on the faculty.

Like an egg cracked over my head, the defamation seeped down, sticky and gelatinous. I was "in over my head," an "anti-nuclear activist" akin to "anti-vaxers" and "climate-change deniers." I was pedaling "junk science." (Phillip Morris coined the term "junk science" in the 1980s to smear scientists who claimed second-hand smoke caused cancer.) That label put me in company with scientists who argue the climate is warming, pesticides in food are harmful, and indoor radon causes damage to human health.<sup>7</sup>

The controversy over *Manual for Survival* will fade to become so many clicks down a Google search engine. What will persist is the increasing ease

5. Even when the National Cancer Institute carried out radiation medicine studies in the 1980s and 1990s, the chief administrator and many researchers on epidemiological studies transferred from the Department of Energy or the International Atomic Energy Agency to the National Cancer Institute. See Wacholz, November 21, 1986, Correspondence Files, 1986, UNSCEAR Archive and "Request for Waiver of Department Regulations to Allow Reappointment of Members to the NCI Thyroid/Iodine 131 Assessments Committee," June 5, 1990, NCI, RG 43 FY 03 Box 5, part 1.

6. USAID, for example, has embraced it in their work tracking disease in the global south. DHS Biomarker Program, <https://dhsprogram.com/What-We-Do/Biomarkers.cfm>; and Kazuki Saito, et al., "Intestinal Bacteria as Powerful Trapping Lifeforms for the Elimination of Radioactive Cesium," *Frontiers in Veterinary Science* 12 (March 2019); available at <https://www.frontiersin.org/articles/10.3389/fvets.2019.00070/full>.

7. Jonathan M. Samet and Thomas A. Burke, "Turning Science into Junk: The Tobacco Industry and Passive Smoking," *American Journal of Public Health* 91, no. 11 (November 2001): 1742–44.

with which long-standing tactics of discrediting scholarly and scientific views are accomplished by means of defamation and ad hominin attacks with little engagement with the evidence at hand. On social media, the job is done without access to established media venues; many online commentators speak authoritatively, though they have no apparent training in relevant fields of knowledge. To do the job of undermining a critical argument backed up by years of research just takes a few willing trolls with an internet connection.

I am disappointed in these reactions less for the injury they do to my reputation (and ego) and more for the discussions they forestall. I was hoping to change the way we see Chernobyl. The common narrative is that Chernobyl was an accident caused by Soviet engineering and design incompetence. After the explosions, firemen rushed in to fight the fire. Miners, helicopter pilots, and engineers followed in the weeks after. Some three dozen men were felled in the prime of life, but, the narrative goes, Soviet liquidators finally managed to defeat the swarming radioactive isotopes. The emergency was over—mission accomplished. Like Tom Cruise in *Top Gun* all that remained to do was to blow the smoke off the hot pistol. We love these stories of calamity defeated by masculine heroism.<sup>8</sup> We seek them out especially in periods of crisis when extra-human forces appear to be lined up against the human race.

But there are obvious contradictions in the plot line. American engineers were quick to assert that such an accident could never happen here, despite the fact that the RBMK reactor is a copy of American production reactors, which initially had the same “positive void coefficient” that caused the Chernobyl explosions.<sup>9</sup> We are supposed to believe that Chernobyl is unique because Soviet officials were especially incompetent and duplicitous, but then we are also led to understand that key Soviet medical experts who were appointed to UN agencies told no lies and spoke only transparent truths at a time when we know their work and their public statements were censored. Classified documents, now available to the public, help us sort through the filters of censorship by recording in real time what Soviet doctors and researchers discovered when they thought they were having a private conversation, before Chernobyl was politicized and monetized.

The official death toll is another troubling riddle. UN documents commonly cited today (though published thirteen years ago in 2006) assert that only thirty-three to fifty-four people died from Chernobyl exposures. The Ukrainian government compensates not thirty-five, but 35,000 spouses (all women) of men who died from a Chernobyl-related illness. That number, even if inflated for political reasons in the 1990s, includes only married men, not bachelors, women, children, infants, or people with undocumented exposures.<sup>10</sup> At the Pripjat visitors’ center on the thirtieth anniversary, the guide gave a death toll of 150,000. These are conservative numbers. Ukraine received only a small portion of Chernobyl fallout. The most radioactive clouds went to Belarus

8. See the HBO series, Craig Mazin, *Chernobyl* (2019).

9. Alvin M. Weinberg, *The First Nuclear Era: The Life and Times of a Technological Fixer* (Woodbury, NY, 1994), 188.

10. See Adriana Petryna, *Life Exposed: Biological Citizens after Chernobyl* (Princeton, 2013).

and western Russia. Those governments have not made any public count of death tolls that I could find. The focus on deaths and cancers is itself a form of obfuscation. People exposed to chronic, low doses of radioactivity suffer from a number of diseases of the circulation, immune, and endocrine systems, as well as the digestive track, thyroid, and heart, plus problems with fertility and reproduction. Their lives are painful, plagued with costly medical procedures, and shorter than average.<sup>11</sup> Looking only for acute effects glosses over the more banal, daily struggle with the consequences of exposure.

The Chernobyl case is also used for planning for future nuclear emergencies. Nuclear lobbyists insist that resettling people from their homes is more dangerous to evacuees than leaving them in place on contaminated ground because of the trauma relocation causes.<sup>12</sup> I found working through archives that thousands of people wrote their leaders begging to be resettled in the years after the accident. People with means and mobility left on their own. Doctors and nurses were among the first to depart.

I anticipated that by airing the insights of doctors and scientists closest to the accident site that *Manual for Survival* would provoke a more fully-informed discussion of the possible hazards of nuclear power. By wading into this long-standing argument, I asserted that scholars in the humanities can help solve scientific stalemates by illuminating the political context in which scientific arguments were created. I still hope an open-ended debate will occur, but so far, I have seen in the reception of this book only a polarization of existing pro and anti-nuclear camps. Perhaps that is a symptom of our times, but in part the schism has occurred because the work of Belarusian and Ukrainian scientists emerged from classified documents when those states were collapsing—at a time when most things Soviet were considered a failure. Even today it is still easy to dismiss knowledge produced in the Soviet Union as corrupted and mendacious, while farmers living in contaminated lands are still easily characterized (without any evidence) as people who smoke, drink, have poor diets, and worry needlessly. The Cold War left many toxic legacies. It appears the long half-life of assumption and prejudice that the Cold War generated is one of them.

11. For detailed descriptions, see Trisha Pritikin, *The Hanford Plaintiffs: Downwinders and the Fight for Atomic Justice* (Lawrence, KS, 2020).

12. J. Lochard, T. Schneider, R. Ando, O. Niwa, C. Clement, J. F. Lecomte, and J. I. Tada, “An Overview of the Dialogue Meetings Initiated by ICRP in Japan after the Fukushima Accident,” *Radioprotection* 54, no. 2 (April-June, 2019): 87–101, available at <https://doi.org/10.1051/radiopro/2019021>.